THE UNIVERSITY OF HULL

Reverse Logistics Practices in the Nigerian Pharmaceutical Sector

being a Thesis submitted for the Degree of Doctor of Philosophy (Ph.D.) in the

University of Hull

by

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July 2017

ACKNOWLEDGEMENT

This PhD has represented one of the most significant milestones in my life. It has been an incredible, challenging, and arduous journey that would not have been possible without the help and support of so many people to whom I am eternally grateful. First and foremost, I want to express my profound gratitude to God for empowering me to successfully complete this PhD programme.

My warmest appreciation goes to my supervisor, Professor David Grant, for his time, guidance, and expert supervision. He has been a huge inspiration for me throughout this journey. His excellent guidance and support made this thesis possible. I consider myself privileged to have worked with him and he will always be a great source of inspiration to me in the academic arena as well as a model of guidance and mentoring.

I am also very grateful to my second supervisor, Dr Sarah Louise Shaw, who has also guided and supported me throughout this journey. She has given me a lot of timely feedback, and identified opportunities for me to attend conferences, guest lecturing, and workshops to help boost my academic experience and exposure.

I owe deep gratitude also to all the case companies for welcoming me, allowing access into their businesses, and to the interviewees who devoted their valuable time for this research. I wish to acknowledge and thank Mr. Olaiwola Ejide of Ejide Pharmacy, Mrs. Henrietta Bakura of the Nigerian Federal Ministry of Health, Miss Enifome Emmanuel of Fidson pharmaceuticals for their support and assistance in Nigeria. Without their help, much of this research would not have been possible.

I am also grateful to my family and close friends who have been there for me over the last three years when I have needed them. One of them deserve a special thank you, my mother, Mrs Taiwo Gbadamosi who has always believed in me and have supported me in so many ways, which words cannot describe.

ABSTRACT

This thesis presents findings from an exploratory study of reverse logistics practices in the Nigerian pharmaceutical private sector. Reverse logistics has received increased attention in recent years due to the sustainability and circular economy implications of value recapture and end-of-life product disposition. A significant amount of reverse logistics research has been done in developed countries but very little has been undertaken in the pharmaceutical industry and developing nations, particularly Africa where recent health crises such as the Ebola virus necessitate safe and proper reverse logistics solutions.

This study investigated characteristics, similarities and differences in pharmaceutical reverse logistics practices of 19 private sector pharmaceutical organisations in Nigeria including the regulatory authority to determine facilitating, enabling and inhibiting factors and develop improvement opportunities for the sector. This exploratory research used a multiple case study method involving semi-structured interviews with pharmaceutical supply chain stakeholders and practitioners to explore five research questions within a seven perspectives framework derived for this study. Empirical findings came from within-case, within case-category, and cross case-category analysis of the 19 case organisations.

This study contributes a conceptual understanding of pharmaceutical reverse logistics management through operationalising the seven perspectives framework and developing a typology of six important pharmaceutical reverse logistics process flows. This study has identified specific factors that facilitate, drive, or inhibit pharmaceutical reverse logistics practices in Nigeria and differentiated them from those in extant literature. This study impacts research by providing theoretically grounded and empirically informed insights into reverse logistics practices in both the pharmaceutical supply chain and a developing nation, Nigeria. To the researcher's knowledge, it is the first of its kind to do so.

This study augments the reverse logistics content framework by including a seventh perspective, the "when perspective". The extended reverse logistics framework provides a basic structure upon which researchers can utilise to explore various issues in reverse logistics, thereby providing a starting point for future pharmaceutical reverse logistics researchers, particularly in developing countries. This study contributes to practice by revealing the 'current state' of pharmaceutical reverse logistics practices in the Nigerian private sector, identifying improvement opportunities, and suggesting implementable measures to facilitate best practice. Finally, this study contributes to the increasing usage, and applicability of qualitative methods in logistics research.

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ABBREVIATIONS

ACPN	Association of Community Pharmacists of Nigeria
AI	Active Ingredient
API	Active Pharmaceutical Ingredient
B2B	Business to Business
CC	Case-Category
CC1	Case-Category One
CC2	Case-Category Two
CC3	Case-Category Three
CC4	Case-Category Four
CC5	Case-Category Five
CC6	Case-Category Six
CIMO	Context, Intervention, Mechanisms, and Outcome
CLSC	Closed-loop supply chain
CW	Central Warehouse
CSR	Corporate Social Responsibility
DC	Distribution Centre
FMoH	Federal Ministry of Health
ECOWAS	Economic Community of West African States
EDD	Expired, Damaged, and Defective
EMA	European Medicines Agency
EOL	End-of-life
ER	Export Returns
FDA	Food and Drug Administration
GLP	Good Laboratory Practice
GMP	Good Manufacturing Practice
GSCM	Green supply chain management
HBP	Hospital Based Pharmacy
HDMA	Healthcare Distribution Management Association
LAWMA	Lagos State Waste Management Authority
MHRA	Medicines and Healthcare Products Regulatory Agency
NAFDAC	National Agency for Food and Drug Administration and Control

NHIS	National Health Insurance Scheme
NGMP	Nigerian Good Manufacturing Practice
NPD	National Drug Policy
NPI	Nigerian Pharmaceutical Industry
OEM	Original equipment manufacturers
OTC	Over the Counter
PC	Pharmaceutical Company
PCN	Pharmaceutical Council of Nigeria
PI	Pharmaceutical Importer
PM	Pharmaceutical Manufacturer
PMGMAN Nigeria	Pharmaceutical Manufacturing Group of the Manufacturers' Association of
PW	Pharmaceutical Wholesaler
PR	Pharmaceutical Retailer
PRL	Pharmaceutical Reverse Logistics
PSC	Pharmaceutical Supply Chain
RA	Regulatory Authority
RCA	Return Contractual Agreement
REACH	Registration, Evaluation and Authorisation of Chemicals
RG	Regulatory Guidelines
RL	Reverse Logistics
ROL	Retail Outlet
RQ	Research Question
SCM	Supply Chain Management
SFFC	Spurious/falsely-labelled /falsified /counterfeit
SLR	Systematic Literature Review
SOR	Sales-On-Return
SEDD	Short-Dated, Expired, Damaged, and Defective
UNIDO	United Nations International Development Organisation
WADRAN	West African Drug Regulatory Authorities Network
WEEE	Waste Electrical and Electronic Equipment
WHO	World Health Organisation
WDA	Waste Disposal Agency

CHAPTER ONE - INTRODUCTION

1.1. Research Background

The strategic application of reverse logistics (RL) for the reclamation of products during their life cycle, and at the end of their useful life is gaining increased attention in today's global business environment. The economic, and environmental implications of reclamation, reuse, and recycling to save landfill space, fuel, and costs are becoming strategically important for companies. The social, and ethical dimensions of RL, particularly as it applies to value recapturing and proper disposal, are emerging topics of discussion both in the academic and business community.

Companies are increasingly devoting ample time and resources towards the understanding, and the implementation of RL practices. Nowadays, almost all businesses deal with some nature of return due to issues of marketing returns, quality problems, overstock, wrong delivery, damaged products returned for refurbishing or re-manufacturing etc. Hence, RL practices is regarded as an essential part of the close-loop supply chain management (SCM), and is fast becoming an excellent way of achieving sustainable development. Many companies that previously did not pay attention to the RL management have begun investment in the RL aspect of their supply chain (Rogers and Tibben-Lembke, 1998).

The hazardous consequences on public health, and the environment of having counterfeit drugs, expired drugs, damaged drugs in circulation is a global concern. This global concern further signifies the social, ethical and economic importance of RL practices, programs or systems designed to recapture value, and to ensure proper disposal. Despite the pivotal role RL plays in SCM, RL is still being studied in an isolated fashion, in terms of the problems studied, the methodologies applied, and the context addressed (Narayana et al., 2014).

Considering the 2014 recent outbreak of Ebola virus in West Africa which claimed about thirty thousand lives within a period of twelve months, the researcher was concerned about the

enormity of the threats posed by the presence or the availability of expired, counterfeit, and damaged drugs in circulation if Pharmaceutical Reverse Logistics (PRL) practices or systems are not implemented or encouraged in Africa. Though, there have been considerable discussion of these issues in the media, governments, and regulatory bodies, including the announcement of the Federal Government of Nigeria's plan to shut down open drug market as part of the effort to eradicate open drug market, to ensure organised drug distribution system in the country.

The ecological impact of improper disposal of expired, defective and counterfeit drug is another major concern to the researcher. According to the Basel Declaration (1999), healthcare establishments owe it as a duty to the environment and public health to treat and dispose wastes generated by them in a manner that would have no adverse health or environmental effects (Ngwuluka et al., 2009). Little is however, known about the actual PRL practices and the enforcement of this obligations in the Nigerian pharmaceutical industry.

Furthermore, there is no evidence of academic and practitioner research or studies on PRL practices, programs, systems in the Nigerian pharmaceutical context. Hence, insight on the state of PRL practices in Nigeria from the Nigerian PSC stakeholders' perspective is currently non-existent. This knowledge gap coupled with the hazardous threats of having expired, damaged, and counterfeit drugs in circulation contributed to the reason the researcher developed interest in conducting this exploratory study.

Furthermore, being a native of the federal republic of Nigeria, and a Dutch citizen by naturalisation with more than ten years career experience in the European supply chain and logistics industry; the researcher aims to contribute to the improvement of PRL practices in Nigeria by exploring and identifying the typologies of PRL processes/strategies practised by PSC stakeholders in the private sector, identify similarities and difference in their PRL operations, and identify improvement opportunities where necessary. The output of this study will not only facilitate the improvement of PRL processes and standard within and between PSC stakeholders but will also facilitate the removal of expired, damaged and defective (EDD)

drugs from circulation, protect end-consumer from consuming EDD drugs, and protect the environment from improper drug disposal. This output will improve the industry and ultimately make a better quality of life for the citizenry.

1.2. Research Context

The researcher has selected Nigeria as the context for this study as all literature examined in preparation for this research failed to address RL, and pharmaceutical reverse logistics (PRL) practices in the Nigerian pharmaceutical context. On the contrary, the majority of extant literatures addresses this phenomenon mainly within the context of developed countries such as the USA, Canada, the Netherlands, Germany, and the United Kingdom. In addition, the majority of extant RL literature focuses on the RL practices in other industries such as the consumer electronic industry, automotive industry, e-commerce industry, auto part industry, publishing industry etc.

Besides the obvious lack of RL literature in the Nigerian pharmaceutical context, the researcher has selected Nigeria as the geographical region for this thesis due to the pivotal role of the Nigerian pharmaceutical industry (NPI) in the supply of pharmaceutical products in the entire West African region. Nigeria provides 60% of the healthcare products consumed in the Economic Community of West African States (ECOWAS) by volume (PMG-MAN, 2009).

According to the Nigerian Pharmaceutical and healthcare report released in 2013 by Business Monitor International (BMI), up to 80% of cases of kidney failure are attributed to the consumption of fake medicines and up to 85% of malaria drugs in Nigeria are deemed ineffective. The threat of having expired, counterfeit, damaged or sub-standard drugs in circulation without effective implementation of PRL can therefore be enormous both to public health and the environment. As a result, Nigeria presents an ideal research context. This study therefore aims to explore PRL practices in the private sector of the NPI in order to generate an empirically informed and theoretically grounded insight into this phenomenon from the

Nigerian pharmaceutical supply chain (PSC) stakeholders' perspectives. Then, to explore and identify improvement opportunities, where possible, to facilitate best practices.

This study focuses on the private sector of the NPI as the sector is economically significant to the Nigerian economy, majority of Nigerians are not covered by the National Health Insurance Scheme (NHIS), and majority of the population rely on the private sector for pharmaceutical services. This therefore made the private sector worthy of investigating first before the public sector. The generalisability of this study to explain the public sector is open to confirmation from future PRL research.

This supply chain matrix (Figure 1.1) is used to set the boundary line for this research and show a typical drug distribution flow in the private sector of the NPI. While end-users is depicted as one of important PSC stakeholders, information relating to the flow of drugs from end-users back to the point of origin were not collected directly from end-users. Rather, empirical data analysed in this study were collected mainly from PSC practitioners involve in PRL operations of their respective organisations as this study focuses on PRL of drugs in the B2B segment of the NPI's private sector.

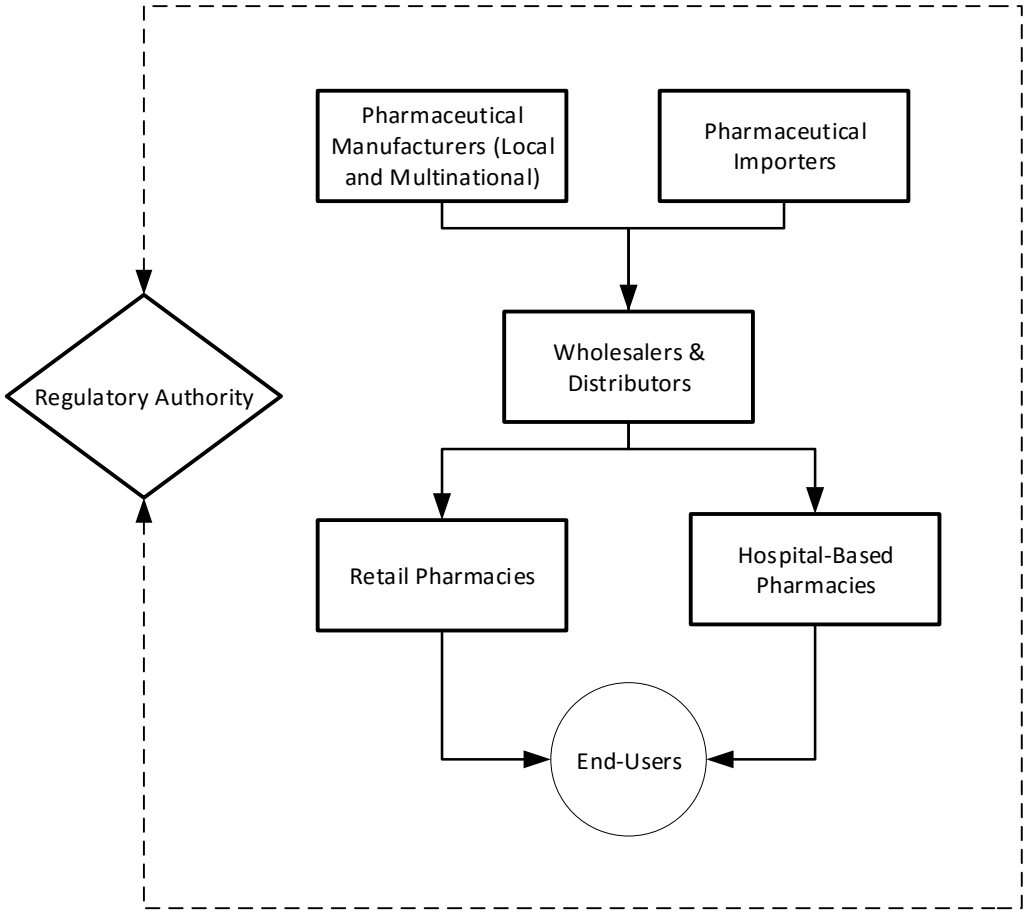


Figure 1.1**:** The Pharmaceutical Industry: Private Sector Drug Distribution Flow

1.3. Research Problem

Five research questions (RQs) are developed for this thesis based on the foregoing research background and context.

1. What are the characteristics of PRL practices in the B2B segment of the NPI?
2. What are the similarities and differences in the PRL practices of PSC stakeholders?
3. How do these similarities and differences, influences PRL operations?
4. What are the facilitators, drivers, and inhibiting factors of PRL practices in Nigeria?
5. Are there improvement opportunities envisaged? If yes, what are they?

The answers to these RQs will establish an empirically informed and theoretically grounded knowledge of PRL practices in the private sector of the NPI.

1.4. Research Methodology

The research approach utilised for this study stems from Mentzer and Kahn's (1995) logistics research framework. The framework was employed to achieve a rigorous and scientific research that will lead theory development. The framework comprises five research stages: Stage One involves idea generation and substantive justification. Stage Two involves literature review and substantive justification. Stage Three involve theory development i.e. constructs identification and conceptual/theoretical framework development. Stage Four involves methodology and data analysis. Stage Five involves conclusion drawing based on research findings. Further details are presented in chapter three of this thesis.

The RQs of this thesis represent a new area of research requiring an exploratory approach. Hence, the study is exploratory in nature. This exploratory study employs multiple case research methodology to maximise the veracity and the versatility of data collected to explore the research phenomenon. It thereby generates an empirically informed and theoretically grounded insight of the PRL practices from the Nigeria PSC stakeholders' perspectives.

The use of multiple cases will help to achieve in-depth knowledge and understanding of PRL practices within each organisation, and to establish a holistic and generalised conclusion. Although this exploratory study involves nineteen pharmaceutical organisations, this study involves six echelons in the PSC as shown in Figure 1.1 – the pharmaceutical manufacturers (PM), pharmaceutical importers (PI), pharmaceutical wholesalers (PW), pharmaceutical retailers (PR), hospital-based pharmacy (HBP), and the regulatory authority (RA).

The exploratory study utilises the semi-structured interview data collection technique to explore the five RQs by collecting qualitative data from selected PSC practitioners

(pharmacists, store managers, supply chain managers, logistics managers, regulatory affair director, sales representative, sales & marketing managers, and regulatory officers) operating within the aforementioned six echelons in PSC. The interviewees were not only purposefully selected, but also diversely selected.

The data analysis method utilised comprises three phases: Phase One involves data reduction and within case analysis. Phase Two involves within case-category analysis. Phase Three involve cross-category analysis which sets the scene for the discussion of empirical findings in relation to extant literature, leading to the development of empirically informed and theoretically grounded insight into the study phenomenon. Further details of the data analysis phases are presented in chapter four of this thesis, section 4.4.9 (p. 210 - 216).

1.5. Thesis Structure

The thesis is divided into two main parts, part one depicted in Figure 1.2, comprises the systematic literature review (SLR), background literature that underpins this thesis, and the research framework adopted. Part Two depicted in Figure 1.3, presents the research methodology, the empirical research, the discussion of findings, and the conclusion.

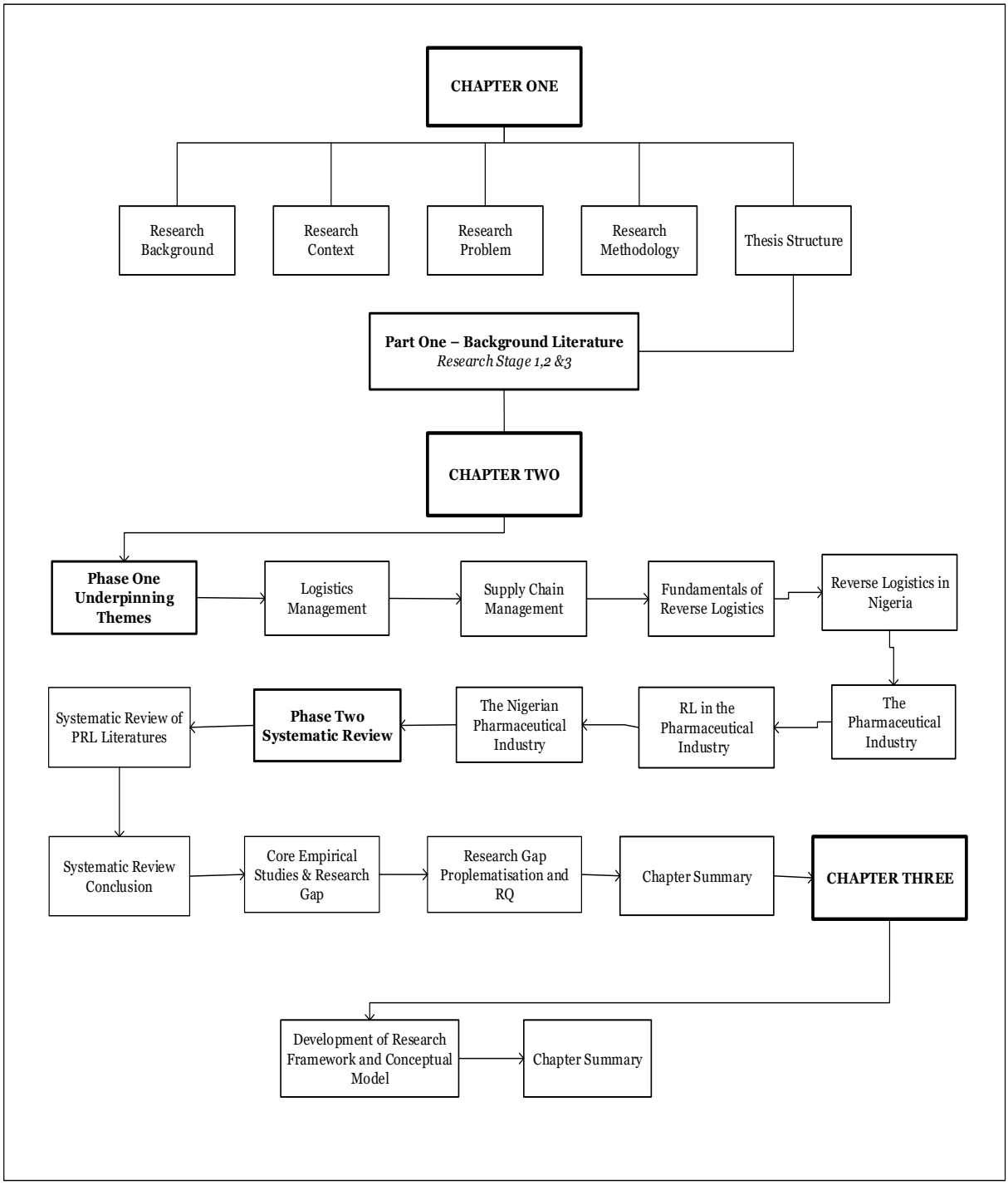


Figure 1.2: Thesis Structure – Part One

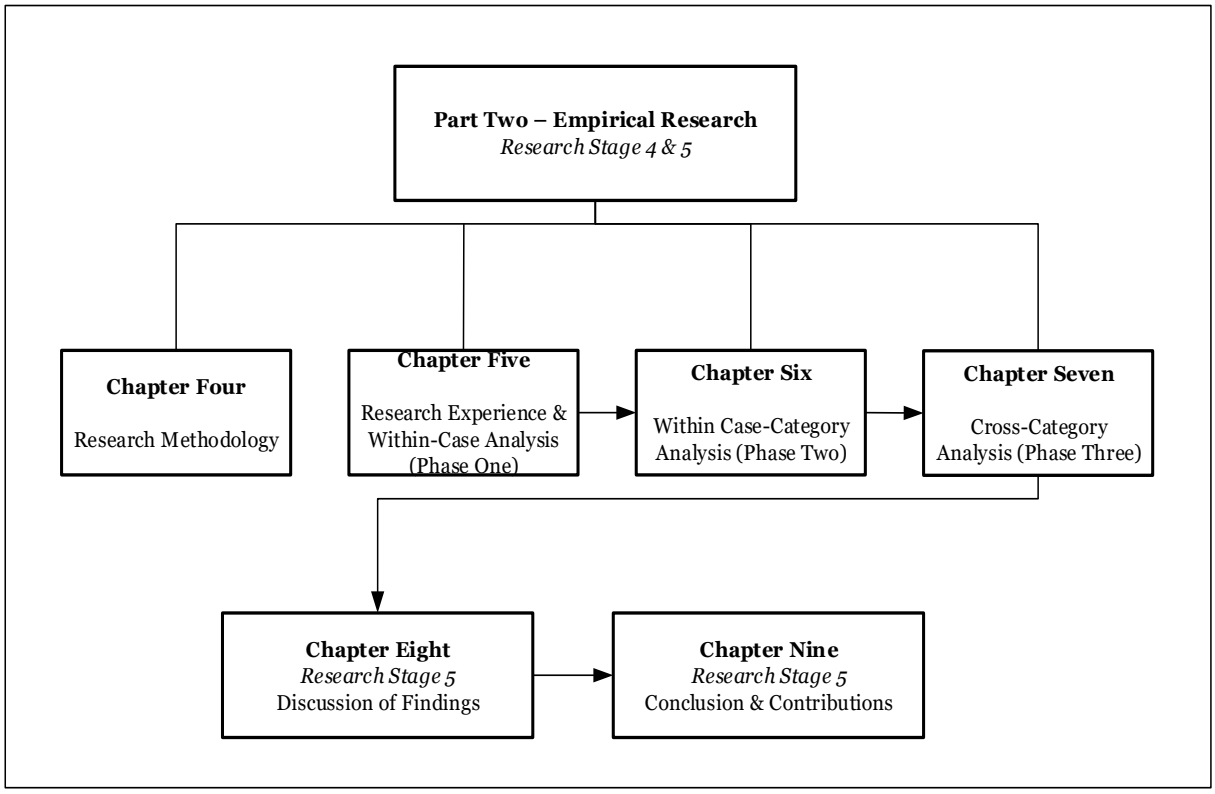


Figure 1.3: Thesis Structure – Part Two

1.5.1. Part One – Background Literature

Chapter Two – Chapter Two discusses the themes that underpin this study including logistics management, SCM, fundamentals of RL, the pharmaceutical industry, RL in the pharmaceutical industry, the NPI, RL in Nigeria. The chapter also systematically reviews extant empirical studies on PRL, systematically confirms gaps in literature, and reviews core empirical studies which further re-affirm research gaps.

Chapter Three – Chapter three discusses the logistics research framework adopted for this study and the conceptual model that will guide the development of a theoretically grounded knowledge of PRL practices in the Nigeria private sector.

1.5.2. Part Two - Empirical Research

Chapter Four – Chapter four discusses the research methodology employed for this thesis by firstly restating the research objectives, and RQs. Then, it discusses the philosophical underpinnings of this research with emphasis on research paradigms, paradigms in logistics research, logistics research issues, as well as the researcher's philosophical stance. This is followed by the research design for this study, associated research design issues, and limitations as well as details of how the empirical data were collected, displayed and analysed.

Chapter Five – Chapter five introduces the within-case analysis conducted for this study (Phase One), and the associated research related encounters. The chapter describes the researcher's research experience in Nigeria, introduces the within-case analysis, and defines the constructs employed to structure the presentation of the empirical data obtained from the field study. The within-case analysis then feeds into the within case-category analysis presented in chapter six.

Chapter Six – Chapter six discusses the within case-category analysis conducted for this study (Phase Two). Hence, it discusses similarities and differences among cases per category based on the within-case analysis finding of chapter five. The chapter also identifies and presents the emergent themes obtained from the Phase Two within case-category analysis. The six within case-category analysis then feeds into the cross-category analysis presented in chapter seven.

Chapter Seven – Chapter seven discusses the cross-category analysis conducted for this study (Phase Three). It discusses similarities and differences among the categories as well as patterns in the empirical data. The data analyses are presented in accordance with the constructs employed for understanding the phenomenon of study within which the primary RQs were addressed. The cross category analysis feeds into the discussion chapter.

Chapter Eight – Chapter eight discusses novel insights obtained from the three-phased data analysis processes (Phase One, Two, and Three) by linking them to extant literatures where possible to examine the relationships between the empirical research and theory. It also considers whether the PRL practices employed by the companies investigated corroborate the RL fundamentals described in the extant literature or the companies operates on a different RL principle. The chapter also discusses the empirical findings in an integrated and holistic way in order to comprehensively address the RQs. The chapter pulls together empirical evidence to develop an empirically informed and theoretically grounded insight into PRL practices in Nigeria, as well as improvement opportunities to achieve best practice.

Chapter Nine – Chapter nine is the final chapter of this thesis. The chapter summarises the thesis, presents the conclusion regarding the RQs, and highlights the theoretical and the practical contributions of the research, the research limitations, and a guide for future research.

PART ONE – BACKGROUND

LITERATURE

RESEARCH STAGES ONE AND TWO

CHAPTER TWO – LITERATURE REVIEW

2.1. Introduction

Chapter One set out the background, context, and purpose of this study as well as the structure of this thesis. The goal of this chapter is to establish an of understanding of the themes that underpin this study, discuss extant empirical studies on RL that have contributed to RL theory development, systematically review extant empirical studies on PRL, systematically confirm gaps in literature, and ascertain the relevance of this study in order to develop the theoretical framework under which this study will be carried out.

The literature review of this study is therefore two phased. Phase one presents a brief introduction of logistics management, supply chain management, fundamentals of RL, and the practice of RL in Nigeria. This then set the scene for the introduction of the pharmaceutical industry, RL in the pharmaceutical industry, and the NPI.

Phase two systematically examines empirical studies on RL practices in the pharmaceutical industry with specific focus on the NPI; analysing the characteristics of work done to date, their contributions and shortcomings. Having systematically confirmed the gap in literature, including the contributions and shortcoming of the core articles, this set the scene for the problematisation of the identified research gap, which further provides a point of departure for the research issues in this study.

Phase One – Themes Underpinning the Study

2.2. Logistics Management

Logistics operations have played a key role in the global economic development for over 5,000 years, and have been transformed into different logistics branches such as Air freight logistics,

City logistic, Construction logistic, Green logistics, Lean logistics, Manufacturing logistics, Maritime logistics, Organisation logistics, Retail logistic, RL and Rural logistic (Kinobe et al., 2012). The Council of Supply Chain Professionals (CSCMP), a globally recognized US-based organisation (2015) defined logistics management as "that part of SCM that plans, implements, and controls the efficient, effective forward and reverses flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers' requirements" (CSCMP, 2015).

In terms of boundaries and activities, "logistics management activities typically include inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfilment, logistics network design, inventory management, supply/demand planning, and management of third party logistics services providers" (CSCMP, 2015). "To varying degrees, the logistics function also includes sourcing and procurement, production planning and scheduling, packaging and assembly, and customer service. Logistics is involved in all levels of planning and execution, strategic, operational and tactical" (CSCMP, 2015). Figure 2.1 shows the various components of logistics management consistent to the CSCMP definition, highlighting under dotted line components to be explored in this study i.e. where RL sits in the overall process.

In terms of relationships with other functions, "logistics management is an integrating function, which coordinates and optimizes all logistics activities, as well as integrates logistics activities with other functions including marketing, sales manufacturing, finance, and information technology" (CSCMP, 2015). Logistics became a separate field of study through the emergence of the marketing concept albeit being originally part of marketing and distribution discipline (Grant, 2003).

Grant (2003) further defined Logistics as a process for effecting the time and place utility of customers through activities of transport, warehousing, inventory management, and information processing. Although the above definitions recognize that the aim of logistics is to meet the customers' need, the CSCMP definition of logistics was adopted for this study. The

CSCMP definition of logistics management was considered appropriate for this study because it not only recognises logistics as part of the subset of supply chain processes and management but also recognises RL flow of goods, services and information in the definition of logistics.

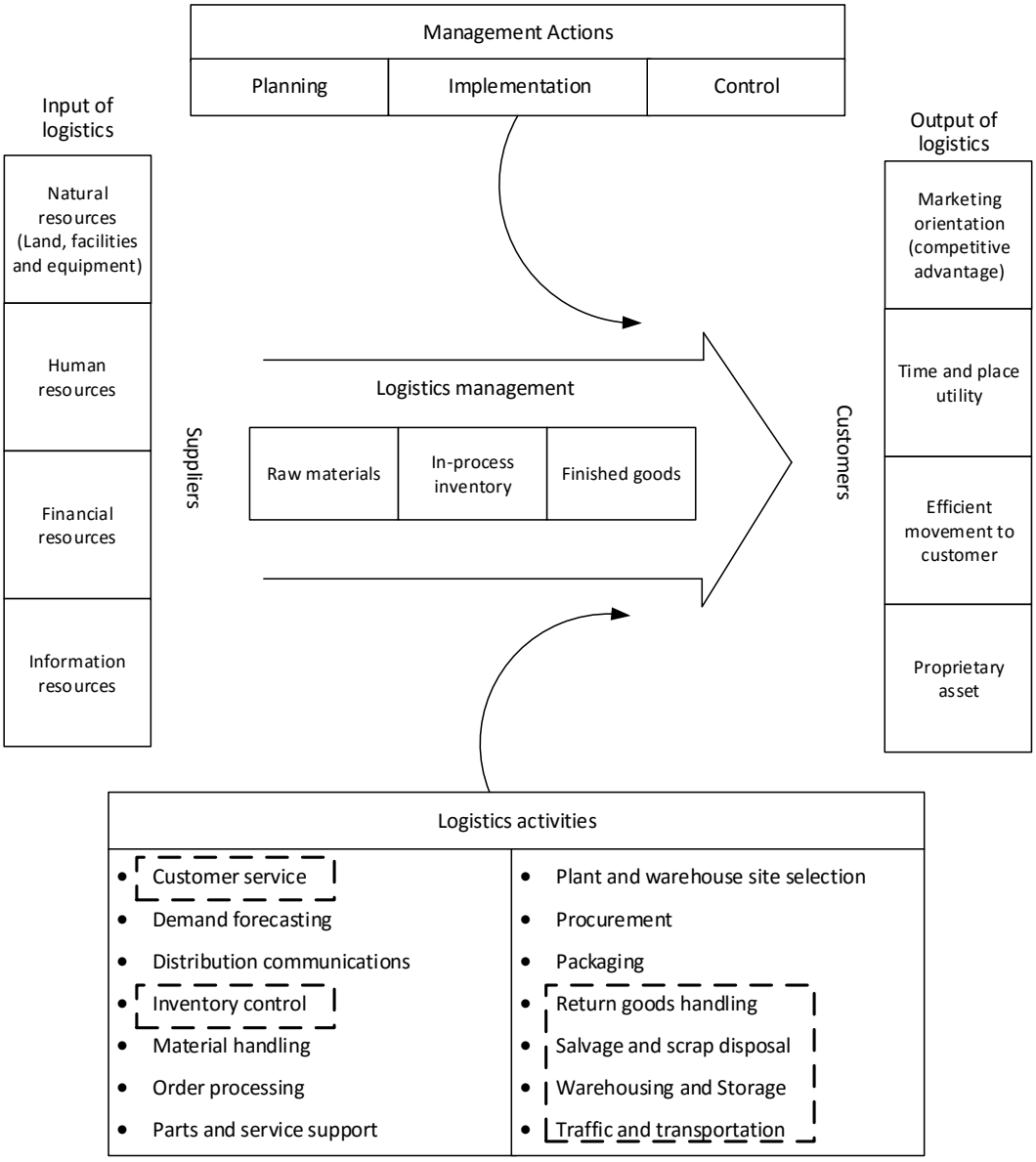


Figure 2.1**:** Components of Logistics Management (Adapted from Grant et al., 2006)

2.2.1. Evolution of Logistics

Logistics activities started about thousand years ago as organized trade, and gradually began to gain recognition as a valuable area of study during the early 1900s through the distribution of farm products (Grant et al., 2006). It was initially considered only as a function that supports organisation's business strategy and improves their time and space utility (Grant et al., 2006). Logistics has now evolved from a supportive function with little added value to a strategic function and a source of competitive advantage for businesses by creating value for customer through quality logistics services (Mentzer et al., 2008). This kind of customer-driven value added service created through logistics cannot be easily duplicated like price and promotion (Mentzer et al., 2008). The leveraging of logistics management enables organisations to enhance customer satisfaction and achieve competitive advantage through inventory availability, on-time delivery, and product damage mitigation (Mentzer et al., 2008).

Logistics activities have been evolving, so also are logistics research works. According to Mentzer et al. (2008) the evolutionary process of logistics research began with primary focuses on the definition and management of sub-functions associated with physical distribution such as warehousing, inventory management, inbound and outbound transportation. In the early 1960s the focus evolved to the studies of system wide inventory levels, facility locations, and logistics network design.

The subsequent series of the evolution processes was driven by the deregulation of the transportation industry in the late 1970s and early 1980s which provided organisations with more transportation options. This development ultimately increased competition within and between transportation modes (Grant et al., 2006). In addition, globalisation of industry, rising interest rates and energy costs have now resulted in logistics being considered a major cost driver for organisation and have drawn the attention of top management in considering logistics in their strategic decision making process. In the face of the intense global competitive

pressure, logistics excellence is required in order to leverage global opportunities (Grant et al., 2006).

Between the 1980s and 1990s exploration of the concept of EDI, inter-organisational, inter-functional integration, and their relationships began (Mentzer et al., 2008). This was heavily driven by the rapid development in information technology. Hence, organisations' capability to monitor transaction-intensive activities such as the ordering, movement and storage of goods and materials was significantly enhanced (Grant et al., 2006). The combination of factors such as advancement in information system technology, increased emphasis on customer service, increased environmental awareness, channel power switch from manufactures to retailers, increased need for system approach and total cost concept, the profit leverage from logistics etc., all make logistics a strategic weapon in the current dynamically competitive global market (Grant et al., 2006).

Logistics has therefore become an important discipline that not only impacts the way logistics is being managed within the corporate environment but also impacts the types of themes and techniques researched by logistics researchers (Kent & Flint 1997). This is evident in the extension of logistics research to the concepts of customer service and customer satisfaction (Mentzer et al., 2008).

Kent and Flint (1997) further shed light on the evolutionary process of logistics research as driven by events in the macro-environment involving many dimension of business and society such as technology, regulations, globalisation, shifting business needs, changing customer demands, cross-fertilization of disciplines, new research findings etc. all contributed to the evolutionary process. Independently, each factors might have subtle effect but they all occur simultaneously with dramatic ramifications in the real world (Kent and Flint, 1997).

The cumulative effect of the global market demands, governmental regulatory pressures and customer pressure are pushing businesses to become more sustainable (Kinobe et al., 2012). As a result, different branches or types of logistics such as air freight logistics, city logistics, construction logistic, green logistics, lean logistics, manufacturing logistics, maritime logistics,

organisation logistics, retail logistics, RL and rural logistics have emerged with the overall purpose of improving the quality of product-life, reducing waste and preserving natural resources (Kinobe et al., 2012). Table 2..1 presents the definitions of the different types of logistics that have emerged as provided by Kinobe et al., (2012).

Following the description of the different branches of logistics, presented in the Table 2..1, this thesis will focus on the RL as highlighted in grey and investigate the practices in the NPI.

Table 2.1: The different logistics types and description (Adapted from Kinobe et al., 2012, p. 1107)

Logistics types	Description
Air Freight Logistics	Mainly relevant to high value and precious goods and perishable products that need to reach their destinations quickly. The services of air freight transportation are always high compared to the other modes of transportation.
City Logistics	City logistics refers to logistic activities by organizations and companies in urban centers. It is characterized by high traffic, advanced information system, co-operative freight transport and public and private logistics terminals.
Construction Logistics	This focuses on the efficient transportation of materials to the construction site to reduce on transport movements, reduce on stockholding, efficiency use of on-site labour, and generate less waste.
Green Logistics	Green logistics refers to minimizing the ecological impact of logistics, for example, reducing energy usage of logistics activities and reducing usage of materials. Green logistics is getting more attention from the supply chain management attributed to the deteriorating environment brought about by the increasing level of energy and pollution released into the ecosystems, high generation of waste and diminishing raw materials.
Lean Logistics	Aims at eliminating waste (inventory) which affects the progress of work in process inventories and in turn will decrease process and cycle times and ultimately increase supply chain velocity and flow. When undertaken, lean logistics will improve inventory accuracy because storage space will be better utilized, products will be handled, moved, counted less and less damaged.
Manufacturing Logistics	Refers to techniques that are developed by most firms in the supply chain aimed at efficiency and effectiveness for instance JIT (just in time) ideology.
Maritime Logistics	Mainly associated with container shipping and involves an integration of maritime operations and supply chain management to meet the needs of regional, national, and international shipping. It is characterized with high carrying capacity.
Organisational Logistics	This is concerned with the entire management of firms or organizations both internal and external throughout the supply network, with primary focus on capacity of people to learn and share knowledge and information.
Retail Logistics	Retail logistics gained recognition after the rise of the supply chain management. This was through the addition of value to products through manufacturing, branding, packaging, display at the store, and at each stage cost is added in terms of production cost, branding cost and overall logistics cost.
Reverse Logistics	It is the process of planning, implementing and controlling the efficient cost effective flow of raw materials, in process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal.
Rural Logistics	Refers to logistic activities that occur in the rural areas and spread to city centers aiming for market for supplying agricultural products.

2.3. Supply Chain Management

SCM was established as a justified area of investigation in the early 1980s, much later than logistics management. SCM has evolved from being a narrowly focused discipline to a broad

and encompassing discipline (Stock & Boyer, 2009). From the early 1980s, SCM definitions have always been considered synonymous with the traditional definition of logistics management because both are associated with the flow of goods and services between suppliers and consumers (Stock & Boyer, 2009). To create a distinction between SCM and logistics management, SCM was reconceptualised from integrating logistics across the supply chain to integrating and managing key business processes across the supply chain (Grant et al., 2006).

In 1998, the CSCMP differentiated logistics as only one function contained underneath the umbrella of SCM. The CSCMP defined SCM as the "planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities" (CSCMP, online). Importantly, SCM also includes the coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers (CSCMP, 2015). This definition signifies that logistics management is an integral part of the SCM i.e. the scope of SCM includes all logistics management activities.

Stock and Boyer (2009) researched and analysed 173 different definitions of SCM and consensually defined SCM as the management of a network of relationships within a firm, between interdependent organisations, and business units; consisting of material suppliers, purchasing, production facilities, logistics, marketing, and related systems that facilitate the forward and reverse flow of materials; including services, finances and information from the original producer to final customer with the benefits of adding value, maximizing profitability through efficiencies, and achieving customer satisfaction.

The consensus definition of SCM proposed by Stock and Boyer (2009) was adopted for this study because it combines the collective thinking and wisdom of both academics and practitioners with varying perspectives and viewpoints. The definition is made up of a synthesis of SCM thought and it accounted for the most agreed upon aspects of SCM (Activities, Benefits, and Constituents/Components). The definition captures the scope of many researchers such as Mentzer et al. (2008), Larson et al. (2007), Trent, 2004, Lummus et al.

(2001), Towers and Ashford (2001), Elmuti (2002), Stevens (1989), Towill et al. (2000, p. 160), Handfield and Nichols (1999) etc., and it is broad enough to accurately portray the accepted models in the SCM discipline (Stock & Boyer, 2009). Most importantly, the definition recognised the reverse flow of material which makes it more appropriate for this study than the CSCMP's definition.

2.3.1. Emergence of Supply Chain Management

Based on Stock and Boyer's (2009) definition, SCM is considered to be a cross-disciplinary concept, not owned by any particular discipline but rather a phenomenon that touches nearly all areas of business (Mentzer et al., 2008). Until recently, the term supply chain was not widely used beyond the boundary of academia, specialist sectors of industry, and the professional management community (Christopher & Peck, 2004). As a related and relatively new concept, the supply chain was first used in the 1980s.

The emergence of the SCM discipline was initiated as a result of the need to respond to the changes in prevailing trend in business strategy; aimed to achieve a more efficient organisation, create and deliver value to customers and shareholders (Christopher & Peck, 2004). To achieve greater good, SCM amounted to the redefinition and amalgamation of established business activities such as logistics management (integrated transport, warehouse and distribution) and manufacturing-based operational management (purchasing, order and inventory management, production planning and control, customer service).

The rapid development of information technology of the 1990s further facilitated SCM evolution towards gaining capabilities and extension of the integration of logistics, operations and marketing elements into a cross-functional inter-organisational process. This enabled SCM to achieve greater efficiency of product flow from raw material production, finished good production and delivery to the final customers (Grant et al., 2006). Considering the intense competition and pressure on business in recent time, SCM has become a strategic tool used by organisations to improve or maximise their profit margins and competiveness. The

optimisation of SCM has also become an excellent strategy for profit maximisation through the changing relationship between volume and cost achievable through productivity gains in the supply chain (Sousa et al., 2011).

Business competitors now share equal access to similar raw materials and suppliers, which limits organisations' ability to focus on price or product. Businesses are under intense pressure to become more sustainable. Consumers' pressure continues to increase, which drives market prices down, governmental regulation and public policy demands continue to focus stringently on companies' interaction with the outside environment. One major way for companies to achieve competitive advantage in the midst of these pressures lies in the development of a sustainable supply chain (Markley & Davis, 2007). To achieve a sustainable supply chain, businesses need to engage in supply chain activities that not only positively affect their profit margins but which also have positive impact on the environment and the society (Carter & Rogers, 2008).

The reverse supply chain is the network of activities involved in the reuse, recycling, and final disposal of products and their associated components and materials (Kinobe et al., 2012). It has been recognised that the RL component of the supply chain has direct economic, environmental and societal impact, hence it contributes to the sustainability objective of SCM. This thesis therefore focusses on the RL component of the supply chain and the practices in the NPI. Researchers such as Narayana et al. (2014) identified the need for RL research to explore other industries other than the automobile, electronic goods, paper recycling, retail, e-commerce industries that have dominated RL research.

2.4. Fundamentals of Reverse Logistics

2.4.1. Reverse Logistics

One of the core elements of an effective SCM is logistics (CSCMP, 1998). As with all supply chain activities, logistics is concerned with cost containment and reduction (Ritchie et al., 2000). Bowersox et al., (1996) sees the real importance of logistics as its ability to give organisations a competitive advantage by providing customers with superior service through inventory availability, speed of delivery, and consistency of delivery. Nevertheless, logistics is not only about delivering goods to customers, but also offers the opportunity for stock to be returned to the supplier via a feedback loop (Ritchie et al., 2000). Hence, the need or potential for the re-use or recycling of unwanted stock has become a major issue in many industries, and the process of achieving this has been labelled "reverse logistics" (Giuntini & Andel, 1995).

Based on the CSCMP's definition of logistics, RL encompasses all the activities mentioned but the difference lies in the direction of the activities (Grant, 2012). In other words, all these activities occur in the opposite direction in RL (Rogers & Tibben-Lembke, 1998). Contrary to the traditional logistics process flows, RL deals with how products are efficiently retrieved from the point of consumption and transported back to the point of origin (Setaputra & Mukhopadhyay, 2010). Hence, RL provides strategic cost savings contrary to the traditional quick-fix cost-savings method such as reducing payrolls layoffs or purchasing substandard materials (Dowlatshahi, 2000). Forward (outbound) logistics is the main focus of most businesses, while RL (inbound) is traditionally an after-sales services whose primary focus is value recovery, cost reduction and regulatory compliance (Khan & Subzwari, 2009).

Rogers and Tibben-Lembke, (1998) therefore defined RL as the process of planning, implementing, and controlling the efficient flow of raw materials, in-process inventory, finished goods, and related information from the point of consumption to the point of origin for the purpose recapturing value or proper disposal. Dowlatshahi (2000, p.143) defined "RL

as a process in which a manufacturer systematically accepts previously shipped products or parts from the point for consumption for possible recycling, remanufacturing, or disposal".

Essentially RL is basically the process of moving goods from their designated point of destination back to the point where they were initially produced for the purpose of recapturing value or proper disposal. Hence, RL includes processing of goods that are returned due to damage, seasonal inventory, restock, salvage, recalls, excess inventory, recycling programmes, hazardous material programs, obsolete equipment disposition and assets recovery (Rogers & Tibben-Lembke, 1998).

The system used in forward logistics cannot be used to process or manage product return because the reverse supply chain is not a symmetrical image of the forward supply chain due to the differences in material flow and information demanded (De la Fuente et al., 2008). The forecasting and planning in RL also differ from those of the forward supply chain due to the high level of uncertainty associated with product return and waste. Hence only companies with a high level of collaboration are more efficient and effective in supply chain integration (De la Fuente et al., 2008).

In modern supply chains however, the border between forward logistics and RL has been eroded and the distinctiveness of the definition of what is considered raw material and who the "end users" are is increasingly becoming vague (De Brito & Dekker, 2003). Unlike the predetermined one-way flow of the forward logistics, goods now to some extent keep circulating in the supply chain as manufacturers are able to disassemble, remanufacture or reuse some of the components of end-of-life products instead of disposing them (Setaputra & Mukhopadhyay, 2010). A typical example of this situation is that of used or recovered glass considered a substantial input for the production of new glass (De Brito & Dekker, 2003). The closed-loop concept of supply chain thereby embraces the coordination and combination of both the forward and RL to provide a holistic view on supply chain (De Brito & Dekker, 2003).

2.4.2. Interest in Reverse Logistics

In recent years, interest in RL has grown both in academia and in business communities, spanning through diverse areas of the supply chain such as recycling, remanufacturing, information technology, warehousing, operations and environmental sustainability (Huscroft et al., 2013; Dowlatshahi, 2010). RL practices have been recognised as an excellent way of achieving sustainable development. Many companies that previously did not pay attention to the management of RL have begun investment in the RL aspect of their supply chain (Rogers & Tibben-Lembke, 1998).

Organisations in some developed countries are not only interested in the management forward logistics of their products but also interested in the return flow of their used products destined for recycling (Souza, 2013 & Olugu et al., 2010). Based on the implementation of RL, these organisations develop partnership with various others in the supply chain to recycle used product. This practice reduces their production cost and incidences, solid waste management costs and the environmental impact of landfill are also reduced, and thus both economic and ecological dividends are realized (Berkowitz et al., 2000).

According to Kinobe et al. (2012), environmental aspects and existing governmental regulations have motivated and induced products producers and suppliers of product to take more responsibility of availing their products on the market. This has resulted to an increased interest in reverse flow products and recycling activities. By using RL, companies are able to achieve sustainable development by implementing environmentally friendly supply chain initiatives and optimising profit simultaneously (Dowlatshahi, 2000).

The battery producing industry have a well-developed RL systems for recycling and reusing waste batteries; this has enabled significant behavioural change, with two in five people in the UK now recycling batteries (ERP, 2010). This came as a result of the EU directive on batteries introduced in 2009, holding battery producers responsible for the collection, treatment and recycling of their batteries. The EU directive and regulation enforces responsibilities on all

entities in the household battery recycling system (Xie & Breen, 2014). This, facilitated the interest in, and the implementation of RL programme in the battery industry.

Another important area of RL which is becoming increasingly important is product recalls. Irrespective of the type of industry, be it in the automotive, electrical, electronics, pharmaceutical or food and beverage industry, the recall of faulty or potentially faulty products appears to be on an increase or at the very least the public and the media appear to be paying more attention to this area more than ever before (Ritchie et al., 2000). Example include, product recalls such as that of Vioxx by Merck, Johnson & Johnson's Tylenol, Toyota and Volkswagen vehicle recall, Heinz baby food, Findus pancakes etc. These product recall activities involve the implementation of an effective RL programme. Essentially, profit maximisation, regulatory compliancy, customer satisfaction, product recall, and waste elimination through the recycling of unused or unwanted supplies provides powerful reason for developing effective RL processes (Ritchie et al., 2000).

There is an increasing need for companies to acquire track and trace capability in order to monitor and recall products when necessary. For example, the FDA regulatory requirement has made it the responsibility of the Pharmaceutical companies (PCs) to develop their RL networks and structure in order to avoid the dissatisfaction of the customers, counterfeit drugs, and return of outsourced drugs (Kumar et al., 2009). There are now RFID compliance guidelines issued by the FDA to encourage companies to implement RFID tags with unique identifiers in order to boost their track and trace capabilities throughout the supply chain (Kumar et al., 2009). This reduces the possibility of counterfeit drugs entering the supply chain and enables retrieval of sub-standard products from circulation e.g. the immediate withdrawal of tens of millions of burger and beef products from sales across Europe during the horse meat scandal of 2013.

In academia, several academic endeavours focusing on the reverse flow of products have emerged, thereby contributing to the body of knowledge in the relatively new field of RL. The practice of RL has stretched out worldwide encompassing all layers of the supply chains in

various industry sectors including those producing steel, commercial aircraft, computers, automobiles, chemicals, appliances and medical items (Dowlatshahi, 2000). Although products will continue to stream from the manufacturers to the end consumers, the stream of goods flowing back from the end consumers is rapidly increasing (Narayana et al., 2014).

RL has not only gained recognition as an essential part of the closed-loop SCM, it has gained importance as a profitable and sustainable business strategy (Grant & Banomyong, 2010). The considerable increase in the pace of research in both areas is evident in the increased amount of attention both have received from operations managers and company executives (Dowlatshahi, 2000). While some actors in the supply chain have been forced by regulatory authorities to take products back, others have proactively implemented RL strategy due to the economic potential associated with the practice (De Brito & Dekker, 2003). Furthermore, the growing awareness of the art and science of RL has encouraged firms to start benchmarking their return operations with the best-in-class operators and some are even acquiring ISO certification or their return processes (Rogers & Tibben-Lembke, 1998).

2.4.3. Empirical Studies towards RL Theory

This study intends to develop an empirically informed, and theoretically grounded knowledge of PRL practices from the NPI's perspective. Prior knowledge of extant underlying theory in RL is imperative in order to establish a solid understanding of this phenomenon from the NPI's perspective. According to Carter and Ellram (1998), the issues surrounding RL functions, channels, disparities between forward and RL, cost, and other general information have been described by various researchers. Guiltinan and Nwokoye (1975) investigated channel structure in RL. They identified distinct RL structures, functions performed in reverse distribution channels, and new members that are idiosyncratic to reverse distribution.

Pohlen and Farris (1992) researched the channel structure in plastic recycling. Their research tested Guiltinan and Nwokoye's (1975) model and proposed a slightly different channel structure. The former provided detailed description of functions performed by reverse channel

members and directions for future research. Both pieces of research, however, focused mainly on recycling, rather than other options, such as resource reduction (Carter & Ellram, 1998).

Stock (1992) conducted a comprehensive and multifunctional review of RL research but the review lacks a well-grounded conceptual framework. Cairncross (1992) conducted research on European environmental regulations and RL activities in Europe. The research described the effect of European environmental regulation on companies operating in Europe. The research also provided pragmatic suggestions and examples of how companies are proactively dealing with the EU regulations. Barry et al.'s (1993) research on RL in Europe provided an outline for performing a life-cycle analysis that considered environmental issues. Kopicki et al., (1993) exploratory research on reuse and recycling programmes used a combination of interview and case studies to examine the logistical implications of reuse and recycling programmes. The outcome of these studies not only lacked a well-grounded conceptual framework, but also lacked empirical evidence (Carter and Ellram, 1998).

Jahre's (1995) research on channel structure in household waste collection systems integrated logistics and marketing channels theory to develop a grounded proposition. The research, however, focused on a narrow area of RL and does not provide empirical evidence. Murphy et al. (1995) studied the effect of environmental issue on logistics management. The research empirically examined the importance of various environmental issues to logisticians and the use of strategies to cope with these issues. According to Carter and Ellram (1998), this research also did not provide a well-grounded and conceptual framework; lacked inferential statistics and a priori assumptions regarding the interaction of the factors being studied.

In a further study, Murphy et al. (1995) investigated the contribution of logistics to corporate environmentalism; the research extended the literature through an empirical study, using a priori assumptions. The research also did not provide a well-grounded, conceptual framework and the initial examination did not determine whether the issues have a direct, empirical effect on the level of RL activities (Carter & Ellram, 1998).

Several articles have been written about specific aspects of RL, and the majority of these articles are practitioner oriented (Carter & Ellram, 1998). Only a few researchers have holistically dealt with the concept of RL and from the articles reviewed so far, only Stock (1992) has taken both a truly holistic view and academic perspective of the RL paradigm (Carter & Ellram, 1998). A critical gap in RL literatures is the lack of theoretically grounded holistic view of RL but in recent time, there have been a growing number of grounded research performed (Carter & Ellram, 1998).

Drumwright's (1994) research on intra-organisational factors that influence socially responsible buying, provided an initial grounded theory of intra-organisational factors that influence environmental purchasing. An interview method used to develop the grounded theory, provided support for developing the propositions. Although the research lacks internal validity, it is considered an excellent starting point for a theoretically grounded work in RL. The study, however, did not account for inter-organisational factors but focuses only on internal, intra-organisational factors that influence RL activities.

Nevertheless, the study shows that a firm's RL activities are influenced by intra-organisational factors such as a sincere commitment to environmental issues, successful implementation of ethical standard, existence of policy entrepreneur who make strong commitment for organisational adoption of environmental friendly philosophy (Carter & Ellram, 1998). The study also indicates that firms' RL activities are directly affected by one or more of the four environmental forces: customers, suppliers, competitors, and government agencies. According to Carter and Ellram (1998), researchers that identified these environmental forces are Stock (1992), Cairncross (1992); Pohlen and Farris (1992); Barry et al. (1993); Kopicki et al. (1993); Livingstone and Sparks (1994) and Murphy et al. (1995).

There is also literature on related fields that secondarily added to the theoretical growth of RL. For instance, Thierry et al., (1995) report that RL is widely used in the automobile industry; providing automobile firms with far reaching cost and strategic advantages in a highly competitive industry (Dowlatshashi, 2000). According to De Brito and Dekker, (2003),

Thierry et al. (1995) shaped product recovery management by presenting valuable insights on various recovery options; distinguishing direct re-use and re-sale, product recovery management (repair; refurbishing; remanufacturing; cannibalization; recycling), and waste management (incineration and land filling). They characterized the recovery options according to the level of disassembly, required quality as well as the resulting product, using three case studies (BMW, IBM, and an anonymous copy remanufacturer) to illustrate changes in operations when companies engage in recovery.

Fuller and Allen (1997) used the recycling of post-consumer goods as the inspiration for the following typology of reverse channels: manufacturer-integrated; waste-hauler; specialized reverse dealer-processor; forward retailer-wholesaler; and temporary/facilitator. Fuller and Allen (1997) illustrated that RL is likely to involve three types of players: typical forward chain players (manufacturer, wholesaler, and retailer), specialized reverse players, and opportunistic players. The applicability of this classification for the PSC industry will be confirmed during the course of this study.

Goggin and Browne (2000) suggested a taxonomy of resource recovery specifically for end-of-life products focusing on electronics and electrical equipment. The classification was based on three dimensions; the nature key players behind RL network. The first, public vs. private sector; the second, commercial vs. domestic market segments; and the third, large vs. small products. Furthermore, based on the input and output product complexity, Goggin and Browne (2000) delineated the resource recovery in three types: material reclamation, component reclamation, and remanufacturing. These stem from Thierry et al.'s (1995) lengthy list of recovery options. This is literature on related fields that secondarily adds to the theoretical growth of RL.

With respect to factors that influence the RL system, Carter and Ellram (1998) developed a model that detailed how internal and external factors drive and constrain RL activities. Figure 2.2 shows how internal and external factors influences RL programme. This model can be

employed to generate insights on factors influencing RL programs and practices in the pharmaceutical industry.

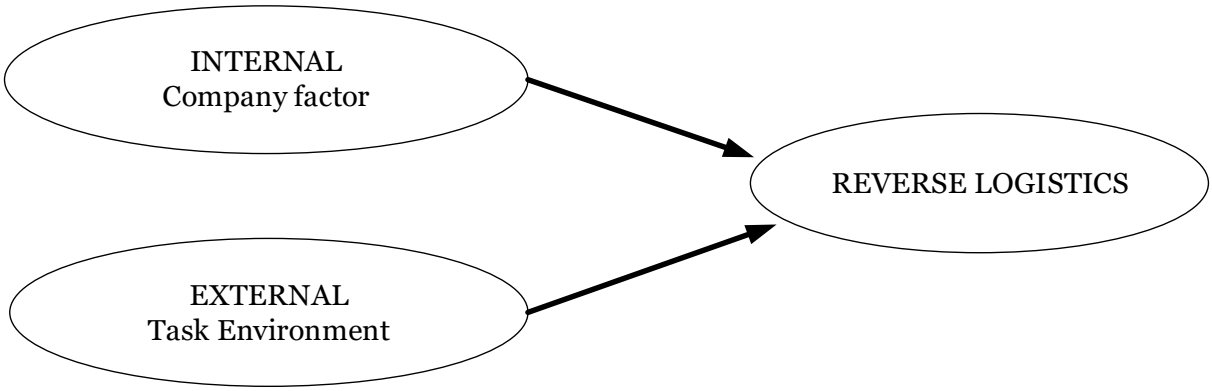


Figure 2.2: Causal Antecedents and Determinants of RL (Carter & Ellram, 1998)

Carter and Ellram (1998) proposed a RL hierarchy based on the work of Stock, (1992) and Kopicki et al. (1993) stipulating that resource reduction should be the ultimate goal in the RL process. Resource reduction refers to the minimisation of materials used in a product and the minimisation of waste and energy achieved through the design of more environmentally efficient products (Carter & Ellram, 1998). Hence, both the forward and the reverse flow of material will be minimised through resource reduction (Carter & Ellram, 1998). How the reverse flow of pharmaceutical drugs occurs i.e. RL of pharmaceutical drugs in the NPI, is an integrate part of the theoretically grounded insight this research intends to develop.

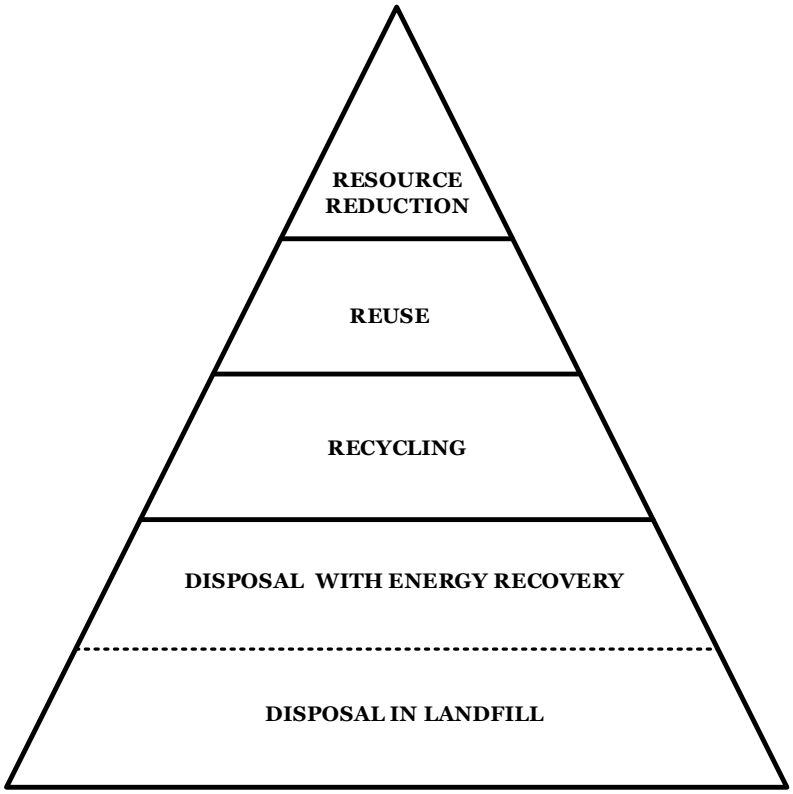


Figure 2.3: The Reverse Logistics Hierarchy

Source: Carter and Ellram (1998) based on the work of Stock (1992) and Kopicki et al. (1993)

The model identifies factors that both drive (the solid ovals), and constrain (the dashed ovals) RL activities. The principal internal drivers are the existence of at least one policy entrepreneur committed to undertake responsibility for RL activities while the other internal drivers are identified as constraints (Carter & Ellram, 1998). Although support from top management, stakeholders' commitment, and appropriate incentives systems are not posited to drive RL activities, they are more likely to constrain RL activities if not present. Hence, both internal and external drivers stimulate RL activities (Carter & Ellram, 1998). The empirical finding of this study will confirm if these extant findings are the same in the Nigerian pharmaceutical context

Although Drumwright's (1994) research provided an excellent beginning in terms of theory development, research lacks external validity and concentrated primarily on the internal

factors that affect company's RL endeavour. Carter and Ellram, (1998) therefore proposed the model shown in Figure 2.4. The model provides the theoretically grounded avenues upon which future research was based, as the model was the first of its kind to suggest critical factors in the RL process and how these factors interact.

Figure 2.4: A Model of the Driver and Constraint of Reverse Logistics (Carter & Ellram, 1998)

The model identifies four environmental forces: The government (in terms of regulations), the suppliers, the buyers, and the competitors. An important point not emphasized by Carter and Ellram (1998) is the direct economic benefit and the corporate citizenship of RL (De Brito & Dekker, 2003).

Furthermore, Rogers and Tibben-Lembke (1998) of the RL Executive Council presented in their book, an overview and introduction to RL as well as fundamental insights on how to manage RL activities well. They defined the state of the art of RL and determined trends and best RL practices in several industries. The limitation of the work is that it only focused on the extent of RL activities in the United States. Although companies included in the research includes manufacturers, retailers, and service firms across fourteen different industries such as magazine publishing, book publishers, book distributors, greeting cards, catalogue retailers, electronic distributors, computer manufacturers, CD-ROM, printers, mail order computer manufacturers, mass merchandisers, auto industry (parts), consumer electronics, and household chemical industries, the research clearly lacks information on RL practices and applications in the pharmaceutical industry.

This thesis intends to develop a theoretically grounded knowledge of RL in the NPI. Further review of works done towards RL theory development is required. In 2000, Shad Dowlatshahi describe a holistic view of RL and distilled 11 insights for successful implementation of RL from the existing literature and published case studies. Dowlatshashi (2000) stated that the strategic factors of RL consist of strategic costs, overall quality, customer service, environmental concerns, and legislative concerns while the operational factors consist of cost-benefit analysis, transportation, warehousing, supply management, remanufacturing and recycling, and packaging. Insights about these factors together form the state-of-the-art knowledge about the keys to successful design and use of reverse-logistics systems (Dowlatshashi, 2000). He argued, however, that the insights developed can be framed as testable hypotheses and the hypotheses constitute a theory of RL that can be compared to the practices of a company or group of companies to determine its generalizability and applicability.

In contrast with most of the previous contributions, De Brito and Dekker (2003) brought forward a content framework on RL as a whole by bringing structure to the fundamental contents of the RL and their interrelations. This was achieved via the answering of four basic

questions on RL: Why? What? How? Who? According to De Brito and Dekker (2003), these are the driving forces and return reasons, what type of products are streaming back, how they are being recovered, and who is executing and managing the various operation. De Brito, and Dekker (2004) argued that these four basic factors are interrelated and their combination determines to a large extent the types of issue that arises in implementing, monitoring and managing RL systems. Details of this framework will be discussed in section 2.4.4 of this thesis.

In this way a general understanding of what RL issues are about was achieved, at the same time capturing the vast categories of matters involved in RL. This therefore constitutes a theory of RL. De Brito and Dekker (2004) however pointed out that the exact influence of the four identified dimensions is still an open question requiring further investigation. It is the proposition of this thesis that the application of this framework to explore PRL practice in a different context has the potential to yield ground breaking empirical findings that can either lead to the extension or the modification of this framework (RL theory). Hence, this study utilized this RL content framework to explore the phenomenon in the NPI.

Glenn et al. (2005), in their empirical study on RL provided empirical evidence on the relationships between and among RL, resource commitment, and innovation. The research findings revealed that resource commitment makes RL programmes more efficient and more effective. The study also illustrated that resources must be used in such a manner as to develop innovative capabilities/approaches to handling returns. The research finding also showed that resource commitment is not significantly related to innovation in RL at smaller firms as this is likely to be attributed to the level of resources available. Hence larger firms enjoy superior performance due to greater level of resource availability. The shortcoming of this study is in the narrowness of the research findings. New research should extend beyond one industry (Glenn et al., 2005).

Rubio et al., (2008) analysed the evolution and basic characteristics of articles on RL published in the production and operations management field in the period 1995 - 2005. They evaluated the evolution of RL research in this period to establish an understanding of this topic,

the methodology and techniques of analysis and other relevant aspects that characterise the research. The following conclusion was reached: researchers have become increasingly interested in the RL field as demonstrated by the progressive growth in the number of articles published from 2000 and the appearance of numerous monographs in the journals. Rubio et al., (2008) research findings revealed that majority of articles centred on the study of tactical and operational aspects such as production planning and inventory management, are derived from the implementation of RL systems. Issues relating to closed-loop SCM were also seen to be receiving preferential attention in addition to the required research on strategic factors such as marketing, competition, technology etc., necessary for the development of a theoretical framework for research.

Rubio et al.'s (2008) research findings regarding research topics, research methodology and research techniques show that research on 'management of the recovery and distribution of end-of-life products' is characterized by both quantitative and qualitative research techniques i.e., mathematical models and case study methodology. Research on SCM issues in RL is largely qualitative, largely using case study, although a quantitative trend has been detected in recent years (Rubio et al., 2008). Research on RL has been led by scholars from the Netherlands, Germany and the USA. This has been a function of the strength of the environmental tradition both in legislative terms and societal concerns as well as liberal returns policy implemented in these countries (Rubio et al., 2008). However, trends in PRL were not reported in the research findings, which is an indication of the small quantity of RL research in the pharmaceutical context.

Sarkis et al.'s (2010) pointed out that the focus of existing RL research has been on the economic and environmental aspect of sustainability. They argued that the social sustainability has not yet been comprehensively examined. As social and ethical dimensions of sustainability particularly as they apply to RL are an emerging topic, they embarked on empirical research to link various sustainability indicators with various RL practices to develop a profile of RL for social sustainability. Therefore, practical examples from industrial

and social systems are provided to support the benefits and challenges of RL with social sustainability as emphasis. However, the research findings show that social sustainability can be greatly influenced by various regional and cultural characteristics (Sarkis et al., 2010). Therefore, cross-cultural investigation of the veracity of the research finding was proposed. Hence RL practices do not only vary between companies and across industries but also vary across regions.

Huscroft et al. (2013), completed a systematic analysis of the RL literature; they examined the degree to which topics addressed in extant literature correspond with the framework (critical factors in the RL process and how these factors interact) proposed by Carter and Ellram (1998). The paper compared and contrasted the findings of content analysis and a Delphi study, which highlighted areas for future investigation that may help to better align research with practice.

In the light of these extant empirical studies towards RL theory, this thesis employs the RL content framework proposed by De Brito and Dekker (2003) to explore RL practices in a different industry and geographical context. The operationalisation of this framework in a different context has the potential to yield ground breaking empirical findings that can further lead to the reaffirmation, or the extension and modification of the RL framework (RL theory). Hence, this study utilized this RL content framework to explore the phenomenon in the NPI.

2.4.4. The Six Perspectives Content Framework of RL

De Brito and Dekker (2003) argued that the best approach to understand the fundamental component of RL and their interaction is to structurally analyse the topic from five essential perspectives: why (receiver), why (sender), how, what and who. The framework provides a structure for understanding issues related RL, and also visibility of the vast assortment of matters involved (De Brito & Dekker, 2003). The framework illustrates that the issues in RL management can be orchestrated by the four dimensions (Xie & Breen, 2014). This approach used to characterise RL was supported by studies done by Thierry et al, (1995) and Fleischmann et al., (1997).

To further develop a theoretically grounded and holistic views on RL, the five perspectives framework has been expanded by Xie and Breen, (2014) by adding another dimension named the "where perspective". The where perspective addresses the more specific RL issues such as locations of collection points and distribution centres in a physical RL network (Xie & Breen, 2014).

1. **The "why perspective" (Receiver): Factors driving RL**

The "Why perspective" deals with the factors driving companies (Receiver) to embark on RL. They include direct and indirect economic factors. Companies gain direct economic benefits as RL helps in reducing raw material usage, adding value through recovery and resale of valuable returns. Companies gain indirect economic benefits as RL improves supplier-customer relations, market protection and brand reputation. Other driving factors includes legislation and good corporate citizenship objectives (De Brito & Dekker, 2003).

Figure 2.5 show a visual representation of these three driving factors (the driving triangle) of RL. Competitive advantage is another factor that drives companies to embark on RL (Khan & Subzwari, 2009). Competitive advantage is linked to the economic factor described below. The ultimate purpose is to achieve a sustainable organisation and most importantly a sustainable supply chain (Markley & Davis, 2007).

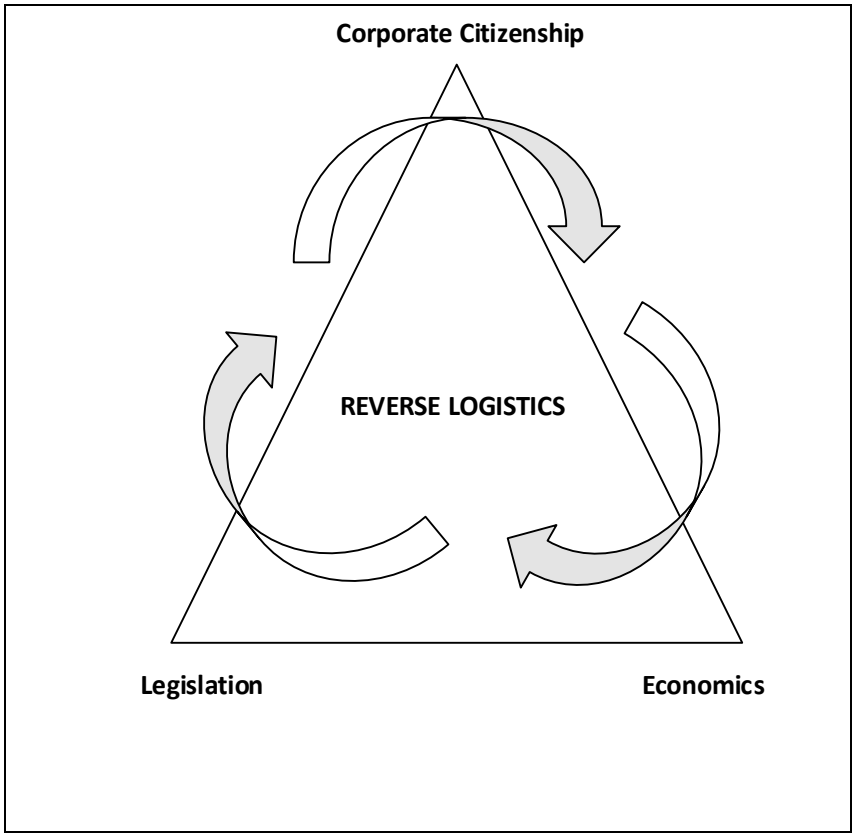


Figure 2.5**:** Driving triangle for Reverse Logistics (Adapted from De Brito & Dekker, 2003)

A. Economic Factor

The implementation of RL management brings direct gain to companies through the residual value in the returned product, re-use of return products as input for production and the reduction of disposal cost (De Brito & Dekker, 2003). According to De Brito and Dekker, (2003) due to the short life-span and the high return rate of electronic products, the components of returned electronics still have intrinsic economic value which is being recaptured. The shorter the product life cycle, the faster returns have to be processed (e.g. repaired, re-manufactured, and upgraded) in the reverse chain, which leads to increasing requirements for speed and responsiveness of the reverse supply chain (Blackburn et al., (2004).

By reusing, remanufacturing or recycling, companies are striving to extract potential value of product returns; in many cases it may cost less to produce an item from reprocessed materials than from raw resources (Pochampally et al., 2009). Ford Motor Company, for instance,

produces tail light housings from recycled plastic bumpers (Blumberg, 2005). The steel industry production cost is also reduced by mingling of metal scrap collected and offered by the metal scrap brokers with virgin material in their process (De Brito & Dekker, 2003).

In a survey conducted by Rogers and Tibben-Lembke (1998), over 20% of firms included in their research cited recapturing value and asset recovery as their reason for implementing RL while nearly 20% of the firms utilised RL to protect their margin. The implementation of RL brings indirect gain by enabling companies to anticipate or impede legislation, protect markets, enhance green image and improved customer service and suppliers' relations (De Brito & Dekker, 2003). Furthermore, by speeding up reverse flows and increasing responsiveness through the reverse supply chain design, customer service level can be improved significantly (Blackburn et al., 2004). The cumulative effect of these measures help companies gain competitive advantage in the face of competition. Sixty per cent of companies cited competitive reasons as the reason for implementing RL (Rogers & Tibben-Lembke, 1998).

B. Legislation Factor

Legislation refers to customers' rights and environmental legislation (Somuyiwa & Adebayo, 2014). Customers' attitudes and governmental regulations regarding environmental impact of products and processes are forcing companies to explore greener alternatives and implement new practices of product returns management (Pochampally et al., 2009). An example of customers' right is that customers can return ordered products within 90 days in the UK while an example of environmental legislation is the recovery quotas and take back responsibility of companies (Somuyiwa & Adebayo, 2014).

The need for compliance with regulatory requirements to recover or take product back is a major reason companies embark on RL (Khan & Subzwari, 2009). Some companies are only concerned with RL as it relates to product return to their suppliers but this mentality is rapidly changing as environmental and regulatory considerations are now having greater impact on their logistics decisions (Rogers & Tibben-Lembke 1998, p.101). The US based-survey

conducted by Rogers and Tibben-Lembke (1998) show that over 29% of the respondents cited legal disposal issue as their reason for implementing RL.

For example, in other regions such as Europe, concerns for end of life products are motivated by legislation (Toffel, 2004). International laws in Europe such as the European Community Directive on Waste Electrical and Electronic Equipment (WEEE) and Registration, Evaluation and Authorisation of Chemicals (REACH) have led other countries such as China to increase organisational efforts for product recovery (Zhu et al., 2008). Even some manufactures in non-regulated markets engage in product recovery to reduce production cost, enhance brand image, enhance customer satisfaction, aftermarket protection and pre-empt pending legislation and regulation (Zhu et al., 2008).

In Europe, there has been increased environment-related legislation such as recycling quotas, packaging regulations and manufacturing take-back responsibility (De Brito & Dekker, 2003). The increase in the volume of waste and societal pressure to be environmentally friendly have made politicians in many countries push for extension of producers' responsibility regarding the end-of-life-phase of their products (Walther et al, 2010). Rogers and Tibben-Lembke (1998, p 11) stated that European firms are required by law to take back transport packaging used for their products. This gives cost saving incentives and value creation opportunities for firms through the reuse and recycling of unusable packaging materials.

Rubio et al. (2008) noted that Europe (The Netherlands, and Germany) has a strong environmental tradition, both in legislative terms and with respect to the concerns of their societies, while the USA is characterized by its liberal returns policy (Rubio et al, 2008). Although, from the consumer return perspective, European RL practice appears to lag behind the leading edge American practice (Rogers & Tibben-Lembke 1998). This indicates the differences of the main factors that drive product returns in Europe compared to that of the USA. However, due to heterogeneous pressures from various stakeholders, different industries have different variations, although commonalities may exist in their adoption of Green supply chain management (GSCM) and Closed-loop supply chain (CLSC) practices (Zhu

et al., 2008). Hence, industry differences also determine the type of factors that drive RL practices.

C. Corporate Citizenship

Corporate citizenship deals with the set of values or principle that drive organisations to embark on RL (De Brito & Dekker, 2003). Companies protect and maintain a good corporate image as they engage in activities that enhance customer satisfaction, societal developments, environmental protection and the mitigation of the environmental impact of their supply chain by implementing RL. In other words, RL practices is a way business fulfil or achieve their corporate social responsibility (CSR) and sustainability. Companies are realising that the sustainability of their business can be ensured by engaging and implementing programmes that simultaneously protect the environment and improve societal well-being and economic performance.

The sustainability goal addressed through RL is beneficial to pharmaceutical companies with end-of-life products (Kabir, 2013). These three components (Economic, Society and Environment) are captured in the concept of organisational sustainability. Figure 2.6 show a visual representation of these three components. A sustainable organisation is one that contributes to sustainable development by simultaneously delivering economic, social and environmental benefits (Markley & Davis, 2007). This concept corresponds to the triple bottom line framework developed by Elkington (2004) which simultaneously considered, balanced and suggested the interception of economic, environmental and societal goals from a microeconomic standpoint (Carter & Rogers, 2008).

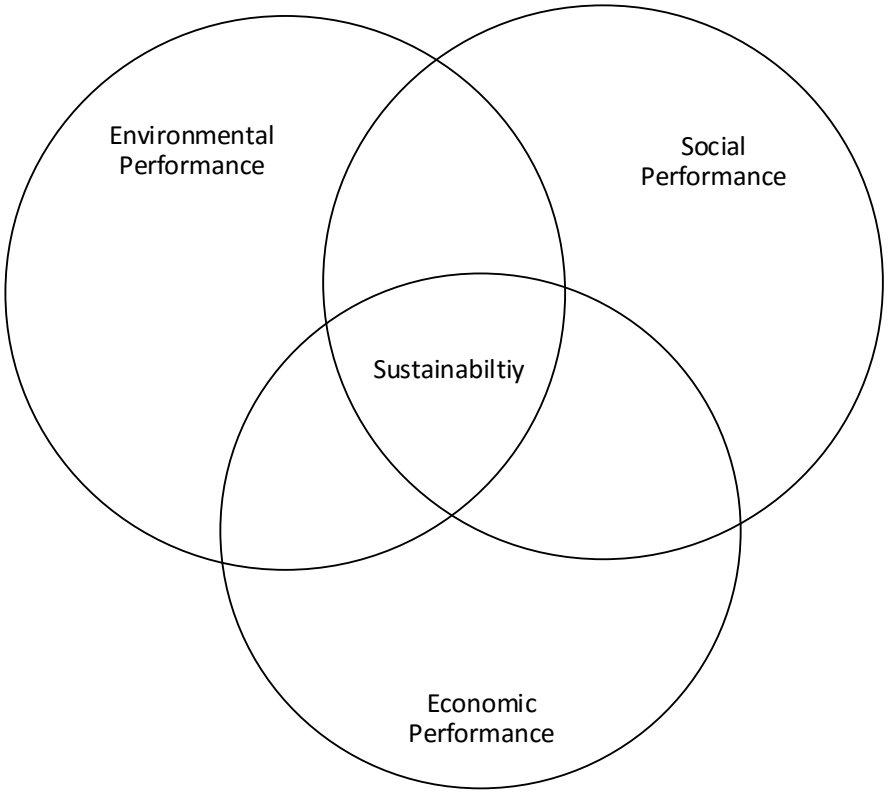


Figure 2.6**:** Sustainability: the triple bottom line (Carter & Rogers, 2008)

These three factors are not mutually exclusive and their boundaries can be difficult to set as companies in developed countries with well implemented environmental and consumer protection regulation are legally obliged to give customers the opportunity to return their products (De Brito & Dekker, 2003). The implementation of RL facilitated by the enforcement of environmental and customer protection regulations helps enhance the corporate reputation of companies.

2. The "why perspective" (Sender): Return reason for RL

Having outlined factors motivating companies to embark on RL, it is now necessary to identify the key reasons why products are returned by the senders (manufacturers, distributors and customers). According to De Brito and Dekker (2003), products are generally returned or discarded by senders because the product is defective or no longer required and the source of returns or senders within the supply chain can be grouped into manufacturing return, distribution returns and customer returns. The differences are elaborated below.

A. Manufacturing Return

Manufacturing returns are returns recovered during the production phase. These returns are unutilised raw materials remaining after production is completed, intermediate or finished products that failed quality checks thereby requiring rework, production left-overs and by-product derived during production (De Brito & Dekker, 2003). Based on this, manufacturing returns are classified into three categories: raw material surplus, quality-control returns and production leftovers/by-products (De Brito & Dekker, 2003)

B. Distribution Returns

Distribution returns are those returns recovered during the distribution phase and are classified as: product recall, B2B commercial returns (unsold products, wrong, damage and defective deliveries), stock adjustments and functional returns (distribution items, carriers and packages) (De Brito & Dekker, 2003). According to Rogers and Tibben-Lembke, (1998), products are returned because of outdated product packaging, seasonal products, product replaced by a new version, product discontinued, high inventory (over stock, marketing returns and slow-moving stock) and because the retailer or distributor is going out of business.

C. Customer Returns

Customer returns are those returns recovered into the supply chain from the end-consumers (De Brito & Dekker, 2003). Products returned from customers can be categorised into five categories based on the purpose of return: B2C commercial returns requiring reimbursement, warranty returns, service returns, end-of-use returns and end-of-life returns (De Brito & Dekker, 2003). Products are returned from customers because they fail to meet the customer's need, they lack understanding of how to use the product, the product is defective and customer abuse of the liberal return policy (Rogers & Tibben-Lembke, 1998). In the light of the above, the key reason for customers' returns are defective/unwanted products, liberal return

policies/customer dissatisfaction, incorrect product, warrantee return and damaged products (Rogers et al., 2002).

After identifying why products are returned by the senders and collected by the receivers, it is equality important to identify how the products are returned. This brings us to the how perspective of the return process.

3. The "How perspective" of RL

The "how" perspective constitute how the value recovery process of RL works in practice (De Brito & Dekker, 2003). The whole process of RL can be categorised into four stages, of which the value recovery process forms only one part (De Brito and Dekker, 2003).

A. Return Process for Distribution and Customer Returns

The first stage is the collection stage, where returns are collected from customers and sent to the point of recovery. The second stage is the stage whereby the returns will be quality inspected and sorted according to the type of recovery required. If the returned product is new, the product will be fed back into the market through re-use, re-sale and re-distribution. If the product is old, the return will be forwarded to the third stage.

The third stage is the value recovery stage where the returns will be processed according to the type of recovery activity required (repair, refurbishing, remanufacturing, retrieval, recycling, and incineration). These identified recovery options or re-processing types are classified into product level, module level, component level, selective part level, material level and energy level respectively (De Brito & Dekker, 2003).

The fourth stage is the re-distribution stage where the repaired, refurbished, remanufactured, retrieved, recycled, and incinerated will be reintroduced into the forward chain. The redistribution model and the end products (repaired product, refurbished product, new product, input raw material and energy) derived from each individual re-processing type differ based on the nature of the activities involved. Details regarding the five re-processing types

are available in Thierry et al. (1995) and Fleischmann et al. (1997). It is important to note that the recovery process described above is for distribution returns and customer returns (Figure 2.7).

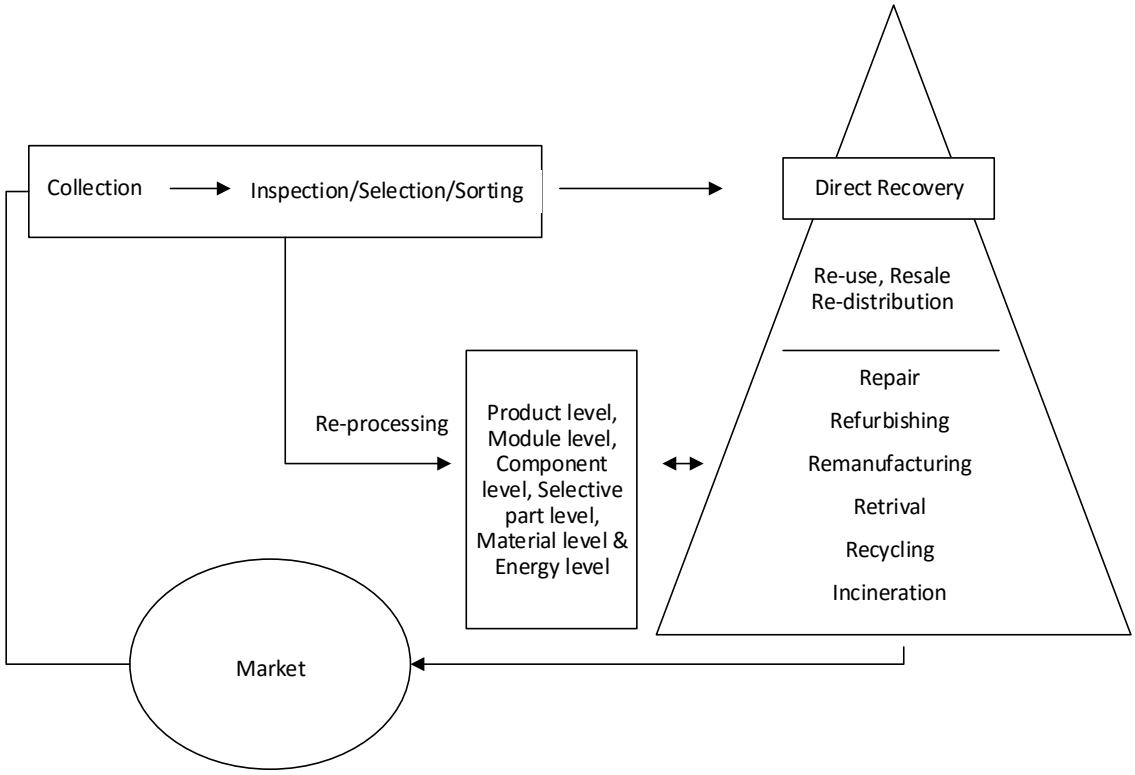


Figure 2.7**:** RL Process (Adapted from De Brito & Dekker, 2003)

The non-occurrence of the above mentioned recovery process will inevitably mean that the products will most likely end up in landfill (De Brito & Dekker, 2003). This signifies the importance of RL in the modern supply chain as a means of achieving competitive advantage, a positive profit centre, cost reduction, improve customer satisfaction, compliancy to regulatory requirement, good corporate citizenship, and reduction of supply chain impact on the environment.

B. Reverse Logistics for Manufacturing Returns

Manufacturing returns are returns recovered during the production phase. In this section, two types of RL involved in production phase are briefly described. The first is the recycling of by-

products obtained during production stages. Since by-products often contain valuable material, they are often economically useful and re-usable in production (Teunter et al., 2003). The disadvantage of re-using by-products is that it makes production planning a lot more complicated (Teunter et al., 2003).

The second type of RL is the re-use and recycling of impure solvents. After usage, impure solvents are usually cleaned in distillation facility if they are economically valuable and then re-used. On the contrary, if the cleaning process is not economical due to the high degree of pollution, the impure solvent will be thermally recycled (Teunter et al., 2003). Another aspect of RL is that of equipment used for the transportation and storage of impure solvents. This are often re-used several times. For details on the RL associated with the re-use, recycling process, please see Teunter et al.'s (2003) case study report.

4. The "what perspective" of RL

The "what" perspective of RL deals mainly with what is actually returned in the RL flow. What is typically returned encompasses a vast area. From a retail perspective, returns can be classified into the following eight separate categories, namely: close outs, buy-outs, job-outs, surplus, defective, non-defective, salvage and returns (Rogers & Tibben-Lembke, 1998). Detailed descriptions of each category can be found in Rogers and Tibben-Lembke, (1998). Products returned into the RL flow include magazines, books, greeting cards, electronics distributors, computers and accessories, CD-ROMs, printers, mass merchandise, auto industry parts, consumer electronics, household chemicals etc. (Rogers & Tibben-Lembke, 1998).

From a regulatory perspective, any product produced is subject to recall due to manufacturing defect, expiration, or for proper disposition and recycling (Khan & Subzwari, 2009). From a competition and clean channel perspective, all old or obsolete products are subject to return into the RL flow (Khan & Subzwari, 2009). In addition to Rogers and Tibben-Lembke's (1998) return categorisation, De Brito and Dekker, (2003) from another perspective categorised types

of product returned or discarded into three categories based on product composition, deterioration and re-usability.

1. Composition

Returned products can be categorised based on the type and number of components and of material that can be recovered from the product. As an Original equipment manufacturers (OEMs) are increasingly facing pressures, from many sources, to take back and recover their end-of-life (EOL) products, material heterogeneity of product is an important factor considered when designing the product recovery process (De Brito & Dekker, 2003). In fact, the presence of hazardous material determines the type and complexity of the re-processing process and the economics of the RL activities (Goggin & Browne, 2000). More details on the recovery process can be obtained from Goggin & Browne (2000, 179)

2. Deterioration

Returned products can be categorised based on their level of deterioration characteristics which caused the non-functioning of the product. The recovery option (re-sale, repair, refurbishment, remanufacturing etc.) to be employed is determined by the answer to the following evaluation questions: does the product age during usage (Intrinsic deterioration), do all parts age equally or not (homogeneity of deterioration), does the value of the product decline fast (economic deterioration) (De Brito & Dekker, 2003)?

3. Use-pattern

Return products can also be categorised based on the location, intensity and the duration of use. This characterisation is very important in the collection phase. Please see the aforementioned “How perspective” for the description of the collection phase. The intensity of usage, the location of the collection centres is influence by the source of the returns which could either be from the end-user, institution, retailers etc. (De Brito and Dekker, 2003).

5. The "who perspective" of RL

The key players in the RL process include members of the forward supply chain, specialised facilitators of RL such as the third-party collection agents, recycling specialists, public private organisations and also non-government charitable organisations (Khan & Subzwari, 2009). In cases where companies risk damaging their corporate image through the use of intermediaries, such organisations internally set up their RL mechanism to avoid this risk (Khan & Subzwari, 2009). Concerns about the health and safety risk regarding the handling or mishandling of returned products by intermediaries justifies companies managing their own collection system (Khan & Subzwari, 2009).

In situations whereby reverse logistic is not a core competency or ultimate strategy of an organisation, finding time and resources to effectively plan, implement and control RL process can be very challenging (Stock, 2001). This is where third-party service providers come into play (Stock, 2001). Many retailers and online-based companies are hiring third-party providers to implement their reverse logistic programmes with the aim of expediting the return process, redistribution and ultimately improving customer satisfaction (Meade & Sarkis, 2002).

De Brito and Dekker (2003) also identified the group of actors involved in RL activities such as collection, processing and re-distribution to be manufacturers, independent intermediaries, specific recovery companies, RL service providers, municipalities, public-private foundations. Driven by different motives represented in the three driven triangle of RL, each of the actors have different objectives and may also compete with each other in the process (De Brito & Dekker, 2003). Figure 2.8 adapted from De Brito and Dekker (2003) shows a visual representation of each actor, which includes members of the forward chain such as the manufacturers, retailers, distributors etc. and actors responsible for the collection and processing activities.

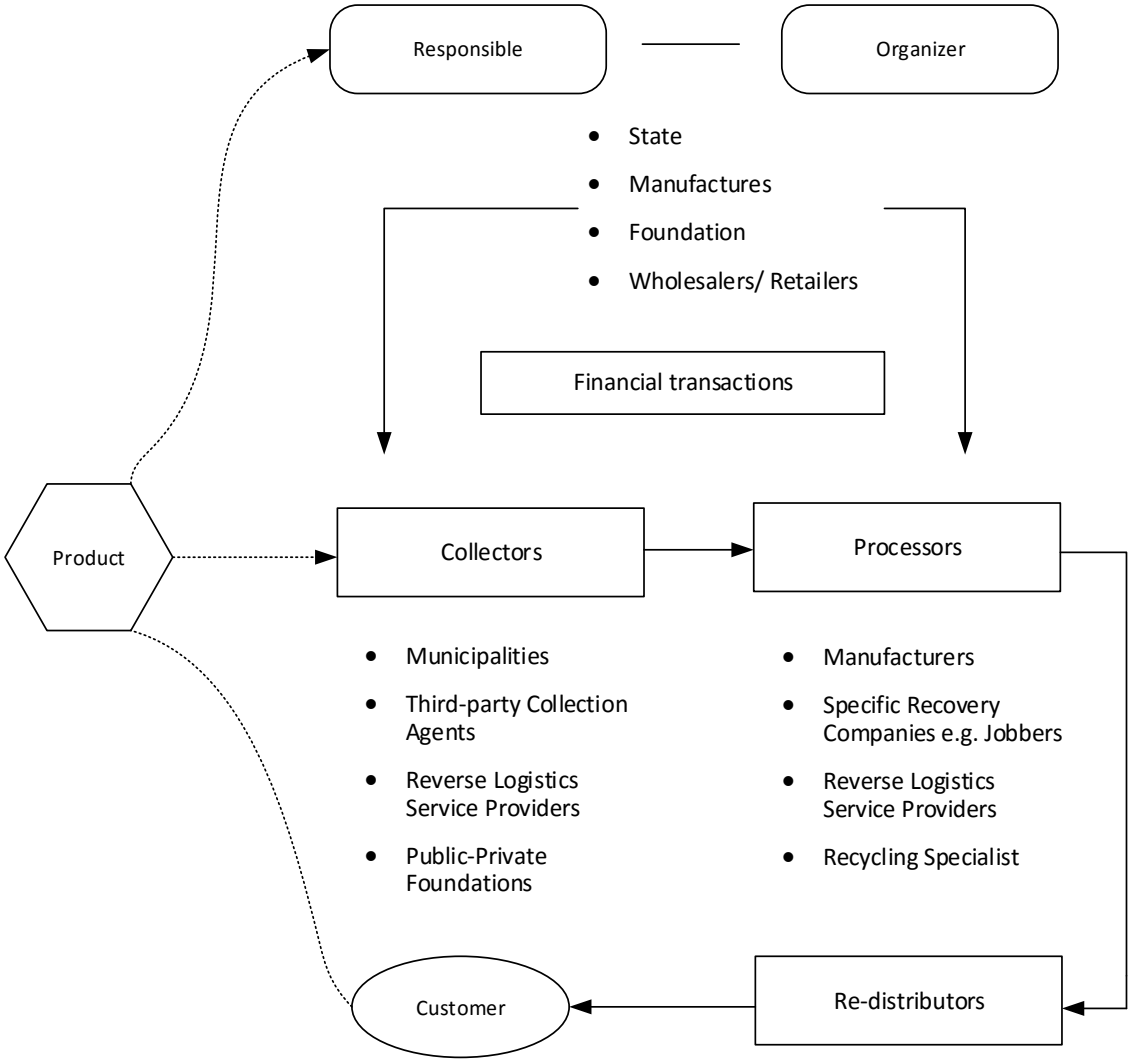


Figure 2.8**:** Who is who in RL (Adapted from De Brito & Dekker, 2003)

6. The "where perspective" of RL

The "where perspective" of RL deals specifically with the physical network structure where the actors are located and the products are collected and processed. In other words, the "where" addresses specific RL issues such as location of collection points, processing points and distribution centres in a physical RL network (Xie & Breen, 2014). The physical network structure for the RL includes the retailers' facilities, wholesalers' facilities, manufactures' facilities, designated collection points or return centres, collection facilities of independent intermediaries, facilities of some specialised recovery companies, designated facilities of some

RL service providers, facilities of municipalities responsible for waste collection and designated facilities of public-private foundations established to manage recovery.

Following the fundamental content of RL discussed in this section, Figure 2.9 presents a visual representation of the six essential perspectives and their basic interrelations. This includes the reasons for returns and the driving factors (why), the types of products (what), the recovery process (How), the actors involved (who) and the location of the actors (where).

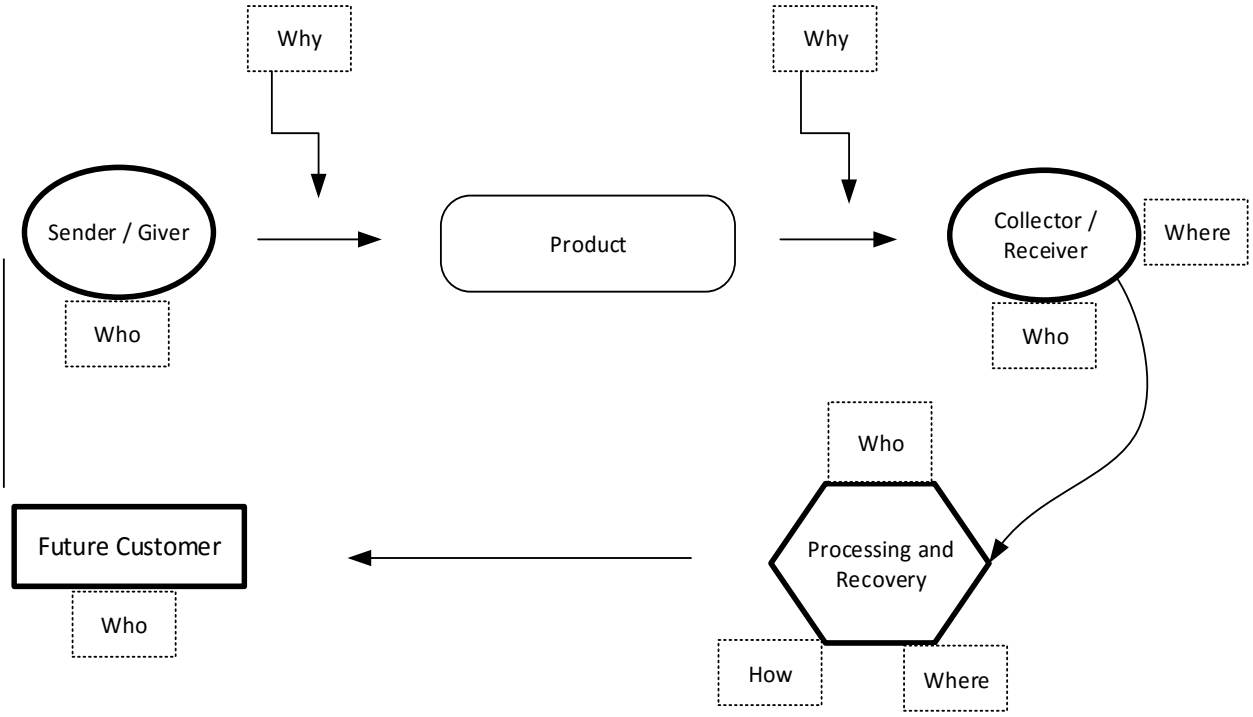


Figure 2.9**:** Why, How, What, Who and Where: Basic Interrelations (Adapted from De Brito & Dekker, 2003)

The six perspectives view-points provide a framework for the basic understanding of RL and their combination determines to a large extent the kinds of issues that arises in implementing, monitoring and managing RL activities (De Brito & Dekker, 2003). Hence, Figure 2.10 depicts the fundamental framework upon which the conceptual framework adapted for this study was based. Further details of the conceptual framework are discussed in section 3.2.3 of this thesis.

Considering both upstream and downstream production operations, Fernandez (2003) suggested that RL can apply to different types of items such as used products, unused products, components, parts and raw materials. It is therefore essential to study RL practices for different types of products as well as industry-specific RL practices and their different geographical regions (Narayana et al., 2014). It is the proposition of this thesis that this kind of study has the capability to expand what is currently known about RL as well as capability to generate insights from a different perspective and context. This can ultimately lead to the re-affirmation, contradiction, extension or modification of theories in RL.

Following this line of argument, this study is highly significant as the primary focus is to explore and develop a theoretically grounded knowledge of RL practices from the perspective of pharmaceutical practitioners, supply chain, logistics and customer service practitioners operating in the private sector of the NPI. The motive and rationale underpinning the selection of Nigeria as the geographical region of study and pharmaceutical industry as the industry of study are further discussed in details in the subsequent sections of this chapter.

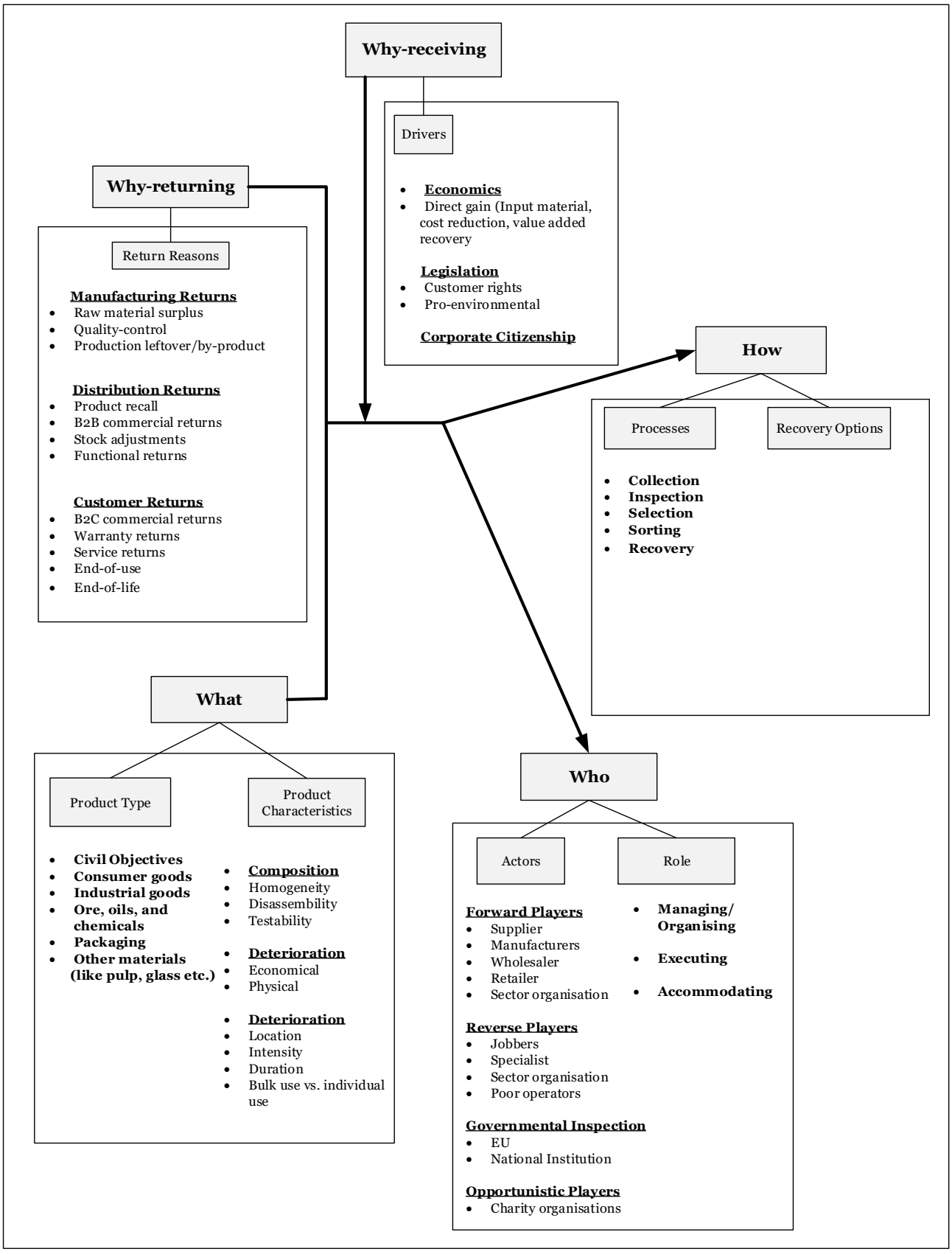


Figure 2.10: Conceptual Framework of RL (De Brito, 2003)

2.5. Reverse Logistics in Nigeria

In Nigeria, household, commercial and industrial units all generate hazardous wastes with no organized management system (Sangodoyin & Ipadeola, 2000). The Nigerian physical environment has been subjected to various forms of abuse and debasement which have resulted in water and air pollution and soil degradation as previously evidenced by large number of heaps of domestic and industrial wastes in urban and rural area of the country (Oko & Nkamnebe, 2013). The presence of this heaps of refuse (waste) can be attributed to the inadequacy and inefficiency of RL management programmes of firms in Nigeria (Oko & Nkamnebe, 2013).

Firms in some developed countries do have sustained environmental stability programmes as they manage wastes in the photographic, computer, printer toner cartridges and lead-acid batteries for automobiles and boats industries respectively either by direct management of RL programmes or outsourcing to third party logistics service providers service (Agrawal et al., 2015). On the contrary, manufacturing firms in Nigeria are generally not RL management oriented in plans and policies (Oko & Nkamnebe, 2013).

The factors hindering the implementation of RL in Nigeria can be attributed to the lack of awareness and education of consumers about proper disposal and environmental consequences of their consumption behaviour. For example, products are consumed and the residual packages recklessly disposed along the streets, disregarding the provided bins. This attitude negates the take-back policy where it is implemented as the end users do not return product, which in turn makes the role of collection agents non-feasible (Oko & Nkamnebe, 2013).

The absence of effective regulatory guidelines (RG), and well-functioning infrastructural facilities to facilitate returns are other hindrance for the implementation of RL in Nigeria. Consumerism activities in Nigeria are at a low level compared to the developed countries; thus, firms are not under any pressure to be environmentally friendly (Oko & Nkamnebe, 2013).

The challenges in implementing RL can also be attributed to the poor enforcement of regulations. Firms are not under the effective control and supervision of governmental agencies charged with the responsibilities of environmental protection as already achieved in some advanced economies (Oko & Nkamnebe, 2013).

The lack of commitment and disciplined leadership are other factor that hinders RL practices in Nigeria. Lagos state, Calabar and some parts of Enugu state metropolis have environmental management policies in place. The state governments made it a punishable offence to litter the environment, thus the few firms operating in the states involved in RL management have collection centres where residues are dropped for collection by the firms. The programmes are however not only executed at consumers' cost but are also inefficiently implemented (Oko & Nkamnebe, 2013). Furthermore, the programme has not been tenable in other states and its still relatively below standard when compared to the practices in developed countries like the Netherlands, Germany and Denmark. The lack of good quality societal leadership and commitment on environmental management is a challenge to RL in Nigeria (Oko & Nkamnebe, 2013).

Despite the vast employment, economic, societal and environmental benefits associated with the implementation of RL management, domestic and industrial wastes still litter the cities in Nigeria, especially in the urban and semi-urban areas. The vast economic dividend of RL are yet to be realised by many organisations in Nigeria. Proper product disposition and value recovery objectives will remain elusive in Nigeria without effective prioritisation and implementation of RL programs, and systems (Oko & Nkamnebe, 2013).

A country's developmental stage may influence attitude towards RL activities as less priority tend to be placed on the implementation of RL as evident in the limited amount of RL research in this context. In developed countries where scientific approaches are continuously harnessed to combat pollution issues, and RL implementation, researchers are not motivated towards this direction in developing countries (Sangodoyin & Ipadeola, 2000). Most low and middle income countries like Nigeria will rather invest in solving other pressing issues such as hunger,

health problems, water shortage, electricity shortage, political stability and unemployment (Kinobe et al., 2012).

International regulatory policy that companies should be accountable and responsible for the proper management, treatment, and disposal of their waste is yet to be implemented in most developing countries like Nigeria (Ngwuluka et al., 2009). The notion that waste is the responsibility of governmental authorities has also not enabled waste generators to appreciate the negative impact of improper waste disposal (Ngwuluka et al., 2009).

Sangodoyin and Ipadeola (2000) empirical studies on hazardous waste generated from household units, commercial outfits and industrial in Nigeria revealed that pads and drug manufacturing firm discharges waste into a dug pit without any treatment. Despite generating an average of 10kg of paper per week, reuse or recycling initiative are yet to be implemented by companies investigated (Sangodoyin and Ipadeola, 2000). This indicates the non-existence of a well-functioning RL programmes to facilitate products return for value recovery and proper disposal.

Besides the health and environmental hazards, various researches indicates that the inappropriate disposal of pharmaceutical waste causes a huge economic loss (Singh et al., 2013). This aspect of the NPI therefore sector requires commitment and investments from the government, regulatory bodies, business community and academics towards RL and implementation in the NPI.

Nevertheless, there are areas where RL practices have been successfully implemented in Nigeria, such as the food and drink industry although limited to bottled drinks. The bottled products of the Nigeria Bottling Company Plc and 7Up Nigeria Bottling Company Plc are scheduled for and are managed under RL system in which empty bottles are returned to the production plants at no cost to the consumers (Oko & Nkamnebe, 2013). This explains why empty bottles of Nigeria Bottling Company Plc and 7Up Bottling Company Plc products as well as those of the alcoholic industry of Nigeria Brewery Plc and Guinness Nigeria Plc do not litter the physical environment in Nigeria (Oko & Nkamnebe, 2013).

In Nigeria, 99% of the bottles and empty crates released by the producers are returned. In situations where leakage in return of empty bottles occurs, the leakage is traced to the point of leakage and the leakage is paid for by the accountable organisation as a condition of remaining a member of the distribution and reverse distribution channel (Oko & Nkamnebe, 2013). As mentioned earlier, the implementation of the RL management is limited to bottled products; thus, there is no documented evidence of RL programme for aluminium, plastic canned, polythene packages and containerization items.

Having discussed the themes that underpins this study including, the concept of logistics management, SCM, RL, pharmaceutical industry, RL in the pharmaceutical industry, and RL practices in Nigeria, it is evident that little is known about PRL practices in the NPI. Extant knowledge of PRL has generally been based empirical evidences from developed countries. This study therefore aims to fill this gap and contribute to the body of knowledge by generating empirically informed and theoretically grounded insight of PRL in the private sector of the NPI.

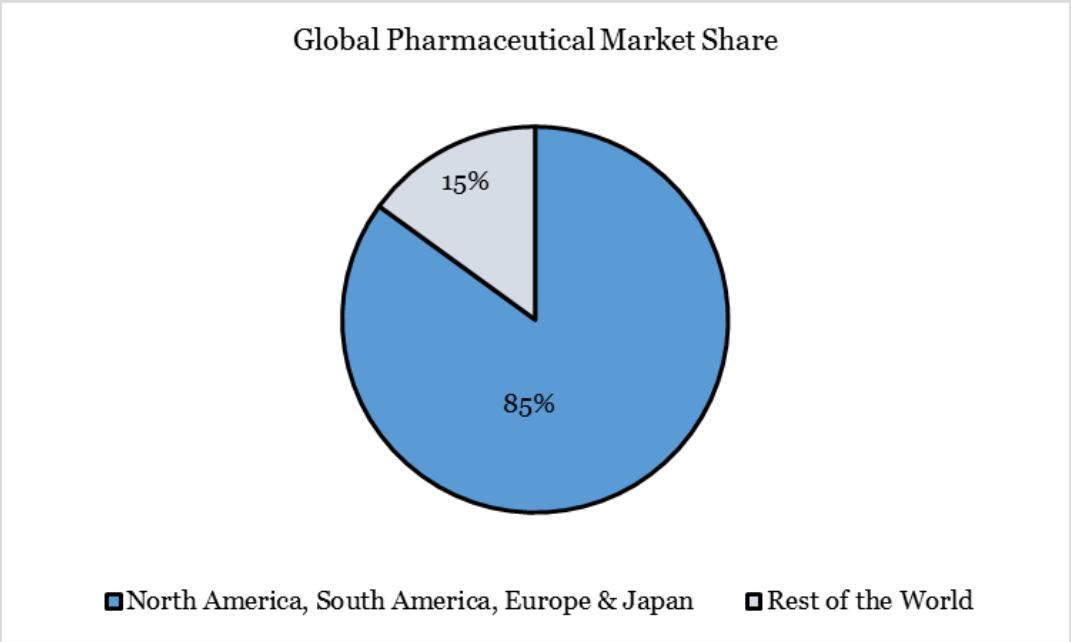
2.6. The Pharmaceutical Industry

The pharmaceutical industry is defined as a complex of processes, operations and organisations involved in the discovery, development and production of drugs and medications (Shah, 2004). PCs generally undergo series of stringently regulated complex processes, operations and organisations in order to discover, develop, produce and introduce a pharmaceutical product into the market. Hence, the pharmaceutical sector is a highly regulated multibillion dollar industry (Rao & Rogers, 2011).

According to the World Health Organisation (WHO), the global pharmaceutical industry is worth more than $300 billion and it is expected to rise to $400 billion in three years (WHO, 2014). The major contributing regions are the United States, Japan, and Europe (Joshi, 2003). GlaxoSmithKline, Pfizer, and Merck are the top three companies in the pharmaceutical

industry, with annual sales of $23.5, 22.6, and 20.2 billion, respectively (Joshi, 2003). It has been predicted that the North and South America, Europe and Japan will continue to account for 85% of the global pharmaceuticals market well into the 21st century (WHO, 2014).

Graph 2.1: Global Pharmaceutical Market Share (Adapted from WHO, 2014)



The pharmaceutical industry is made up of many different stakeholders such as the suppliers, primary manufacturing, secondary manufacturing, primary wholesale distributors, secondary wholesale distributors, re-packagers, hospitals, pharmacy retail outlets etc. (Enyinda & Tolliver, 2009). From the point of view of manufacturers as depicted in Figure 2.11, the global pharmaceutical industry can be divided into five sub-sectors (Shah, 2004; Sousa et al., 2011):

1. The large R&D based multinationals with a global presence in branded products, both ethical/prescription and over-the-counter.
2. The large generic manufacturers, who produce out-of-patent ethical products and over-the-counter products operating in the international market.

3. The local manufacturing companies that operate in their home country, producing both generic products and branded products under licence or contract.
4. The contract manufacturers, who do not have their own product portfolio, but produce either key intermediates, active ingredients (AI) or even final products by providing outsourcing services to other companies.
5. The drug discovery and biotechnology companies whose main concern is drug discovery. They are often relatively new start-ups with no significant manufacturing capacity.

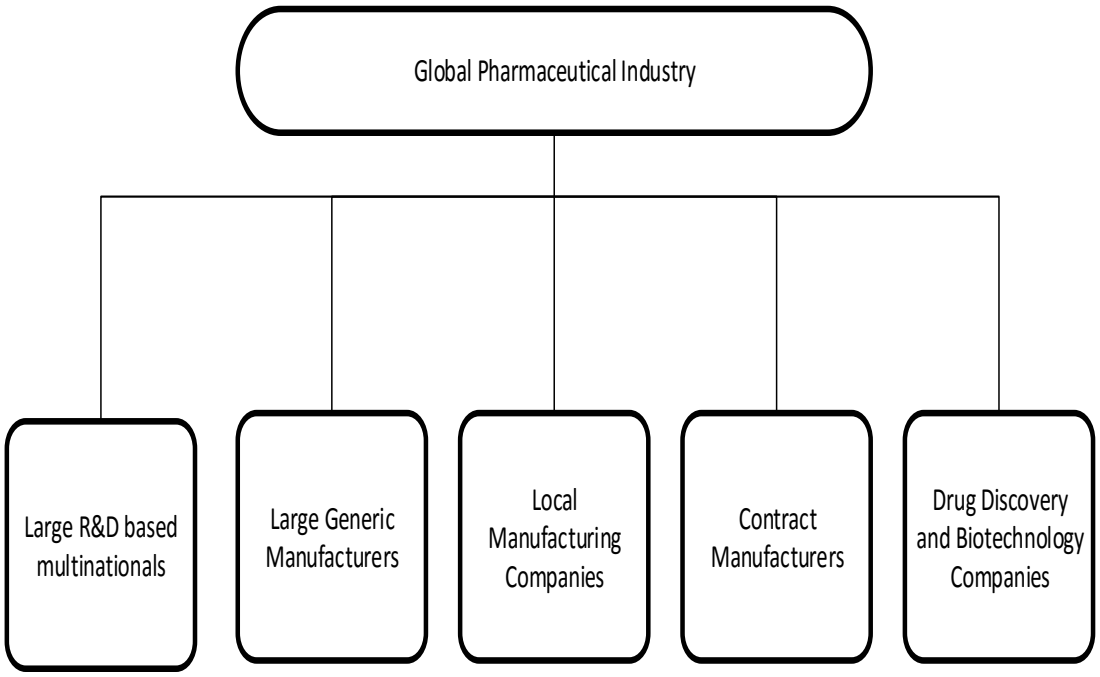


Figure 2.11**:** The five sub-sections of the global pharmaceutical industry: Manufacturers Perspective (Adapted from Shah, 2004; Sousa et al., 2011)

Pharmaceutical products consist of two main components, namely, the active pharmaceutical ingredient (API) or bulk drug and the formulation i.e., a suitable final dosage form (Hemant, 2003). Pharmaceutical companies combine AIs with accuracy under specific conditions, while negotiating a maze of stringent regulations and quality controls (Kabir, 2013). Other specialised supply chain players such as third party logistics service providers, retailers,

wholesalers, and distributors are also required to meet similar stringent regulatory requirements. As a result, every detail counts in the PSC (Kabir, 2013). The pharmaceutical industry is characterised by high R&D investment, high quality constraints, long production lead times, high waste to product ratios, shortening product cycles and high margin for sales along the PSC (Narayana et al., 2014).

The high waste to product ratios characteristic of the pharmaceutical industry explain why research is increasing in the study of environmental issues in PSC and waste minimisation in the production stage (Narayana, et al., 2014). Product recovery activities in the PSC thus have the aim of reducing the burden on production and helping drive supply chain optimisation. Despite the economic benefits, the pharmaceutical industry is faced with a challenging issue of counterfeiting considering the hazardous nature of pharmaceutical drugs. The WHO estimated counterfeit drug sales to range between $35 and $40 billion per year which is an equivalent to about 10% of total pharmaceutical sales (Narayana et al., 2014). In addition to the considerable interest in environmental implications and waste minimisation, there are increasing pressures to implement proactive measures in the PSC to mitigate end-users' health risk, protect the environment, and ultimately safeguard the brand image of pharmaceutical manufacturers.

The pharmaceutical industry thus forms the focus of this study due to the nature of drugs being high value chemicals with potential hazardous impact both on the health of the society and the environment. The proper management of pharmaceutical product returns is achievable through the implementation of an efficient RL system. Despite this potential, RL research in the pharmaceutical industry is very limited in comparison to other industries, as evident from the SLR conducted for this study.

2.6.1. The Changing circumstances of the Pharmaceutical Industry

In the recent past, the high return on investment and high revenue obtained from "blockbuster" products by pharmaceutical companies facilitated high productivity of R&D operations

resulting in the creation of innovative compounds which helped in treating previously untreatable diseases (Booth, 1999). The high R&D productivity facilitated the establishment of long and effective patents of these compounds. The resulting patents led to the creation of technological barriers that prevent new entry. The technological barrier therefore limited the number of substitute products in a given therapeutic area. The limitation of substitute products, thereby resulted in the price inelasticity of available product facilitated by the separation of prescribing and paying responsibility (Booth, 1999). To maintain a healthy product pipeline, pharmaceutical companies exploited the price inelasticity to achieve high margin and invest a large portion of their resultant profit in R&D (Shah, 2004).

In more recent years, the above mentioned regime that characterised the pharmaceutical industry has evolved and has made the current circumstances more complex and challenging (Shah, 2004). According to Shah (2004), based on the number of new chemical entities registered per unit of investment, R&D productivity is declining. Effective patent lives are shortening and their ability to provide a barrier to new entry have declined even while active. As a result, there are now many substitute or alternative products including off-patent generics available in many therapeutic areas. Even according to a CNBC 2017 report, amazon is considering entering the prescription drug business. Key players in the healthcare industry have now been able to exert pressure to make price more elastic and have also now been able to influence prescribing practices.

The global marketplace has become more liberalised, thereby exposing products to competition on a global level. Due to the concerns for the increasing healthcare cost associated with the aging population, there have been increased governmental and regulatory authorities' intervention in the way PCs operate. The type of intervention includes strict controls on the prices of new drugs, more cost-benefit analysis and encouragement of the use of substitute products or genetic substitutes where possible (Shah, 2004). As a result of these changes, the historic dependence of large players on "blockbuster" drugs is declining (Shah, 2004).

In a nutshell, the current operating circumstances of the pharmaceutical industry have evolved and are more challenging than ever before. The establishment of regulatory authorities and market maturity have led to the increasing cost of production, increasing new drug introduction lead-time, increasing the number of substitute drugs, decreasing productivity of R&D, shortening the patent lives of new molecules, the reducing exclusivity period of new product, increasing pressure on price and prescription policies (Shah, 2004; Sousa et al., 2011).

In other words, the pharmaceutical industry is undergoing intensive changes to cope with the new challenges of the global economy (Bravo, & Carvalho, 2013). Intensive globalization processes, increased competitiveness, the fast-changing structure of competitors, complex strategic positioning, shrinking pipelines, expiring patents, counterfeit drugs, increased regulatory scrutiny on profits and a fight for global market share are some of the factors contributing to new challenges facing the pharmaceutical industry (Bravo & de Carvalho, 2013; Papageorgiou et al., 2004).

FigureFigure 2.12 provides a visual representation of the previous circumstances of the pharmaceutical industry and the current factors giving the PCs new challenges including the major drivers of the pharmaceutical industry.

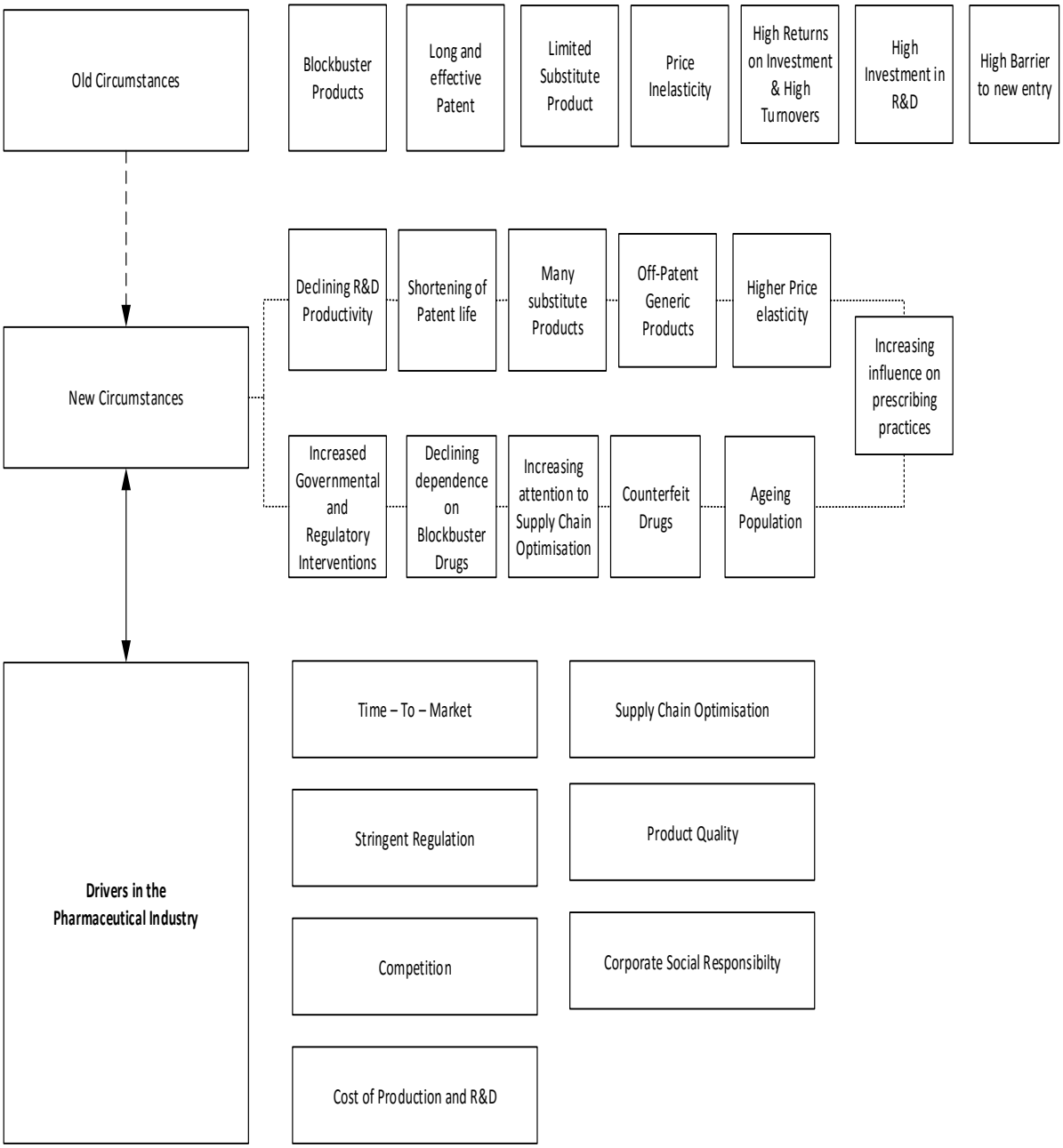


Figure 2.12**:** Changing circumstances of and drivers in the pharmaceutical industry

2.6.2. Drivers in the Pharmaceutical Industry

In the light of the current operating circumstances of the pharmaceutical industry, time-to-market is arguably the single most important driver in the pharmaceutical industry. The competition-free life of new drugs is shortening from five years to a year or two years (Shah, 2004). In other words, companies typically have about five years to maximise profit before

competition from other alternative drug manufacturers and generics. As a result, PCs are able to secure maximum return during the early life of a successful drug.

Regulation is another significant driver, given the significant potential for adverse health effects of drugs. As a result, PCs are subject to stringent regulation. Regulatory requirements cover all facet of the PSC, which include the processes used to evaluate the safety and efficacy of the chemical compounds, through to the details of the process and plant design and manufacturing operations (Shah, 2004). The regulations also cover warehousing, logistics, and transportation of pharmaceutical products.

The primary regulatory authority that regulates pharmaceutical companies in the USA is the US Food and Drug Administration (FDA), in the UK, the Medicines and Healthcare Products Regulatory Agency (MHRA), in Europe, the European Medicines Agency (EMA) while in Nigeria, it is the National Agency for Food and Drug Administration and Control (NAFDAC). These regulatory bodies have helped ensure the quality, control and safety of pharmaceutical products. Despite these positive achievements, the existence of long and expensive regulatory protocols has been criticized for the reduction in R&D and for the innate conservatism of pharmaceutical companies (Shah, 2004).

According to Booth (1999), logistics cost in the pharmaceutical sector is relatively high and research efficiency is declining due to the increasing cost of developing new chemical entities (Shah, 2004). As a result, cost of production is another major driver in the pharmaceutical industry. The negative impact of the capital-intensive nature of R&D activities is one of the main drivers behind the recent series of mergers and acquisitions in the industry.

The need for an optimized supply chain strategy is a recent driver in the pharmaceutical industry. Traditionally, the industry's preferred mechanism for addressing productivity crises has been to increase investment in R&D and sales, the two extreme ends of the supply chain, implemented by organic growth or by merger and acquisition (M&A) to exploit economies of scale (Sousa et al., 2011). Hence, most management utilises a strategy of discriminatory attention only to these extreme end of the supply chain. Drug discovery, sales and marketing

but nowadays, there are increasing realisation for the resource investment in supply chain optimisation as a means of delivering value (Shah, 2004).

Companies' profitability can be improved not only through new product development but by restructuring the relationship between volume and costs, which can be achieved through supply chain optimisation. Supply chain optimisation is an excellent way to increase profit margins and is becoming a global practice across all industries (Sousa et al., 2011). The increased concern for environment and market pressure towards the improvement of customer service quality, product quality and cost efficiency are factors that drive the development of RL, which further facilitates PSC optimisation.

2.6.3. Supply Chains in the Pharmaceutical Industry

There has been a tendency to portray all supply chains as having similar characteristics, however Hughes et al. (1998) note, different industries, products and services can have very different supply chains. SCM can be defined as the management of a network of relationships within a firm and between interdependent organisations and business units consisting of material suppliers, purchasing, production facilities, logistics, marketing, and related systems that facilitate the forward and reverse flow of materials, services, finances and information from the original producer to final customer with the benefits of adding value, maximizing profitability through efficiencies, and achieving customer satisfaction (Stock & Boyer, 2009).

The supply chain of a typical pharmaceutical manufacturer with a high added value per mass unit comprises one or more of the following nodes: primary manufacturing for AI production, secondary manufacturing for formulation and packaging, market warehouses, distribution centres, wholesalers and retailers, pharmacies and hospitals. A typical PSC of drug supply chain from the primary manufacturers (Suppliers) to the end-users (Patients) is depicted in Figure 2.13.

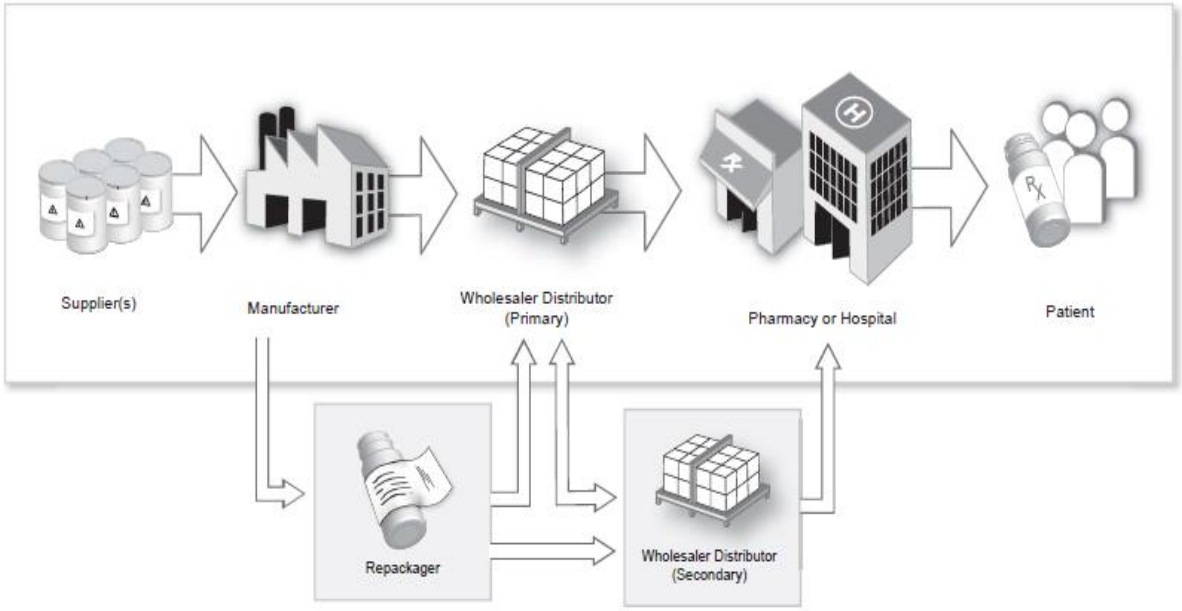


Figure 2.13**:** A Drug Supply Chain Example From Supplier to Patient (FDA, 2016)

As an industry with very high-value products, AIs are usually produced in low quantities in few centralised locations worldwide (Sousa et al., 2011). The primary manufacturing site is responsible for the production of AI or API. The process involves either several chemical synthesis and separation stages for the building up complex molecules or fermentation and product recovery (Shah, 2004). The process is characterised by long cycle times and it makes end-to-end responsiveness difficult. The long cycle times can be attributed to time required for the quality control check on material released from the intermediate stage before been passed through for usage in the downstream process. Furthermore, the use of contractors for the manufacturing of AI which is a growing trend in recent times also gives rise to extended supply chain co-ordination issues, albeit the strategy enables research-oriented companies to concentrate on R&D activities (Sousa et al., 2011).

The production volume of AI is usually low; hence primary manufacturing sites are typically multipurpose plants to leverage cost between products. The low production volume also makes transportation cost a significant factor at this end of the supply chain. As a result, primary sites may be located in any part of the world irrespective of the secondary manufacturing sites.

According to Sousa et al. (2011), factors that influence the choice of primary manufacturing site location are tax rates, existence of skilled workforce, political and economic stability of the country. Each primary site to be located in any part of the world may supply AI to any secondary sites.

The secondary manufacturing site is responsible for the preparation and formulation of the products in a suitable form for end-users. This involves adding the AI produced at the primary manufacturing site to some "excipient" inert materials along with further processing and packaging to produce the final product in SKU form. A typical process for the production of a product produced in pill form is as follows (Shah, 2004):

1. Granulation: includes the addition of excipient materials
2. Compression: formulation of pills
3. Coating
4. Quality control
5. Packaging

Secondary manufacturing sites are often geographically separate from the AI manufacturing sites. This is frequently the result of tax and transfer price optimisation within the enterprise (Shah, 2004). Figure 2.14 adapted from Sousa et al., (2011) is the supply chain structure of a typical enterprise providing a visual representation of the location of primary manufacturing site in relation secondary manufacturing sites of pharmaceutical companies. Pharmaceutical companies are multi-product, multi-purpose and multi-site facilities operating in different countries and dealing with customers and business partners globally (Bravo & de Carvalho, 2013).

Hence, there are more secondary than primary manufacturing site serving regional or local market as shown in Figure 2.14. This is due to high transportation cost associated to the large amount of inert products and packaging materials required for preparation and formulation of the final products. To optimise material availability with efficient transportation cost, secondary sites tend to be more in number than primary manufacturing sites serving regional

or local markets. Depending on geographical location, delivery lead-time between primary and secondary sites is between one to two weeks by sea freight and one to two days by air freight. Transportation within region is usually by air freight and road freight.

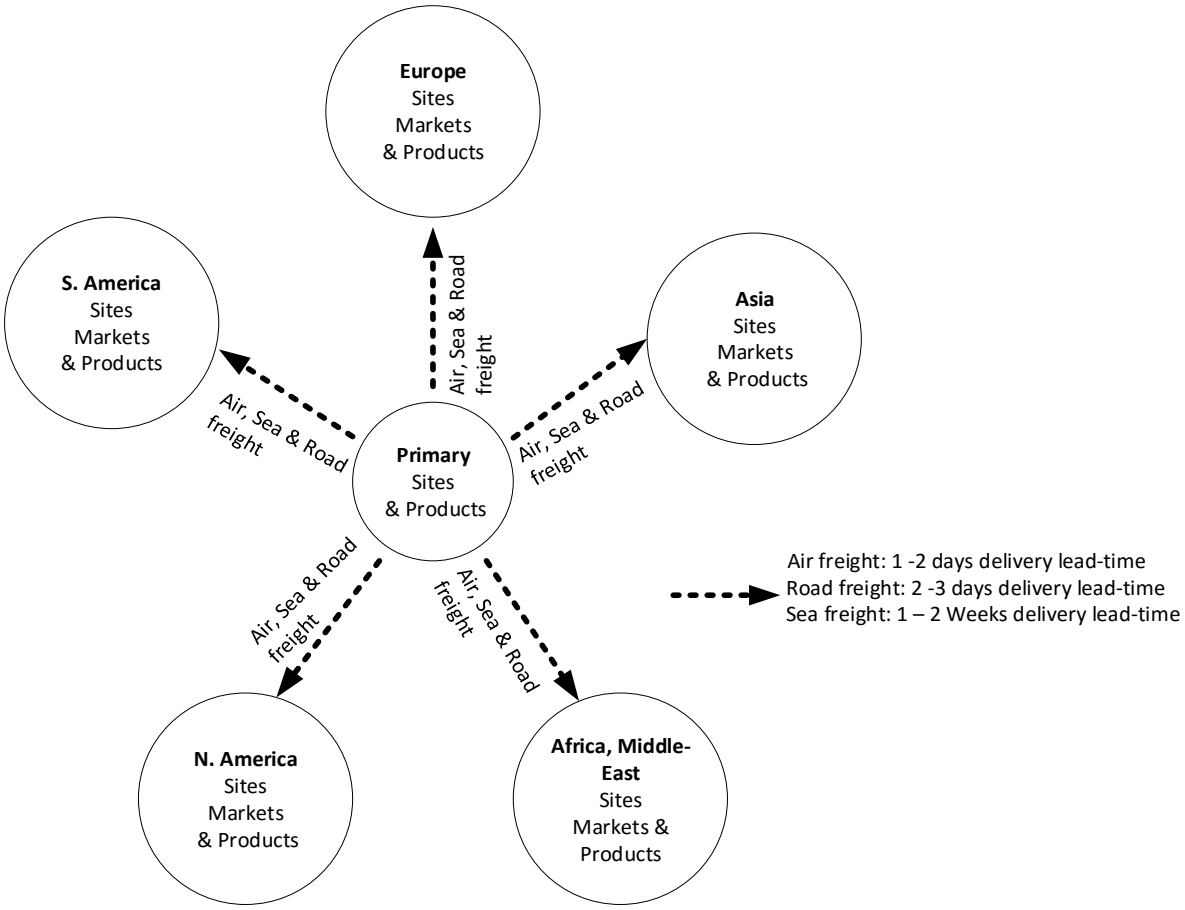


Figure 2.14**:** Supply chain structure of an enterprise (Adapted from Sousa et al., 2011)

PSC from manufacturing perspectives is basically the linkage for physical movement of all materials from suppliers, through transformation, and then finished goods for the customers. From the retail and hospital pharmacies perspectives, the supply chain distribution, where the start point is the finished products (Drugs) that has to be delivered or administered to the patients in timely manner.

Pharmacies operate more like retailers, distributing goods (drugs) manufactured by other organisations. Like most retailers, hospital pharmacies are mainly driven by the customer (patients) need, although mediated by the medical staff (Ritchie et al., 2000). Hence, stock availability is vital in the pharmaceutical industry as drug "out-of-stock" is not only an inconvenient and loss of sales situation, it is actually a critical situation which may lead to the prolonging an illness or loss of life. Given that many drugs have limited shelf-life, waste is an issue, especially with expensive drugs.

Therefore, improving the supply chain through effective inventory management and restructuring the relationship between volume and costs, can be achieved through supply chain optimisation (Sousa et al., 2011). Based on the increasing interest in RL, and the associated economic, regulatory, social and environmental benefits, effective implementation of RL directly or indirectly contributes to the overall supply chain optimisation objectives.

2.7. Reserve Logistics in the Pharmaceutical Industry

RL in the pharmaceutical industry is extremely important from economic, regulatory, social and environmental points of view (Kabir, 2013). The reverse supply logistics for pharmaceutical companies is big business. The industry estimates pharmaceutical returns management is a $2.5-billion-dollar business with an estimated $5 billion dollars of product that is expired, recalled, damaged packaging, or delivered incorrectly (Martin, 2007; Teunter et al., 2003). It is estimated that total returns cost is approximately 3% to 6% of annual pharmaceutical sales (Hunter et al., 2005). This means that of Merck's $24.2 billion in sales in 2007, the cost of their returns is estimated to be between $726 million and $1.452 billion (Kumar et al., 2009).

Product recall requires organisation to be able to reverse the normal logistics flow from supplier to customers so that inventory deemed unsuitable can be located by customers and returned to the supplier in a timely and cost-effective manner (Bowersox et al., 1996). This is

particularly important in the case of pharmaceutical products where patient health may be put at risk if drugs are not withdrawn expeditiously (Ritchie et al., 2000). For example, in 1997, the world's best-selling weight loss drugs, Redux and Pondimin, had to be withdrawn when evidence emerged that their use might lead to heart disease. Regardless of where the problems originated from, it is the responsibility of the pharmaceutical to effect product recall (Ritchie et al., 2000).

Waste elimination and product recalls are of growing concern to hospital pharmacies. Product recalls appears to be becoming an increasingly frequent occurrence in the private sector (Ritchie et al., 2000). Hospital pharmacies have to perform RL activities from time to time especially when a recalled drug is a drug which is being dispensed to a hospital patients or end-users (Ritchie et al., 2000). Hence, product recall needs to be carried out speedily and efficiently. Pharmaceuticals products are, however, different from other common products as returned or recalled pharmaceutical products are seldom repaired or resold. Instead, pharmaceutical products are destroyed or properly disposed (Kabir, 2013).

The need for destruction has been identified to be associated to the inability or difficult constraints of regulated facilities of manufacturers to ensure pharmaceuticals were handled properly after leaving their control and to ensure a secure chain of custody (Kabir, 2013). The most common reasons for the return of pharmaceutical products have been identified to be due to the expiry and damage of product, wrong delivery, counterfeits, product recalls and trial recovery for clinical trials (Palms Blog, 2012). Figure 2.15 illustrates a general pharmaceutical reverse supply chain; highlighted areas are those in which this study focuses.

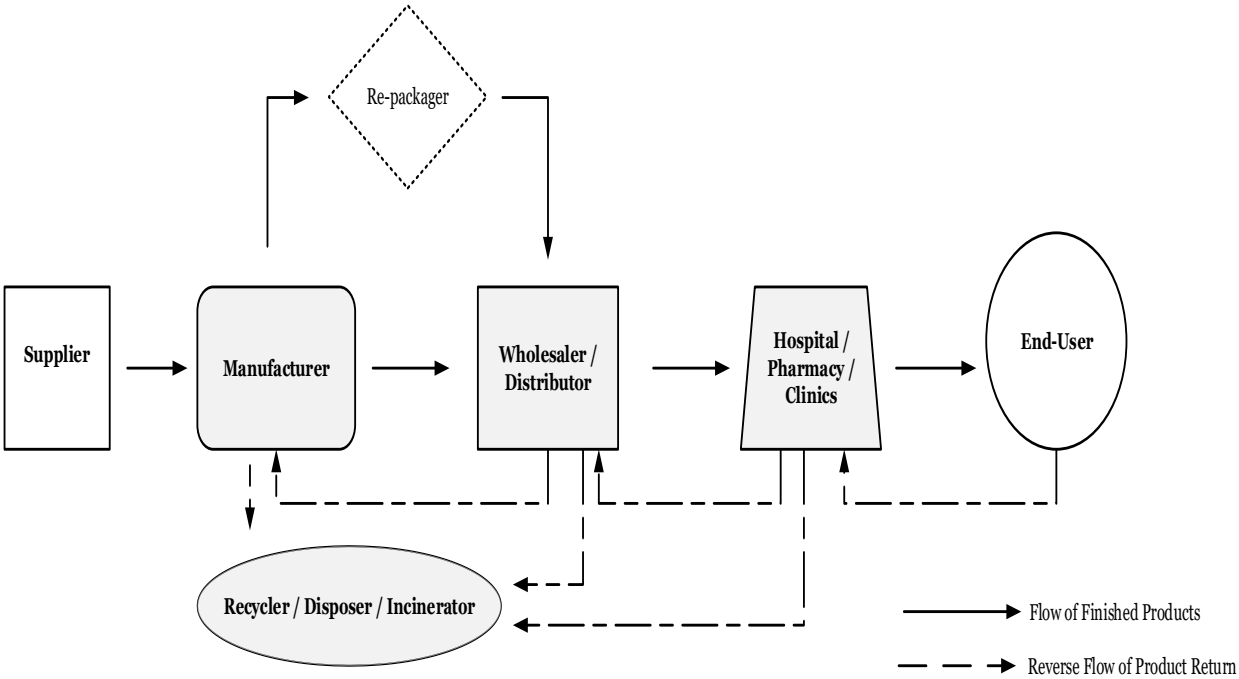


Figure 2.15: Generic Structure of RL for a Pharmaceutical Drug Product (Adapted from FDA, 2016 Drug Supply Chain)

RL in the pharmaceutical industry further differs from that of other industries because of the nature of pharmaceutical products, need for accurate tracking and visibility, need for batches and expiry control, cold chain requirements, need for proper storage and disposal, need for pedigree reporting and anti-counterfeiting measures etc. (Kabir, 2013; Kwame et al., 2014).

In practice, pharmaceutical product returns are mostly handled by third party service providers and distributors. Both supply chain stakeholder forms an integral part of the RL network. In the implementation of PRL, high priority is given to the security of returned goods, cost mitigation through return process automation and traceability of returns from customers to the final destination of deposition (Kabir, 2013). Given the critical value of drugs (social, economic and environmental effect), the regulation of safe manufacturing, sale and distribution of medicines is a priority for governmental authorities (Kabir, 2013).

2.7.1. The Need for RL in the Pharmaceutical Industry

In the light of the peculiar characteristics of the pharmaceutical industry which includes high cost of production, low to moderate shelf lives of product and high regulatory intervention, potential for unscrupulous intermediaries that can compromise product integrity, potential for the infiltration of counterfeit drugs and potential hazards associated with the misuse of drugs are major concerns in the pharmaceutical industry (Khan & Subzwari, 2009). Despite the industry focus on quality, pharmaceutical manufacturing has failed to keep up with other industries in terms of efficacy and productivity (Bravo, & de Carvalho, 2013).

Wrongly delivered or expired pharmaceutical products, including those with damaged packaging need to be retrieved from the channel and replaced with saleable product in order to maintain sales, product availability and compliancy to regulatory requirements (Khan & Subzwari, 2009). The issue of counterfeiting drugs is a major concern for the pharmaceutical industry. According to the World Health Organisation, a counterfeit drug is one which is deliberately and fraudulently mislabelled with respect to identity and or source (World Health Organisation, 2009). This is a globally recognised problem as it has the potential to damage patient confidence in medicine and to damage the reputation and profitability of the pharmaceutical companies (Khan & Subzwari, 2009).

According to a survey done in 1996 in the USA regarding the disposal of unused medicines, only 5% of patients follow the recommendation of proper disposal (Kumar et al., 2009). The figure was segregated into the following categories: 54% disposed of medicines in the trash, 35.4% flushed medicines down the toilet or sink, 7.2% did not dispose of medicines, 2% used all medicines prior to expiration and 1.4% returned medicines to the pharmacy (Kumar et al., 2009). Furthermore, the Healthcare Distribution Management Association (HDMA) estimates 3-4% of product flow from pharmaceutical companies ultimately return back, some for redistribution, disposition and destruction by third-party processor or manufacturers (Sartori, 2011).

Estimates show 1% of pharmaceutical trade in industrialised countries (Australia, Canada, Japan, New Zealand, the United States of America, and most of the European Union) involve spurious/falsely-labelled /falsified /counterfeit (SFFC) drugs while the percentage in many African countries range from 30% to 40% (WHO, 2012). In Ghana, 20% of chronic diseases such as kidney disorder have been attributed to the intake of expired drugs (Addo, 2005). The WHO estimates that 10% of global pharmaceutical commerce involves counterfeit drugs (Sartori, 2011).

There are many reasons for the growth of unused pharmaceutical drugs. Life lost, patient dissatisfaction with treatment, patients relieved of symptoms, drug reaching the expiration date, over prescription of medicines due to improvement in patient's health, patients shifting to another drug due to side effects, unavailability of drug in adequate quantity, overstock and quality defect are some of the major reasons for the growth of unused medicines (Singh et al., 2013). Some medicine contains chemicals like mercury, radioactive components and other hazardous components.

The availability of poor quality drugs, counterfeit and expired products in the market is disconcerting as it places the consumer and the environment at risk. This signifies the need for a well-functioning and effective tracking, recall, retrieve, salvage mechanism in the pharmaceutical industry, especially for the removal of counterfeit drugs from the market (Khan and Subzwari, 2009). Product recall and waste elimination through recycling of unused, unwanted supplies also provide powerful reasons for developing an effective RL process (Ritchie et al., 2000). For these reasons, the implementation of RL system in the pharmaceutical industry has become inevitable as it helps protect the consumers, protect pharmaceutical companies' image and facilitate the cleaning of the market from expired and counterfeit drugs (Khan & Subzwari, 2009).

2.8. The Nigerian Pharmaceutical Industry

2.8.1. Historical Review

A report (unpublished) on the history of the pharmaceutical industry indicated that the advent of NPI began with some multinational companies having sales outlets in the country purely to meet local pharmaceutical needs. The early sixties saw the emergence of some tertiary manufacturers of pharmaceutical products (Ngwuluka et al., 2011). The trail blazers in the establishment of pharmaceutical manufacturing in Nigeria are Glaxo (1958), Pfizer (1962), Sterling (1963), Wellcome (1967), Patterson Zochonis (1968) and Pharchem (1968) focusing the majority of their manufacturing on simple preparations, topical preparation and re-packaging of imported products (Erhun et al., 2005).

The growth of the local pharmaceutical industry began between 1970 and 1980s with the establishment of the first set of indigenous pharmaceutical companies such as Rajab (1980), Leady (1980), Biomedical Service (1981), Emzor, Barewa and Mopson in the later part of the 1980s (Erhun et al., 2005).

The indigenous secondary manufacturers' productions were initially limited to tableting and liquid mixing operations (Ngwuluka et al., 2011). Today, the manufacturing industry has made some progress, though slowly (Ngwuluka et al., 2011), as the NPI is now made up of about 150 known pharmaceutical companies. Only about 54%, which are predominantly multinational companies, are engaged in active manufacturing despite the fact that their installed capacity can meet up to 50 to 75% of the country's drug demand. The majority of the manufacturing done by local companies is basically secondary and tertiary (Erhun et al., 2005). Some of the indigenous companies have now gone into other dosage forms such as creams, emulsions, liniments and sterile products.

Nigeria is yet to have a primary manufacturer that produces bulk AIs. Therefore, existing companies that produce finished products today import most excipients, and all the AIs (Ngwuluka et al., 2011).

2.8.2. Industry Overview

The NPI is vibrant, employing about 500,000 people in manufacturing and distribution (Aiswariya, 2014). The NPI growth is expected to near 14% per annum in the next five years; underpinned by continuous burden of infectious diseases such as malaria, Tuberculosis, and AIDs among others drive demand for anti-infectives (Aiswariya, 2014).

In a presentation at the Pharma Insight Briefing session of CPhil in 2014, Aiswariya pointed out the increased incidence of NCDs in Nigeria including diabetes, hypertension, and cancer which drives demand for chronic prescription drugs. The over-the-counter (OTC) product segment is quite large as significant proportion of the population are yet to be covered by the National Health Insurance Scheme (NHIS) operational since 2005. The establishment of NHIS scheme was intended to provide universal coverage by 2015 although only 50% of the Nigerian population are covered under the NHIS (Aiswariya, 2014).

The NPI can therefore be divided into two major sectors: the private and the public sector. The private sector is the primary focus of this study and it is made up of NGOs (PM, PI, PW, PR, and private clinics and HBP), and traditional health practitioners. According to the PCN, Nigeria has a total of 14,607 public healthcare facilities and 9,034 private healthcare facilities (National Bureau of Statistics, 2006a). It has, however, been estimated that Nigeria has over 10,000 unregistered patent and propriety drug stores selling OTC products only. Most of such stores are located in villages and poor communities throughout the country, in areas where fully fledged pharmacies do not exist (Wambebe & Ochekpe, 2011).

According to the Nigerian Federal Ministry of Health (FMoH) in collaboration with the WHO (2011), there are 13,199 (0.87 per 10,000) licensed pharmacists, of which 2,051(0.13 per

10,000) work in the public sector. There are 5,483 (0.36 per 10,000) pharmaceutical technicians and assistants (in all sectors).

2.8.3. Market size

According to the 2006 National Census, the population of Nigeria was one hundred and forty million and was estimated to be above one hundred and seventy million in 2013 by WHO, making Nigeria potentially the largest domestic market in Africa (Wambebe and Ochekpe, 2011). The multinationals are the leading and major players in the NPI, taking advantage of years of experience, local adaptability, exclusively bestowed patent right and product integrity (Erhun et al., 2005).

In 2009, the Pharmaceutical Manufacturing Group of the Manufacturers' Association of Nigeria (PMGMAN) estimated the size of the Nigerian pharmaceuticals and healthcare industry to be in excess of US$ 2 billion annually (Wambebe & Ochekpe, 2011). Out of this figure, the prescription ethical pharmaceuticals contribute approximately US$ 500 million while over the counter (OTC) pharmaceuticals account for about US$ 900 million. The estimate market for the biological products such as vaccines, insulin, interferon etc. is worth about US$ 100 million while related healthcare and lifestyle products account for about US$ 500 million (Wambebe & Ochekpe, 2011).

On the lower side, the business intelligence services estimated the NPI to worth US$ 600million (Business Monitor International, 2010) in 2009. Out of this figure, BMI (2010) attributed the largest share of US$ 418 million to generic medicines, US$ 121 million to over the counter (OTC) products and US$ 61 million to patented products. Frost & Sullivan (2010) estimated a pharmaceutical market value of US$ 740 million in 2009 of which US$266.4 million were attributed to generic medicines, US$ 177.6 million to branded products and US$ 296 million to OTC products (Frost & Sullivan, 2010).

Furthermore, Nigeria provides 60% of the healthcare products consumed in the Economic Community of West African States (ECOWAS) by volume (PMG-MAN, 2009). With an estimated population of about 600 million, the ECOWAS sub-region represents a huge potential market for pharmaceutical products (Wambebe & Ochekpe, 2011).

2.8.4. Competitive Landscape

The competitive landscape of the NPI is made up of three key market participants (Aiswariya, 2014). As depicted in Figure 2.16: Branded companies (Multinational pharmaceutical companies) such as GSK, Pfizer, Novartis, Roche, Sanofi Aventis who predominantly target the private sector especially for in-demand therapies; Generic companies (Pharmaceutical Importers) such as Mzor, Fidson, May and Baker, Ranbaxy who produces out-of-patent drugs and over-the-counter products, and sells the drugs through NGOs and government tenders; and indigenous pharmaceutical manufacturers such as Mzor, Fidson, May and Baker, Evans Medical Plc who produce both generic products and owned branded products under licence besides distributing brands of MNCs and importers. These key market participants are part of the five sub-sections of the global pharmaceutical industry depicted in Figure 2.11.

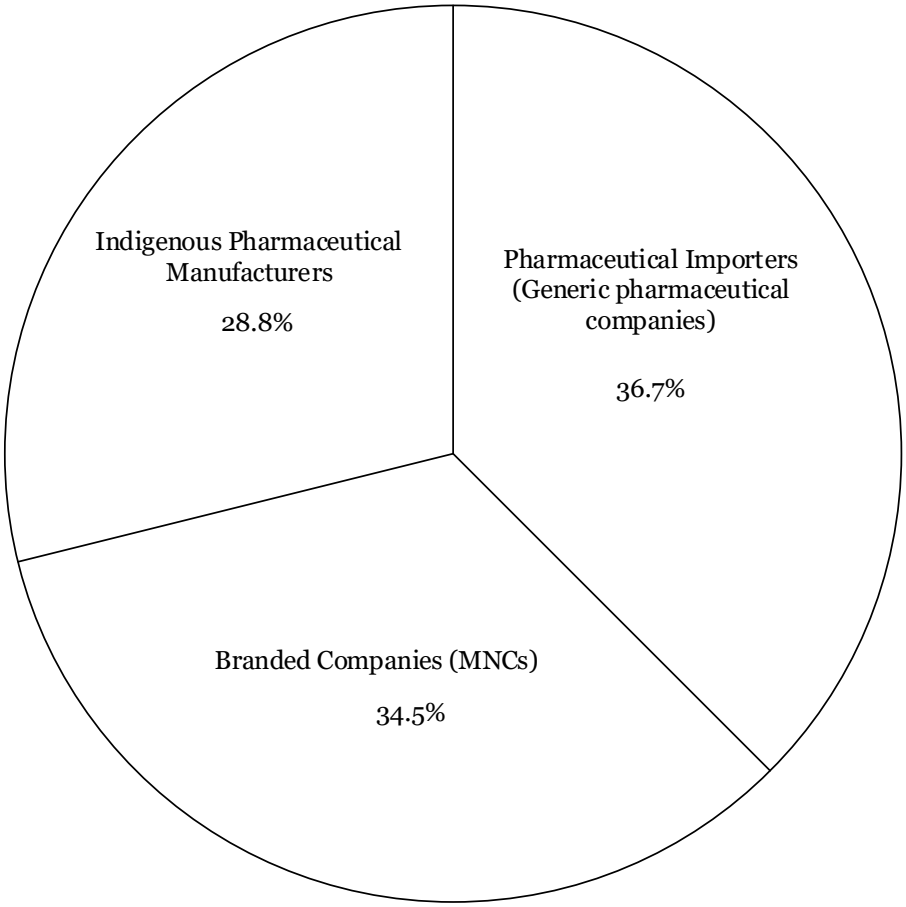


Figure 2.16: Percentage Sales breakdown by Tiers of competition (Adapted from Frost & Sullivan, 2013; Aiswariya, 2014)

Figure 2.17 depicts the analysis of the Nigerian pharmaceutical market by product segment: OTC, generics and branded drugs. Aiswariya, (2014) illustrated the future direction for PCs in Nigeria by pointing out the following expectations: branded companies are expected to adopt a differential pricing strategy specific patient segments and geographies in Africa to make treatment affordable to large group of patients, thereby significantly expanding their customer base. Foreign traders in Africa are expected to bolster their distribution channels by engaging in strategic partnerships with trustworthy local stakeholders. Given the immense growth potential and business opportunities, it is expected that companies would invest significantly in their marketing capabilities, patient awareness programmes, and treatment support services to enhance brand loyalty.

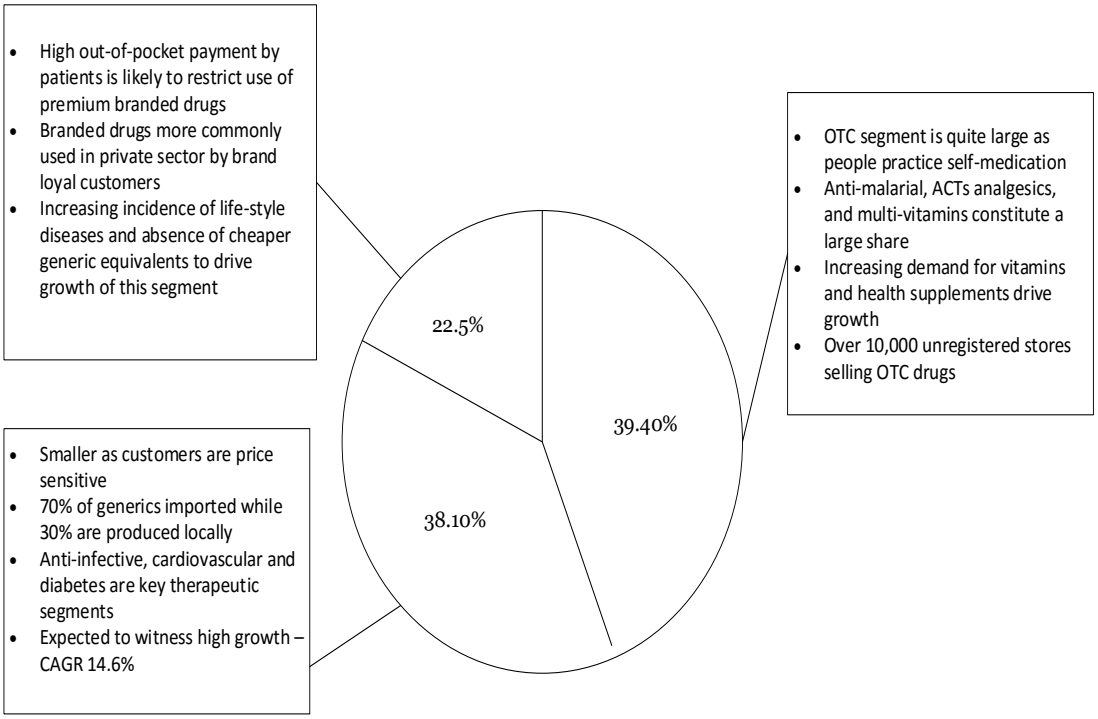


Figure 2.17**:** Nigeria – Market Analysis by Product Segment (Adapted from Frost and Sullivan, 2013 and Aiswariya, 2014)

In the light of the above mentioned growth expectations in the NPI, no expectation towards the development of proper PRL solutions is evident. Thus, this study aims to explore, and generate an empirically informed insight on PRL practices in Nigeria so that awareness of this phenomenon can be enhanced, and improvement measure can be recommended in line with the growths expected in the NPI.

2.8.5. The NPI: Pharmaceutical Procurement

The procurement of pharmaceutical products into the public sector are sourced from the government, and from private institutions (Private Sector) as depicted in

FigureFigure 2.18. According to the United Nations International Development Organisation's (UNIDO) 2011 report on the Nigeria pharmaceutical sector, prepared by Wambebe and

Ochekpe, the Nigerian federal government is responsible for the overall policy formulation, and technical guidance to all healthcare providers. Hence, in the public sector, the Nigerian government (Federal, State and Local Government Areas) supplies pharmaceutical products to its various healthcare institutions.

The public sector procurement comprises of three levels (Aiswariya, 2014). The first is the tertiary healthcare centres (University teaching hospitals) and federal medical centres located in 36 states. These centres procure drugs and supplies from the federal government. The second level is the secondary level healthcare centres. The secondary level healthcare centres comprise the state hospital and are supplied by the state Ministry of Health (MoH). These centres also offer technical support to the local government area (LGAs). The third is the primary level healthcare services, managed and controlled by the LGAs.

The private sector, which is the primary focus of this study, is made up of NGOs, and traditional health practitioners. They provide pharmaceutical services at all the three levels of the healthcare delivery system.

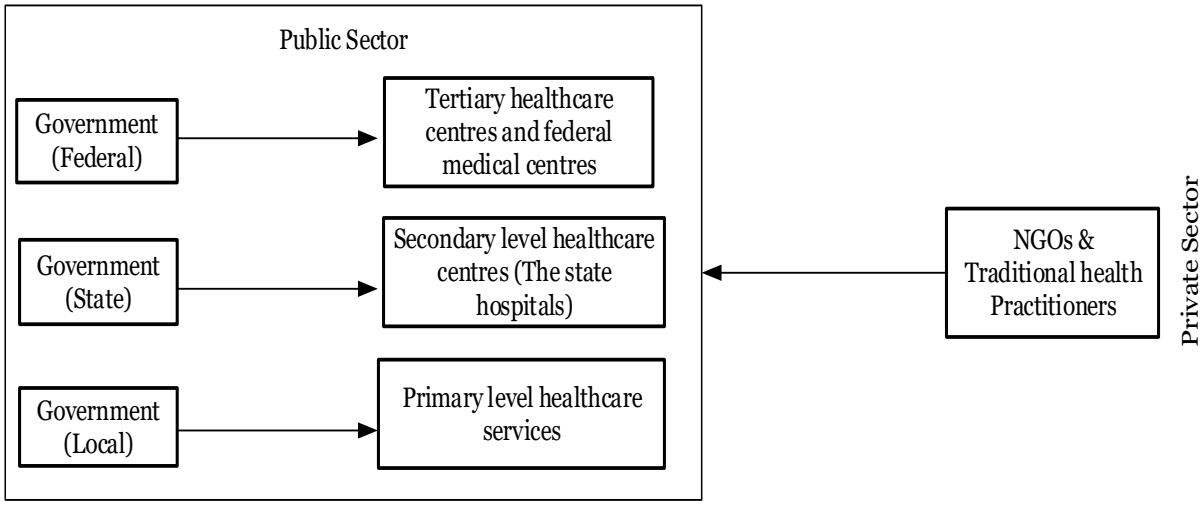


Figure 2.18: Pharmaceuticals Procurement

2.8.6. The NPI: Pharmaceutical Distribution

Distribution of medicines in Nigeria is not only chaotic but also involves many different stakeholders and intermediaries. Some major pharmaceutical manufacturers contract private logistics service providers to perform their distribution operations while some international development partners utilise the services of couriers for delivery of medicines. There have been cases whereby medicines expire before reaching end-users and this can be attributed to the inefficiency of the distribution process (Wambebe & Ochekpe, 2011).

The distribution channel of pharmaceutical products in the Nigerian private sector differs from that of the public sector. In the private sector, pharmaceutical manufacturers and importers have their own distribution channels as they sell to the wholesalers, retailers and hospitals (Wambebe & Ochekpe, 2011). Figure 1.1 depicts the private sector drug distribution flow. There is no national distributor that distributes drugs throughout the country, 36 states have around 300 drug importers (financially strong distributors are the importers). The private sector utilises three distribution channels.

The first channel is that the importers supply drugs to the wholesale market, as well as directly to the big retailers and hospitals. The second channel is that many foreign manufacturing companies get the import registration through the wholesale importer (the whole seller in the market) and retailers procure the drugs from the wholesaler. The third channel is that wholesalers (importers) get the registration in their own name, get the product contract manufactured from the manufacturer and sell to other wholesalers. Retailers then procure from these wholesalers. This study focuses mainly on the reverse flow of drugs (OTC and prescription drugs) in the private sector of the NPI i.e. the RL activities that occur among PMs (Multinational and local), PI, PW, PR, HBPs, and the RA.

The UNIDO 2011 report, however revealed that these distribution channels enable the sale of drugs and medical supplies to unregistered and unlicensed premises and even in some cases pharmaceutical products are sold by non-pharmacists. It is a general perception that about 17%

of the total essential generic drugs in the Nigerian market are routinely faked and specifically up to 30% of anti-malarials are fake (PMG-MAN, 2007 and 2009). Although judicious effort is now being taken by the NAFDAC to reduce counterfeit trade, there is still evidence of counterfeit pharmaceuticals in Nigeria. NAFDAC aims to tackle this problem through radio frequency identification (RFID) technology for logistics and tagging to detect fake medicine (Aiswariya, 2014).

The public sector traditionally has three warehouses: The Central Medical Stores, the Federal Medical Stores (FMS) and the State Medical Stores. As of 2011, medicine supplies are stocked and distributed through these three storage facilities. In 2010, the National Health Logistics Committee was established to harmonize all logistics related to medicines supplied by merging the existing three layers of warehousing of health commodities into one, the Central Medical Stores, with a branch in Oshodi and another in Abuja (Wambebe & Ochekpe, 2011).

In 2009, there was a proposition by relevant stakeholders (NDP, FMoH, PCN, NAFDAC, PMG-MAN and the WHO Country Office in Nigeria) to privatise the medicine distribution by establishing a privately owned mega distribution company which would be managed as an independent corporate entity. The proposed mega distribution company would be responsible for the collection of health products from the manufacturing facilities/export warehouses and distribution to regional warehouse hubs located in the South West, South East and Northern parts of the country. Wholesalers would then collect the health products from the regional hubs for distribution to the retailers who are responsible for the sales to the end-users in clinics, hospitals and medical institutions (Wambebe & Ochekpe, 2011). The mega distribution consensus model was framed to improve distribution, thereby preventing drug distribution to pharmacist and promoting rational drug use (Aiswariya, 2014). Figure 2.19 is a visual presentation of the public sector PSC in Nigeria.

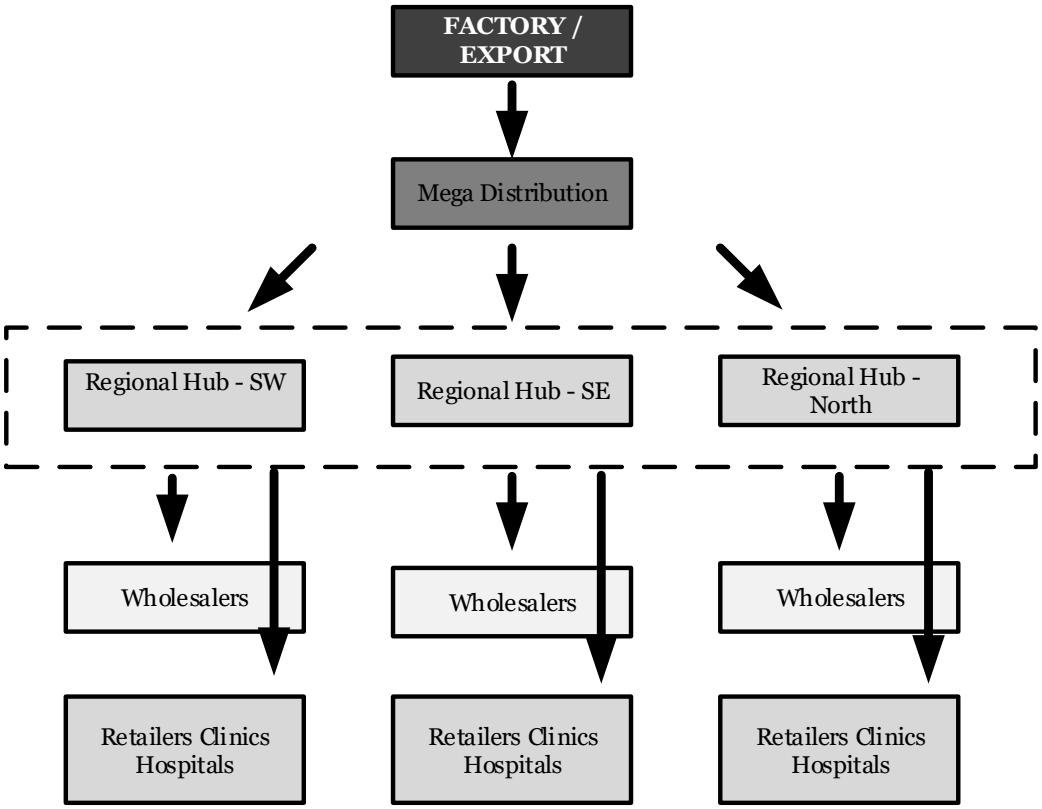


Figure 2.19: The Pharmaceutical Industry: Public Sector Drug Procurement – Mega Distribution Company Consensus Model, Nigeria 2013 (Adapted from PMG – MAN Frost and Sullivan, 2014)

2.8.7. The NPI: Supply of Input

All APIs used in Nigeria are imported mainly from India and China. The importation normally takes more than three months due to the lengthy clearance, customs and NAFDAC formalities (Wambebe & Ochekpe, 2011). According to PMG-MAN, pharmaceutical grade starch is currently imported primarily from China while there are local companies which produces, industrial grade starch. To help counter the infiltration of counterfeit drugs, in 2009, China introduced the death penalty, while India introduced life imprisonment for companies that export sub-standard finished products to other countries. The law has been extended to cover API manufacturers with the WHO agreeing in principle to commence the mandatory processes

for the approval of the inclusion of API manufacturers in the WHO prequalification scheme (Wambebe & Ochekpe, 2011).

Primary and secondary packaging materials are manufactured locally in Nigeria and about 25% of excipients are locally sourced. The majority of the machinery and virtually all the quality control analytical equipment is imported mainly from Asia and Europe respectively although some spare parts are fabricated locally (Wambebe & Ochekpe, 2011). Due to the poor infrastructural facilities and poor access to utilities in Nigeria, pharmaceutical companies are obliged to install generators to maintain supply of electricity. Pharmaceutical companies are also required to construct bore holes and install water treatment facilities in order to maintain supply of good quality water for production purposes. According to PMG-MAN, this additional utility costs range between 25% and 40% of production costs (Wambebe & Ochekpe, 2011).

2.8.8. The NPI: Pharmaceutical Production

There are 53 states in Nigeria including the Federal Capital Territory (FCT). It is also estimated that more than 50% of pharmaceutical manufacturers and major importers are situated in Lagos. This could be due to the proximity of the sea port as a number of drugs and most of the raw materials are imported (Ngwuluka et al., 2011). Furthermore, it is attributed to the fact that Lagos still remains the commercial capital of Nigeria.

Local Nigerian pharmaceutical manufacturers produce liquid preparations, tablets, capsules, ointments, lotions, creams and ophthalmic preparations. The local pharmaceutical production is currently able to meet about 30 percent of local demand while the remaining 70% demand of demand is met mainly by imports from Asian companies (Aiswariya, 2014). The local production flow scheme of pharmaceutical companies in Nigeria is in compliance with Good Manufacturing Practice (GMP) but core production processes are still step-by-step, mixed manual and automated. About 30% to 80% of the production processes are automated (Wambebe & Ochekpe, 2011).

In 2014, the average capacity utilization of local production in Nigeria was reported to be at about 45%, which signifies that a substantial volume of capacity is underutilized. Hence ample spare capacity is available for new capital investment, which will be required if local pharmaceutical production is to become more competitive against imported pharmaceutical products (Wambebe & Ochekpe, 2011). Judicious effort to increase the utilization rate of available capacity includes the upgrading of facilities of local drug manufacturers to obtain the WHO pre-qualification status (Aiswariya, 2014). Today, the attainment of WHO GMP and pre-qualification status by certain companies enables local manufacturing companies' participation in international tenders (Aiswariya, 2014). To further encourage local production, the Nigerian FMoH has issued a ban on the import of certain essential medicines to attain self-sufficiency and reduce parallel trade.

The ECOWAS tariff structure for import of drugs has gone through some major revision. As a result, the current rate for essential medicine, industry machinery and equipment is zero percent tariff, raw material and other capital goods is 5% tariff, intermediates is 10%, finished goods is 20%, finished products with adequate local capacity is 50% tariff (Aiswariya, 2014).

2.8.9. The NPI: Regulatory Authorities

The NPI is regulated by two regulatory bodies, namely, the PCN and the NAFDAC. Both organisation come under the aegis of the FMoH. The PCN regulate the practise of pharmacy and training of pharmacist including the development of the basic curriculum for degree and mandatory continuous educational programmes. The PCN is also responsible for the regulation of premises used by pharmacist to practise their profession, inspect manufacturing facilities, retail outlets and drug warehouses to ensure compliance with Good Manufacturing Practice (GMP) (Wambebe & Ochekpe, 2011).

NAFDAC is responsible for the regulation and control of all pharmaceutical products and substances, chemicals, bottled water and packaged food in Nigeria. NAFDAC is also responsible for the inspection of manufacturing facilities to ensure that the facilities meet the

required standard for the production of specific products. Due to the overlapping nature of this responsibility, there is a need for the harmonization of GMP inspections of manufacturing facilities as well as of human resource development planning by both PCN and NAFDAC.

A regional regulatory body named the West African Drug Regulatory Authorities Network (WADRAN) based at NAFDAC was established in 2006. WADRAN is tasked with the broad objective of harmonising food and drug regulations within the ECOWAS sub-region. WADRAN headquarters are currently based at NAFDAC in Abuja. According to UNIDO, (2011), NAFDAC issued regulations on Nigerian Good Manufacturing Practice (NGMP). In order to drive regulatory improvement, PCN has issued new guidelines on drug distribution, with non-compliant organisations facing licence revocation.

Under this new system, only outlets with a 'blue' licence are permitted to give consumer advice and must function exclusively as retailers. Companies with a 'white' licence are restricted to representing importers and distributors. Import-only businesses will carry a 'grey' licence. Considering however the Nigerian bureaucratic and corrupt reputation, the proper enforcement of the new guidelines remains questionable (BMI, 2013). As of 2011, according to the FMoH and WHO 2011 report, legal provisions exist in Nigeria requiring manufacturers to be licensed. Legal provisions exist requiring manufacturers (both domestic and international) to comply with GMP. Legal provisions exist requiring importers, wholesalers and distributers to be licensed. However, legal provisions requiring wholesalers and distributors to comply with GMP do not exist (NAFDAC, 2010).

In the light of these descriptions and characterisation of the NPI in terms of historic overview, market size, supply network, distribution network, supply of input, production, and regulatory authorities present, there is no evidence of how the logistics of expired, damaged, and defective drugs are managed within the PSC network, hence, no visibility or account of PRL practices in the Nigerian pharmaceutical context. This therefore links to the overall purpose of this study, which is to explore this phenomenon in the private sector of the NPI.

2.8.10. Challenges facing the NPI

The Nigerian business environment including the pharmaceutical industry is very fluid, complex and extremely challenging for investors and business managers. According to Erhun et al., (2005), the most noticeable challenge, especially for the pharmaceutical industry, is divestment due to high level of unprofessional practices of drug counterfeiting in the Nigerian market. How these drugs are collected and removed from circulation is currently unknown.

Over 90% of APs needed for pharmaceutical manufacturing are still being imported due to non-performance of the local chemical and petrochemical industries. Erhun et al., (2005) further pointed to challenges facing the NPI including, high cost of capital and non-availability of soft loans to the pharmaceutical sub-sector due to the poor perception of the industry by financial analysist/institution. Inadequate infrastructure such as poor roads, irregular electricity and water supply dearth of statistical data on the industry and reluctance or outright refusal of industry practitioners in sharing information. This contributes to the current lack of empirical insight into RL practices in the NPI and it is the primary purpose of this study to fill this gap.

Unfair competition brought about by globalisation, inadequate level of security of life, and property are other challenges faced by the NPI as well as the previous lack of government commitment and regulatory inconsistencies (Erhun et al., 2005). However, in most recent years, Nigeria has experienced positive economic growth and developments. As one of the more developed African-Anglophone markets, the macroeconomic stability has helped reduce poverty by increasing purchasing power of consumers albeit the level of poverty in Nigeria still remains high by western standard (Wambebe & Ochekpe, 2011). The National Agency for Food and Drug Administration and Control (NAFDAC) is becoming increasingly visible and active in the aggressive campaign against substandard health products.

The National Drug Policy (NDP) has recently been introduced in Nigeria with the aim of achieving 70% national self-sufficiency in drugs. The 70% target is to be achieved through

greater local production of generic drugs and raising of tariff and non-tariff barriers on imported drugs (BMI, 2013). This is an attempt to curb the influx of inexpensive counterfeit drugs in Nigeria, and to facilitate effective distribution of locally produced drugs. Trade incentives introduced by ECOWAS for pharmaceuticals within West Africa are helping to promote movement of pharmaceuticals within the sub-region (Wambebe & Ochekpe, 2011).

Furthermore, Good Manufacturing Practice (GMP) certification has now been given to three local drug companies by the WHO, which has put the NPI in the global eye (Anudu, 2014). Despite these positive developments, the Nigerian market is still classified among countries plagued by counterfeit products, even though the aggressive campaign by NAFDAC is considered one of the strengths of the NPI following the BMI 2013 quarter four SWOT analysis. However, how the reverse movement of EDD drugs including counterfeit drugs, from circulation is performed is currently unknown.

In 2001, the Nigerian market was characterised by an influx of fake machine parts, fake motor spare parts, fake chemicals, fake and adulterated food items. The era 1985-2000 in Nigeria heralded the regime of faking and quackery, counterfeit drugs, quack doctors, illegal chemist shops and hospitals (Erhun & Babalola, 2001). Empirical observations have shown that there may be more fake than genuine drugs in circulation (Osibo, 1998). A more recent report indicates that the level of counterfeiting of medicines fell from 40% to 17% in 2006 and was estimated to be less than 10% in 2009 (NAFDAC, 2010). Table 2.2 shows an estimate of the market shares of counterfeit and substandard drugs in ECOWAS. Despite this positive development, 10% is arguably a substantial figure for a country with a population of about a hundred and seventy million people. Hence there is ample scope for improvements.

According to the NAFDAC up to 80% of cases of kidney failure are attributed to the consumption of fake medicines and the spread of counterfeit medicines is estimated at 16 percent (BMI, 2013). Up to 85% of malaria drugs in Nigeria are deemed ineffective. The counterfeiting practices in developing communities include counterfeiting when demand for an expensive product is high, tampering with original packages with drugs packed in large

pack sizes, swapping of labels of two products manufactured by the same company, exploiting similarity in appearance between the original preparation and the counterfeit, labelling low price products with a high price product label and passing off one company's product for another (Erhun & Babalola, 2001).

Table 2.2**:** Estimates of the Market Share of Counterfeit and Substandard Drugs in ECOWAS (UNIDO, Wambebe and Ochekpe, 2011)

Country	Percentage Share
Benin	30%
Burkina Faso	10%
Cote d'Ivoire	30%
Ghana	15%
Guinea	60%
Liberia	15%
Mali	15%
Niger	30%
Nigeria	17%
Senegal	12%
Sierra Leone	30%
Togo	25%

Criminal practices of faking, adulterating and cloning of successful products have proved to be a hydra-headed monster that constantly threatens the survival of the NPI. This is closely followed by the chaotic drug distribution channel of the local industry, with prescription and non-prescription drugs sold in the open market like other food commodities (Erhun et al., 2005)

The issue of pharmaceutical waste impact on the environment and public health is another issue facing the NPI. No matter the type or level of production, the pharmaceutical industry generates pharmaceutical waste (Ngwuluka et al., 2011). While countries such as Italy, Germany, the United States, the United Kingdom, Taiwan, and India have been monitoring and managing pharmaceutical waste, there is no indication that Nigeria is doing the same, and

no awareness that pharmaceutical waste is an emerging contaminant with growing concern (Ngwuluka et al., 2011).

Ngwuluka et al., (2011) further argued that although some of the NPIs were started by some international counterparts, hypothetically, the local industries fall short in management of pharmaceutical waste. Following this line of taught, one cannot but wonder what the current state of RL practices in the NPI is; does the NPI fall short in the practice of RL? This study intends to shed light on this phenomenon.

However, evidence from the BMI 2013 Quarter four Nigerian pharmaceutical and Healthcare report revealed that the major issues facing the NPI are the frequent reports of counterfeits, local production being limited to basic medications, insufficient investment in research and development (R&D), and a chaotic drug distribution system. The report suggested that if local pharmaceutical manufacturing can be modernised and expanded, the health of the country will be improved. Required improvements cannot be limited to the pharmaceutical manufacturing alone but need to be extended to the establishment of a well-functioning waste management and value recovery systems such as RL system required for value recovery, removal of hazardous waste products, counterfeit drug, and expired drug from circulation.

RL is the subject of interest of this thesis and the pharmaceutical industry is the context of study. The NPI is chosen for the study because of these issues discussed and the fact that Nigeria is one of the most promising, and rapidly growing pharmaceutical markets in West Africa with more than 150 pharma formulation manufacturing facilities. About 60% of drug manufacturing in the ECOWAS sub-region takes place in Nigeria, dominating the huge sub regional market (PMG-MAN, 2009). Sadly, the country is listed in Table.2 among countries plagued by counterfeit products including pharmaceutical products.

According to the 2011 UNIDO report on the Nigerian pharmaceutical sector, Nigeria contributes an estimate of 17% market share of counterfeit, and substandard drugs in the ECOWAS sub-region. Despite this negative attributes, more than 60 percent of

pharmaceutical production in the ECOWAS countries is domiciled in Nigeria (Aiswariya, 2014).

Phase Two – Systematic Review

2.9. Systematic Review of PRL Literatures

In management research, the literature review process is a key tool used to manage the diversity of knowledge for a specific academic inquiry, and the aim is often to enable researchers to access the existing intellectual territory, and to further develop the existing body of knowledge via a specified RQ or series of specified RQs (Tranfield et al., 2003). In order to confirm the authenticity of the gap this research intend to fill, a systematic review of existing studies on PRL practices was conducted.

A systematic review is a methodology used in locating existing studies, evaluating their contributions, analysing and synthesizing their data, and reporting evidences in a way that enables a clear and reasonable conclusion to be reached about what is known and what is unknown (Denyer & Tranfield, 2009). The systematic review of extant literature was conducted for this study instead of the traditional narrative review as the latter has been widely criticized for being mainly a singular descriptive account of work done by researchers in a field of study.

Descriptive accounts are often selected for inclusion on the basis of implicit biases of the researcher (Fink, 1998; Hart 1998). The narrative literature review has also been condemned for lack of critical assessment of literatures (Tranfield et al., 2003). The systematic review method allows a detailed technology aimed at minimizing bias through exhaustive literature search of published and unpublished studies which provides an audit trail of reviewer's decision, procedure and conclusion (Cook et al., 1997).

Hence, a three-stage review approach, delineated by Transfield et al., (2003) was adopted for this operation.

Stage One – Planning the Review Process: Defining the research aim and the review aim, as well as preparing the proposal and developing the review protocol.

Stage Two – Conducting the Review Process: Identifying, selecting, evaluating and synthesizing the pertinent empirical studies.

Stage Three – Reporting and dissemination of the systematic review findings.

2.9.1. The Review Protocol – Stage One

RL is very diverse as the research on RL practices spans a number of academic fields (Huscroft, et al., 2013). RL processes operate within the supply chain domain, but also encompass facets of production planning, scheduling, transportation network, information collection and sharing, recycling, hazardous materials disposal and handling, and other topics (Huscroft, et al., 2013). Furthermore, RL research interacts with many other fields of research within business management, engineering and environmental sciences (Rubio et al., 2008). The idea of reviewing and analysing literature from all these fields and facets can be very ambitious. Hence, the operation must be appropriately delimited, so that the abundance and heterogeneity of the data available does not hinder the main goal of this review.

The first phase of SLR is represented by the definition of the scope in compliance with the objectives and the underlying research hypotheses (Colicchia & Strozzi 2012). Denyer and Tranfield (2009) proposed to use the acronym CIMO (Context, Intervention, Mechanisms, and Outcome) to specify the four critical parts to be investigated in order to conduct the following phases of a well-built SLR. In this study, a three-stage review approach, delineated by Transfield et al., (2003) was used instead of the CIMO-logic as the former is simpler and more in line with the structural approach of this thesis. Nevertheless, both approach share similar characteristics.

In this study, the systematic review focused mainly on locating extant empirical studies or articles that addresses RL practices in the pharmaceutical industry and in the NPI. Thus,

domains for the review synthesis are literature on RL management, practices and issues in the pharmaceutical industry with specific focus on the NPI. This is synonymous to the Context element of the CIMO framework.

The SLR characterises (Descriptive statistics) the empirical studies and justifies the authenticity of the gap this study intends to fill. The review protocol for this operation provides the following details on:

1. The conceptualisation of RL practices in the pharmaceutical industry and the practices in the NPI.

2. The typology of research studies to be considered in this review and their suitability criteria.

With regards to points 1 and 2, choices on the type of studies to be included in the review and the eligibility conditions (inclusion and exclusion criteria) were made as delineated below:

1. The review was conducted by searching the Emerald, ProQuest (ABI/INFORM Complete), Scopus and Web of Science database. These data-base were selected as they were found to have the largest coverage of articles and functionality in the field of supply chain and RL. Google scholar was also used but as a last option.

2. Following David and Han's (2004) approach to ensure quality control, only published peer-reviewed articles were considered.

3. To further enhance quality control following David and Han's (2004) approach, only article published in the English language from 1990 till 2017 were considered. The starting point of the literature search is 1990, because this was the time when Stock's (1992) white paper on RL was published and when RL research started to experience substantial developments (Wang et al., 2017). This stating point is also consistent with the systematic analysis of RL literature conducted by Huscroft et al. (2013) and the bibliometric analysis of RL research conducted by Wang et al. (2017).

4. To address the multi-dimensionality of RL definitions, the relevance of the selected articles was ensured and confirmed by requiring their abstract to contain RL or at least one of the following synonyms: returns, return management, return process, recovery, and take-back.

5. With focus on the RQs, the relevance of the selected articles was further ensured by requiring that the selected articles were both empirically and conceptually based. This is to identify conceptual development in RL, and in relation to the pharmaceutical industry.

6. Articles' applicability was further ascertained by ensuring that the selected paper contained RL, or returns, and pharmaceuticals (if possible) as a key phase throughout the paper including the title, abstract and keywords.

7. Articles' substantial applicability was further confirmed by reading the abstract for context and the whole article for both substantial context and satisfactory empirical content. This step further enforced alignment between the selected articles and the review objectives (Delbufalo, 2012).

The protocol is a plan that helps protect objectivity by providing explicit description of the steps to be taken (Tranfield et al., 2003). This review protocol ensured that only articles that are directly related to the research topic were identified and reviewed. Hence, the review protocol serves as a guide and a control mechanism for the review process. This is synonymous to the Intervention element of the CIMO framework.

2.9.2. Database Interrogation Process and Result – Stage Two

The database interrogation process adopted for this operation consisted of four sub-stages as developed by Delbufalo (2012). Emerald, ProQuest (ABI/INFORM Complete), Scopus and Web of Science database were the databases employed for the interrogation process. These

databases were employed as they were found to contain the largest coverage of articles and functionality in the field of supply chain and RL. This stage of the SLR is synonymous to the Mechanism element of the CIMO framework.

Sub-Stage 1: The database interrogation was purposefully conducted using search strings "Reserve Logistics", "Reverse Logistics" and "Pharmaceutical*" combined and "Nigerian Pharmaceutical Industry" to search in the title, abstract or keywords of the articles appearing in the selected journals during the period of analysis.

Based on the review protocol, and the purpose of the review, "Supply Chain" and "Logistics" were not selected as search strings. The term "supply chain" is too broad and not narrow enough to be used as an effective search string that will generate relevant articles required for this study. Its exclusion eliminated the unnecessary downloading of articles that are irrelevant to the research topic. The term "Nigeria" was also not used as a search string as its combination with other keywords such as "Reverse Logistics", and "Pharmaceutical" produced zero search result.

Following conditions 1, 2 and 3 of the review protocol, the database interrogation process generated a total of 3043 articles published in 781 different journals that constituted the base of further analysis. Four hundred and twenty-eight articles were, however, found relevant for the study after filtering according to the eligibility conditions and elimination of duplicates.

Sub-Stage 2: Title and abstract analysis was conducted on the extracted articles following conditions 4 and 5, which resulted in the elimination of an additional 283 articles (275 exclusions and 8 anonymous authors. At the end of this process, 145 articles remained relevant and were considered for further investigation.

Sub-Stage 3: Delbufalo's (2012) quality criteria matrix was used to further scan these articles for empirical studies. The articles were grouped into groups A, B and C. Group A articles are empirical studies that specifically addressed RL fundamentals and those that discussed RL issues in the pharmaceutical industry. At this stage, Group A articles are considered most

relevant and closely aligned to the research topic. Group B articles are empirical studies whose relevance to this thesis is less direct in terms of content and context. The articles deal with RL issues in other industries which are potentially relevant for building a broader understanding of RL management.

Group C are articles that are less relevant to the thesis compared to those of group A and B. Although the empirical studies are in the area of RL, the studies are done in the context of other industries, and the topics addressed fall outside the scope of this thesis. At the end of sub-stage 3, only 11 articles were found most relevant are categorised under Group A, 87 articles partially relevant and categorised under Group B, while the remaining 47 articles were considered less relevant and categorised under Group C.

Sub-Stage 4: At this stage, 126 of the 145 articles (19 articles were non-accessible) were further read in full to verify their substantial and empirical relevance in accordance to eligibility conditions 6 and 7. As a result, 28 articles were further excluded from the list, remaining 98 articles.). Please see in Appendix Three (p. 531) of this thesis, a sample of the paper review chart used to analyse, scrutinize and select/discard articles after the initial screening.

At this stage, it is important to note that management reviews are regarded as a process of exploration, discovery and development. A more flexible approach may make explicit what the researcher intend to do a priori (review protocol) but can be modified during the course of the study, so far the modifications, and the rationale for the modifications are explicitly stated (Tranfield et al., 2003). Following this view, 11 additional articles considered relevant to this study were non-systematically sourced to capture all available empirical studies that address the research topic.

It is also important to note that more RL, logistics and supply chain articles, useful in adding to the depth of knowledge of the wider aspect of the research area were further obtained non-systematically during the course of this study i.e. after this SLR was completed. This suggests a major limitation of this SLR as some articles not captured during database interrogation

process were randomly found via internet search, logistics books, business magazine, references in articles etc. Nevertheless, this SLR is an exhaustive literature search of published empirical studies on PRL which provides an audit trail of reviewer's decision, procedure and conclusion.

The 11 additional articles sourced at this stage of the SLR consist of a book, a conference paper, a business magazine, and 8 other publications. This process then brings the total number of articles considered relevant to this study to 109. Nineteen out of the 109 articles depicted in

Table 2.4 are highlighted in grey and are considered very important to this thesis. Twelve of these articles are considered core empirical literature as (9) specifically address RL issues in the pharmaceutical industry, (2) addresses RL in the Nigerian food and beverage industry and (1) discusses waste management in the NPI. The contributions and shortcomings of these 12 articles are presented in section 2.11 (p. 142 - 148) of this thesis.

Further quality assessment, along with data extraction from the 109 articles were performed in order to build the research gap for this study. This later analysis was done descriptively using a standard template adopted from Delbufalo's (2012) work. The descriptive analysis produced graphs and tables designed to contain the author (s), year, country, industry, journal, publication type, theoretical approach, methodology employed, and data analysis method was used for the 109 articles. A summary of the database interrogation results is noted in Table 2.3 and an overview of the 109 articles is presented in Table 2.4.

Table 2.3: Summary of the Results

Stage and Activities	Result	Citations selected
Stage 1		428
Search string analysis	Database (4)	
Condition 1, 2 & 3	Search String used (3)	
	Citation found (3043)	
	Exclusion including duplicates (2616)	
Stage 2		145
Exclusion analysis through search s	Anonymous author (8)	
	Exclusion (275)	
Stage 3		145
Quality and Relevance Analysis	A - Relevant (11)	
	B - Partially Relevant (87)	
	C - Less Relevant (47)	
Stage 4		109
Full article analysis	Relevant Articles (145)	
Plus non-systematically sourced ar	Non-Systematically Collected Articles (11)	
	Not Accessible Articles (19)	
	Exclusion (28)	

Source: computed based on the data set

Table 2.4: Overview of Articles Generated at the End of Stage Two

Author	Topic	Year
Roger, D.S and Tibben-Lembke, R.S	Going Backwards: Reverse Logistics Trends and Practices	1998
Joshi, H. N.	Analysis of the Indian pharmaceutical industry	2003
Teunter, R., Inderfurth, K., Minner, S. & Kleber, R.	Reverse logistics in a pharmaceutical company: a case study	2003
Shah, N	Pharmaceutical supply chains: key issues and strategies for optimisation	2004
De Brito, M. P. & Dekker, R.	A framework for reverse logistics	2004
R. Glenn Richey, S. E. Genchev and P. J. Daugherty	The role of resource commitment and innovation in reverse logistics performance	2005
R. Glenn Richey, M. Tokman, R. E. Wright and M. G. Harvey	Monitoring Reverse Logistics Programs: A Roadmap to Sustainable Development in Emerging Markets	2005
M. M. Amini, D. Retzlaff-Roberts and C. C. Bienstock	Designing a reverse logistics operation for short cycle time repair services	2005
C. W. Autry	Formalization of reverse logistics programs: A strategy for managing liberalized returns	2005
P. J. Daugherty, R. G. Richey, S. E. Genchev and H. Chen	Reverse logistics: superior performance through focused resource commitments to information technol	2005
E. D. Fassoula	Reverse logistics as a means of reducing the cost of quality	2005
D. A. Mollenkopf and D. J. Closs	The Hidden Value in REVERSE LOGISTICS	2005
R. G. Richey, H. Chen, S. E. Genchev and P. J. Daugherty	Developing effective reverse logistics programs	2005
V. Raci and R. Shankar	Analysis of interactions among the barriers of reverse logistics	2005
Wilson O Erhun , Demehin, Adeolu I	The impact of global pharmaceutical mergers and acquisitions on the Nigerian pharmaceutical industry	2005
M. L. French and R. Discenza	Returns in process industries: a managerial perspective	2006
B. S. Sahay, S. K. Srivastava and R. K. Srivastava	Managing product returns for reverse logistics	2006
G. Patel, J. Li, S. Bose, D. Timmer and M. Gonzalez	Reverse Logistics: Problems, Framework, Models, and Applications	2006
J. Stock, T. Speh and H. Shear	Managing Product Returns for Competitive Advantage	2006
G. Kovács, K. M. Spens and R. Korkeila	Stakeholder response to future changes in the reverse supply chain	2006
S. Mondal and K. Mukherjee	Buy-back policy decision in managing reverse logistics	2006
Savage, C. J., Roberts, K. J. & Wang, X. Z.	A holistic analysis of pharmaceutical manufacturing and distribution: are conventional supply chain tech	2006
D. Mollenkopf, I. Russo and R. Frankel	The returns management process in supply chain strategy	2007
A. Alshamrani, K. Mathur and R. H. Ballou	Reverse logistics: simultaneous design of delivery routes and returns strategies	2007
M. J. Álvarez-Gil, P. Berrone, F. J. Husillos and N. Lado	Reverse logistics, stakeholders' influence, organizational slack, and managers' posture	2007
J.-B. Sheu	A coordinated reverse logistics system for regional management of multi-source hazardous wastes	2007
S. Webster and S. Mitra	Competitive strategy in remanufacturing and the impact of take-back laws	2007
R. Morana and S. Seuring	End-of-life returns of long-lived products from end customer - insights from an ideally set up closed-loc	2007
C. R. Carter and D. S. Rogers	A framework of sustainable supply chain management: moving toward new theory	2008
S. L. Golicic, L. R. Skinner, P. T. Bryant and R. Glenn Richey	Examining the impact of reverse logistics disposition strategies	2008
J. Hanafi, S. Kara and H. Kaebernick	Reverse logistics strategies for end-of-life products	2008
X. Li and F. Olorunniwo	An exploration of reverse logistics practices in three companies	2008
S. K. Srivastava	Value recovery network design for product returns	2008
T. J. Barker and Z. B. Zabinsky	Reverse Logistics Network Design: A Framework for Decision Making	2008
B. M. Flygansvaer, L.-E. Gadde and S. A. Haugland	Coordinated action in reverse distribution systems	2008
S. Kumar and V. Putnam	Cradle to cradle: Reverse logistics strategies and opportunities across three industry sectors	2008
K. Logozar	Outsourcing Reverse Logistics	2008
S. Rubio, A. Chamorro and F. J. Miranda	Characteristics of the research on reverse logistics (1995-2005)	2008
T. J. Barker and Z. B. Zabinsky	Reverse logistics network design: A conceptual framework for decision making	2008
P. Chandiran and K. S. P. Rao	Design of reverse and forward supply chain network: A case study	2008
E. L. Marsillac	Environmental impacts on reverse logistics and green supply chains: Similarities and integration	2008
R. Shankar, V. Ravi and M. K. Tiwari	Analysis of interaction among variables of reverse logistics: A system dynamics approach	2008
S. Kumar, E. Dieveney and A. Dieveney	Reverse logistic process control measures for the pharmaceutical industry supply chain	2009
H. Sonya Hsu, C. A. Alexander and Z. Zhu	Understanding the reverse logistics operations of a retailer: a pilot study	2009
P. Anderson	How to Succeed in Reverse Logistics	2009
S. E. Genchev	Reverse logistics program design: A company study	2009
J. R. Stock and J. P. Mulki	PRODUCT RETURNS PROCESSING: AN EXAMINATION OF PRACTICES OF MANUFACTURERS, WHOLESALERS	2009
A. Tonanont, S. Yimsiri and K. J. P. P. E. Rogers	Reverse Logistics Optimization with Data Envelopment Analysis	2009
P. O. D. Valle, J. Menezes, E. Reis and E. Rebelo	Reverse logistics for recycling: The customer service determinants	2009
Khan, A. & Subzwari, M	Reverse Logistics in Pakistan's Pharmaceutical Sector	2009
Gerard Sartori	Reverse Logistics Role in Securing the Pharmaceutical Supply Chain	2009
E. P. Jack, T. L. Powers and L. Skinner	Reverse logistics capabilities: antecedents and cost savings	2010
F. O. Olorunniwo and X. Li	Information sharing and collaboration practices in reverse logistics	2010
S. Dowlatshahi	A cost-benefit analysis for the design and implementation of reverse logistics systems: case studies app	2010

Table continuation in next page

M. Starostka-Patyk and J. K. Grabara	REVERSE LOGISTICS PROCESSES IN INDUSTRIAL WASTE MANAGEMENT AS AN ELEMENT OF SUSTAINABLE I	2010
R. Setaputra and S. K. Mukhopadhyay	A framework for research in reverse logistics	2010
Sarkis, J., Helms, M. M. & Hervani, A. A	Reverse logistics and social sustainability	2010
C. Gobbi	Designing the reverse supply chain: the impact of the product residual value	2011
C. L. Rossetti, R. Handfield and K. J. Dooley	Forces, trends, and decisions in pharmaceutical supply chain management	2011
T. J. Barker and Z. B. Zabinsky	A multicriteria decision making model for reverse logistics using analytical hierarchy process	2011
S. Lambert, D. Riopel and W. Abdul-Kader	A reverse logistics decisions conceptual framework	2011
B. Partida	Leaders Show Power of Reverse Logistics	2011
S. D. Rao and J. P. P. E. Rogers	Need for Modeling Risk Management of Pharmaceutical Industry Product Recalls	2011
L. L. Sowinski	PRODUCT RECALLS AND REVERSE LOGISTICS	2011
R. E. Wright, R. G. Richey, M. Tokman and J. C. Palmer	Recycling and Reverse Logistics	2011
K. Arun Vasantha Geethan, S. Jose and C. Sunil Chandar	Methodology for performance evaluation of reverse supply chain	2011
A. El Korchi and D. Millet	Designing a sustainable reverse logistics channel: The 18 generic structures framework	2011
Ngwuluka, Ndidi C.; Ochekpe, Nelson C.; Odumosu, Patricia O.	An assessment of pharmaceutical waste management in some Nigerian pharmaceutical industries	2011
T. Daim, A. Potdar and J. Rogers	Reason-code based model to forecast product returns	2012
K. Das	Integrating reverse logistics into the strategic planning of a supply chain	2012
S. Dowlatshahi	A framework for the role of warehousing in Reverse Logistics	2012
G. Dutton	Unlocking Reverse Pharma Logistics	2012
R. L. Gordon	Reverse Logistics Management: Beyond 3.4 Defects per Million	2012
C. K. M. Lee and J. S. L. Lam	Managing reverse logistics to enhance sustainability of industrial marketing	2012
X. Shi, L. X. Li, L. Yang, Z. Li and J. Y. Choi	Information flow in reverse logistics: an industrial information integration study	2012
L. L. Sowinski	Uncovering Opportunities with Reverse Logistics	2012
R. K. Tyagi, K. K. Dhanda and S. Young	An Operational Framework For Reverse Supply Chains	2012
A. Van Der Wiel, B. Bossink and E. Masurel	Reverse logistics for waste reduction in cradle-to-cradle-oriented firms: waste management strategies i	2012
M. Abdessalem, A. B. Hadj-Alouane and D. Riopel	Decision modelling of reverse logistics systems: Selection of recovery operations for end-of-life produc	2012
C. T. Hernández, R. C. Castro, F. A. S. Marins and J. A. R. Durán	Using the Analytic Network Process to evaluate the relation between Reverse Logistics and corporate pe	2012
A. Jayant, P. Gupta and S. K. Garg	Perspectives in reverse supply chain management(R-SCM): A state of the art literature review	2012
B. T. Hazen, D. J. Hall and J. B. Hanna	Reverse logistics disposition decision-making Developing a decision framework via content analysis	2012
M. Bernon, J. Upperton, M. Bastl and J. Cullen	An exploration of supply chain integration in the retail product returns process	2013
D. J. Hall, J. R. Huscroft, B. T. Hazen and J. B. Hanna	Reverse logistics goals, metrics, and challenges: perspectives from industry	2013
J. R. Huscroft, B. T. Hazen, D. J. Hall, J. B. Skipper and J. B. Hanna	Reverse logistics: past research, current management issues, and future directions	2013
M. Turrisi, M. Bruccoleri and S. Cannella	Impact of reverse logistics on supply chain performance	2013
F. J. García-Rodríguez, C. Castilla-Gutiérrez and C. Bustos-Flores	Implementation of reverse logistics as a sustainable tool for raw material purchasing in developing cour	2013
S. Hejrani and H. S. Ko	A Reverse Logistics Model for Medical Waste Management	2013
A. E. N. Oko and A. D. Nkamnebe	Reverse Logistics Management and Enviromental Sustainability Drive in Nigeria (Study of the Food and I	2013
D. S. Rogers, R. Lambke and J. Benardino	Taking control of reverse logistics	2013
D. S. Rogers, R. Lembke and J. Benardino	REVERSE LOGISTICS: A New Core Competency	2013
L. L. Sowinski	Reverse Logistics: Ready for Prime Time	2013
C. Bai and J. Sarkis	Flexibility in reverse logistics: A framework and evaluation approach	2013
M. B. De Aquino, T. De Jesus Balieiro, A. A. Gomes and M. A. De F	The reverse logistics as an environmental tool integrated to environmental management system for an	2013
I. E. Nikolaou, K. I. Evangelinos and S. Allan	A reverse logistics social responsibility evaluation framework based on the triple bottom line approach	2013
H. Krikke, D. Hofenk and Y. Wang	Revealing an invisible giant: A comprehensive survey into return practices within original (closed-loop)	2013
A. M. Ramirez and L. Girdauskiene	Creation of Knowledge and Reverse Logistics. Empirical Analysis from Perspective of the Resource Base	2013
M. I. Kabir	Reverse logistics in the pharmaceutical industry	2013
Shaurabh Singh, Saurabh Bharati and Moti Kumar	Strategic Framework for Reverse Logistics in Pharmaceutical Industry	2013
S. A. Narayana, A. A. Elias and R. K. Pati	Reverse logistics in the pharmaceuticals industry: a systemic analysis	2014
Y.-C. Huang and M.-L. Yang	Reverse logistics innovation, institutional pressures and performance	2014
N. A. H. N. Abdullah and S. Yaakub	REVERSE LOGISTICS: PRESSURE FOR ADOPTION AND THE IMPACT ON FIRM'S PERFORMANCE	2014
K. O. Kwateng, B. Debrah, D. V. Parker, R. N. Owusu and H. Prem	Reverse Logistics Practices in Pharmaceutical Manufacturing Industry: Experience from Ghana	2014
A. M. Ramírez and V. J. G. Morales	Improving organisational performance through reverse logistics	2014
T. R. P. Ramos, M. I. Gomes and A. P. Barbosa-Póvoa	Planning a sustainable reverse logistics system: Balancing costs with environmental and social concerns	2014
A. O. Somuyiwa and I. T. Adebayo	Empirical Study of the Effect of Reverse Logistics Objectives on Economic Performance of Food and Beve	2014
M. Eskandarpour, E. Masehian, R. Soltani and A. Khosrojerdi	A reverse logistics network for recovery systems and a robust metaheuristic solution approach	2014
K. Govindan, H. Soleimani and D. Kannan	Reverse logistics and closed-loop supply chain: A comprehensive review to explore the future	2014
Ying Xie and Liz Breen	Bridging the gaps in the pharmaceutical reverse logistics in community pharmacy (NHS UK): A benchmar	2014

2.9.3. Descriptive Statistics of Selected Articles – Stage Three

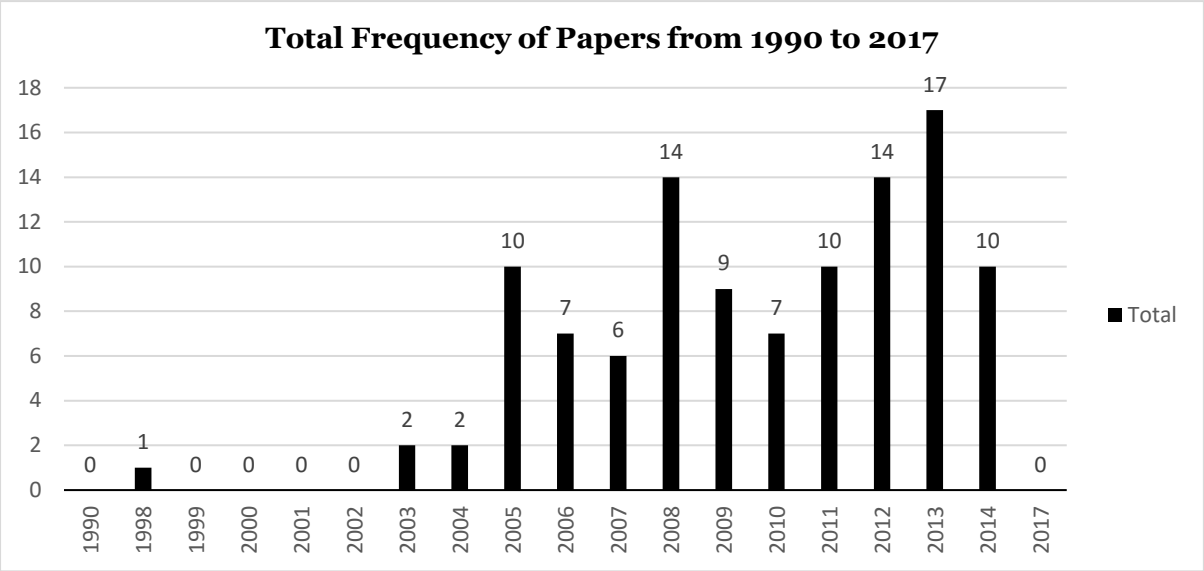
In this section, a descriptive analysis of the 109 articles are presented and discussed under seven different categories, namely, year of publication, country of publication, industry of publication, journal type, publication type, theoretical approach, and methodology employed. The outcome of each descriptive analysis are used to confirm the research gap and to justify the significance of this study. This stage of the SLR is synonymous to the Outcome element of the CIMO framework.

2.9.4. Analysis by Yearly Publications

Graph 2.2 below shows the yearly publication of the 109 articles selected based on the review protocol. The analysis by year of publication revealed that the largest number of publications was recorded in 2013 (17%), followed by 2012 (14%), 2008 (14%), 2011 (10%), 2014 (10%), 2005 (10%) and 2009 (9%) of the total publications respectively. Fewer publications were recorded between 1998 and 2004 with no publication recorded between 1990 and 1998 as well as between 1999 and 2002. The reasons for the smaller number of publications in the a990s can be attributed to the relative newness of RL in the academic communities.

It is clear that the interest of the academic community in this research topic has grown significantly in recent years, which has consequently contributed to its development, both quantitatively and qualitatively (Rubio et al., 2008). Despite this notable increase in number of RL research since the turn of the century, the number of industry-specific studies on PRL is still relatively few, and arguably non-existence in the Nigerian pharmaceutical context. Based on this lack of empirical studies, the need for this exploratory study is justified.

Graph 2.2: Total Number of Publications between 1990 and 2017



2.9.5. Analysis by Countries

Table 2.5 highlights the number of publications from 32 different countries across the globe between 1990 and 2017 on RL. This is based on the review protocol designed for the data interrogation process adopted for this study's literature review. The total number of 123 appears different from the 109 articles used for the analysis because the country of the co-authors, if different from that of the first author, were included and excluded if the same. This was considered necessary to ensure equal representation and avoid duplication of countries in each publication. Although publication by multiple authors from the same country will appear as single authored, the main aim of this analysis was to ensure equal representation of countries by identifying the number of contributions per country.

Based on analysis, the largest number of publications came from the USA (55 publications) accounting for 45 percent of the total publications. This indicates that the majority of research on PRL is from the USA (45%), followed by India (9.8%), UK (4.1%), Spain (4.1%), Portugal (3.3%), Canada (2.4%) and the Netherlands (2.4%). North America accounted for 46%, Europe accounted for 25% while Asia accounted for 17% of the total publication for this systematic

review. This signifies that these three regions have the lead on PRL research area. As a result, these research works carry attributes specific to developed nations, and bias can be considered as a limitation. A way to reduce geographic bias is to establish bridges with researchers in other continents (De Brito, 2003).

It is important to note that European countries led by Germany and the Netherlands have a strong environmental tradition both in terms and with respect to the concerns of their societies while the USA is characterised mainly by its liberal returns policy. These features provide the incentives for RL research in these countries, hence, contributing to its development (Rubio et al., 2008). The middle East and Africa show the fewest number of publication, with Nigeria, Tunisia and Ghana accounting for only 4 publications. This presents opportunity for further research.

Table 2.5 indicates 4 publications from Nigeria, but these articles did not address RL practices in pharmaceuticals. They deal with waste management practices in the Nigerian pharmaceuticals, RL management and environmental sustainability drive in Nigerian food and drink industries, the impact of global pharmaceutical mergers and acquisitions on the NPI, and the effect of RL objectives on economic performance of food and beverages companies in Nigeria. The low number of publications in this region indicates knowledge a gap on how PRL is being practised in this part of the world, especially in Nigeria, despite being Africa's most populous nation with the largest economy.

RL is practised in a more organised way in the developed world than in the developing countries as the latter provides less value addition for reversed products (Kinobe et al., 2012). Hence, the lack of academic literature can arguably be attributed to the relatively low level of the socio-economic development, lack of incentives or policies that facilitate RL practices, and low level of interest in RL research and programmes in Nigeria. According to Kinobe et al., (2012), most low and middle income countries would rather invest in solving other pressing issues such as hunger, health problems, water shortage, electricity shortage and unemployment. Nigeria being Africa most populous nation with the largest economy, it will

be valuable to the body of knowledge and to the business community to engage in empirical research that will provide insight on RL practices from a different context, hence, justifying the need for this study.

According to Mustafa and Irani (2014) academics from countries such as the USA, Europe and Asia (India, Taiwan, China and other Asian countries) should contemplate collaboration with researchers from developing countries in undertaking more productive research critical to the global emergence of RL. It will be beneficial to the body of knowledge to expand research to the supply chain of other countries especially the emerging and transition economies which will play a leading role in the global supply chain in the near future (Rubio et al., 2008)

Table 2.5: Frequency of Publications in each Country between 1990 and 2017

Country	Frequency of Publications	Percentage	Country	Frequency of Publications	Percentage
USA	55	44.7%	Malaysia	1	0.8%
India	12	9.8%	Saudi Arabia	1	0.8%
UK	5	4.1%	Norway	1	0.8%
Spain	5	4.1%	Sweden	1	0.8%
Portugal	4	3.3%	Venezuela	1	0.8%
Canada	3	2.4%	Lithuania	1	0.8%
The Netherlands	3	2.4%	Ghana	1	0.8%
Brazil	2	1.6%	Hong Kong	1	0.8%
Australia	2	1.6%	Singapore	1	0.8%
Denmark	2	1.6%	Croatia	1	0.8%
Taiwan	2	1.6%	Tunisia	1	0.8%
Italy	2	1.6%	France	1	0.8%
Greece	2	1.6%	Finland	1	0.8%
Germany	2	1.6%	Iran	1	0.8%
Nigeria	4	3.3%	South Korea	1	0.8%
China	2	1.6%	Pakistan	1	0.8%
Total			123		100%

2.9.6. Analysis by Industry

Table 2.6 highlights at least 24 different types of industry used by different researchers to conduct RL research between 2005 and 2014. The analysis by industry indicates that RL topics have been studied in at least 24 different industries. This in turn indicate the strategic importance and the applicability of RL programmes/systems across several industries. This notion is supported by Huscroft, et al. (2013) as they pointed out that the diversity RL research across a number of academic fields and RL processes encompasses facets of production,

planning, scheduling, transportation networks, information collection and sharing, recycling, hazardous materials disposal and handling, and other topic. Table 2.6 shows a frequency of 124. This is due to the fact that some of the publications are multi-industry empirical studies, and this shows that there is interest in multi-industry studies in a single RL study as well as comparative studies across industries.

Table 2.6 shows that the majority of the research is generally on SCM (28%) but the research findings are not industry specific. This provides an indication that the research findings are applicable to any industry. RL research in the pharmaceutical industry accounts for 14% of the total publications, followed by the electronic industry (12%), automotive industry (7%), Manufacturing industry (6%), Medical industry (5%), Retail industry (5%), Food and Beverage industry (4%), Electrical industry (3%) and Recycling industry (3%). The remaining industries accounted for the remaining 14%. The industry type named "Not Specified" however accounts for 2% of all publications and it referred to research conducted in the context of all industries. These findings again indicate the strategic importance and applicability of RL in various industries.

However, despite the usage of "Reverse Logistics" combined with "Pharmaceuticals" as a search string, only 14% of the RL articles, generated from the 4 databases combined addresses issues in pharmaceutical industry. This low percentage indicates that few RL research has been done in the pharmaceutical industry. Considering the enormity health risk associated with the consumption of damaged, defective, expired or counterfeit drugs, there is a great need for more RL research in the pharmaceuticals context. This need further revealed the gap in literature and justified the need for this study.

Table 2.6: Frequency of Publications per Industry between 1990 and 2017

Industry	Frequenc	Percentag	Industry	Frequenc	Percentag
Not Specified (SCM)	34	28%	Not Specified	2	2%
Pharmaceutical	17	14%	Auto Parts	1	1%
Electronic	15	12%	Mobile Phone	1	1%
Automotive	9	7%	Defence	0	0%
Manufacturing	6	5%	Handmade Sector	1	1%
Medical	7	6%	Wholesale Distributor	1	1%
Retail	6	5%	Consumer Appliances	1	1%
Food and Beverage	5	4%	Carpet Manufacturing	1	1%
Electrical	4	3%	Metal	1	1%
Recycling	4	3%	Publishing	1	1%
Cosmetic Devices	2	2%	Apparel	1	1%
Battery	2	2%	Waste	1	1%
Total			123		100%

2.9.7. Analysis by Publication Type

In this section, the 109 articles are categorised according to the publication type as highlighted in Table 2.7 below. Table 2.7 demonstrates that majority of the publications are research papers (73%), followed by conference proceedings (6%), Conceptual papers (6%), Trade Journal (5%), literature review (4%), case study (2%), and books (3%). This information was obtained via a non-systematic process. The large number of research papers further signify the growing significance and interest in RL research in the academic community. However, this growth significance has not been completely geographically widespread, as evident in the very small number of RL literature produced both from the African continent and in an African context.

Table 2.7: Classification of Publication Types between 1990 and 2017

Publication Type	Frequency	Percentage
Research Paper	80	73%
Conference Proceedings	6	6%
Conceptual Paper	6	6%
Trade Journal	5	5%
Literature Review	4	4%
Case Study	2	2%
Book	3	3%
Business Magazine	1	1%
Manuscript	1	1%
Not Specified	1	1%
Total	109	100%

2.9.8. Analysis by Underpinning Theory

Good research is grounded in theory (Mentzer, 2008). One of the main purposes of conducting a literature review is to establish the type of theory(s) used in addressing RQs in a scholarly study (Mustafa & Irani, 2014). The findings in Table 2.8 indicate that the majority of the articles (63%) analysed did not discuss any underpinning theory. This can be attributed to the limited amount of theoretically grounded research in RL.

According to Carter and Ellram (1998), the majority of RL research has been exploratory and has often consist anecdotal evidence. Carter and Ellram (1998) confirmed the lack of a theoretically grounded and holistic view of RL in literature; only recently have empirical studies been performed. Rubio et al. (2008) suggested that research on RL should now be directed at analysing strategic aspects and developing organisational theories, allowing the development of an appropriate framework of reference within which the tactical and operational aspects can be developed efficiently. This study intends to contribute to this suggested development.

Based on the systematic review, sustainability theory accounts for 5% of the article analysed, followed by the resource-based view (4%), grounded theory (2%), institutional theory (2%), stakeholder theory (2%) and triple bottom line (2%) respectively. All these theories constitute 17% of the articles analysed. This indicates the steady increase in the usage of the in theories in RL research. Hence, this study also aims to apply appropriate theories to guide the exploration of processes of this research. The remaining identified theories, their frequencies and percentages are presented in Table 2.8.

Table 2.8**:** Frequency of Underpinning Theories in each Publication between 1990 and 2017

Underpinning Theory	Frequency	Percentage	Underpinning Theory	Frequency	Percentage
No Underpinning Theory	71	63%	Extreme point approach and Central tendency approach	1	1%
Sustainability Theory	6	5%	Fisher's model	1	1%
Resource based view	5	4%	Goal-setting theory	1	1%
Grounded Theory	2	2%	Green Innovation	1	1%
Institutional theory	2	2%	Interpretive Structural Modeling	1	1%
Stakeholder theory	2	2%	Means-end chain theory	1	1%
TBL	2	2%	Mixed-integer programming (MIP) model	1	1%
Closed-loop supply chains	1	1%	Multicriteria decision making model	1	1%
Collection strategy	1	1%	Resource-Advantage Theory	1	1%
Complex adaptive system	1	1%	Risk Management	1	1%
Conceptual Theory Buildin	1	1%	Supply Chain Integration	1	1%
Coordinated action	1	1%	System Dynamics (SD) based approach	1	1%
Cost analysis model	1	1%	Systemic approach	1	1%
Cost-benefit analysis	1	1%	...	...	...
Double loop Learning	1	1%	Transaction cost	1	1%
Total			112		100%

2.9.9. Analysis by Research Methodology

The research methodologies employed by the authors in the selected 109 articles are highlighted in Table 2.9. The findings suggest that a total of 27 different research methodologies were identified. 22% of the articles analysed did not discuss the research methodology employed. Nevertheless, the majority of studies employed case study and interview-based research methodology, as each method accounts for 33% of the total research method employed in the selected articles. This is followed by Survey (14%), literature review (9%), Analytical Method (8%), Questionnaire (7%), and Content Analysis (3%).

These figures suggest that the majority of the research methods employed in RL research are qualitative in nature such as case study, interview, literature review, and observation. These are clearly qualitative methods, and they account for 50% of the articles reviewed. Twenty-one per cent of the articles reviewed, however lack details of the research method employed; indicating that the number of studies that employed a qualitative method is potentially higher than 50%.

This finding reinforces the argument that the majority of RL research is exploratory in nature. The exploratory nature indicates the relative newness of the concept of RL. The frequency of survey (21%) combined with other identified analytical methods in this review is lower than initially anticipated due to the prior understanding that logistics research has traditionally been quantitative in nature. Hence, the high percentage of qualitative methods indicates the exploratory nature of RL research.

Following Mustafa and Irani's (2014) approach, the category analytical method employed in this review denotes five different methods i.e. statistics, computer programming, simulation, algorithm and mathematical modelling. The category literature review includes articles that uses financial statement review and documentary as methodology. This helps simplify and reduces the number of methodology categories presented in Table 2.9

Table 2.9.

It is also important to note that 30% of the selected articles employed mixed method approach. The mixed method is not a category employed in this systematic analysis because the author intends to identify all the individual methodologies employed in each articles. Hence the total frequency of research methodologies identified in all the 109 articles reviewed is 153 based on methodological categorisation depicted in Table 2.9

Table 2.9.

It is important to note that 30% of the total 109 articles employed a mixed-methods, this figure indicates that the usage of mixed-methods is becoming popular in logistics research. This

finding is consistent with Wang et al.'s (2017) analysis which suggested that enhanced diversity of research methodology and author base is imperative for the future development of RL research. As there have been increasing calls for rigour in logistics research, the use of different research methods can overcome he potential bias and sterility of a single method approach (Collis & Hussey, 2003).

Table 2.9**:** Classification of Research Methodology between 1990 and 2017

Methodology	Frequency	Percentage	Methodology	Frequency	Percentage
Not Specified	33	22%	Financial statements review	1	1%
Case Study	25	16%	Genetic algorithm	1	1%
Interview	26	17%	Intensive Assessment and Monitoring	1	1%
Survey	21	14%	Meta-Analytic Review	1	1%
Literature Review	12	8%	Modelling	1	1%
Questionnaire	10	7%	Process-Cost Approach	1	1%
Content Analysis	4	3%	Reason Code	1	1%
Observation	2	1%	Scenario-Based Returnable Estimation Procedure	1	1%
Analytical hierarchy process	1	1%	Stochastic Procedures	1	1%
Bi-level optimization model	1	1%	System thinking	1	1%
Bracketing	1	1%	Systems approach	1	1%
Delphi technique	1	1%	Two-Period Model	1	1%
DMAIC Approach	1	1%	Two-Step Modelling Approach	1	1%
Documentary	1	1%	Workshop	1	1%
Total	153				100%

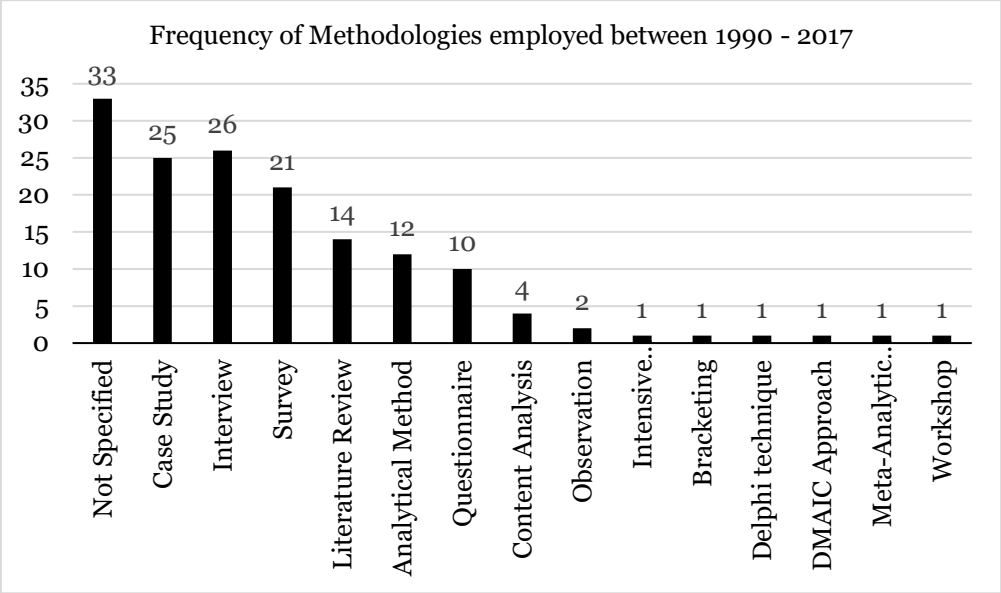
Although the dominance of quantitative method is not sufficiently reflected in the SLR conducted for this study, it is important to be aware that the quantitative research method is the dominant method in logistics research. This is based on the widely accepted review conducted by Dunn et al. (1993), Näslund (2002) as well as Sachen and Datta (2005). Their findings confirmed the dominance of quantitative research methods in logistics.

Nevertheless, the relatively higher percentage of qualitative method derived from SLR for this study also confirms the increasing acceptance of qualitative research methods in logistics research as researchers are becoming more interested in the "how" and "why" RQs (Sachen & Datta 2005). The remaining identified methodologies with their frequencies and percentages are further presented in

Table 2.9Table 2.9 and Graph 2.3

Graph 2..

Graph 2.3: Classification of Research Methodology between 1990 and 2017



2.9.10. Analysis by Journal

The analysis by journal aimed to recover journals that are mostly involved in the conversation about RL, as well as the application of RL in the pharmaceutical industry. From the 109 articles selected, a list of 63 different types of journals was used by researchers and academics to publish their research. This indicates that conversation about RL practices and issues has been held in several journals. However, discussion on RL practices in the pharmaceutical industry has been discussed in fewer journals as only 12 out of the 109 articles were found to specifically discuss this phenomenon.

According to the findings illustrated in Table 2.10, most researchers used *Internal Journal Of Physical Distribution and Logistics Management* for their publication (13%); a 2 star journal according to the association of business school (ABS) ranking. This is followed by *International Journal of Logistics Systems and Management* (6%), *IIE Annual Conference Proceedings* (5%) and *International Journal of Production Research* (5%). The scope of these

leading journal is broad covering industries such as Electronics, Retail, Automobile, Electrical, Auto Parts, Defence, Pharmaceutical, Supply Chain, Battery, Glass Recycling, Medical, Apparel, Manufacturing industries etc.

Table 2.10**:** Journal types and their Frequency between 1990 and 2017

Journal	Frequency	Percentage	Journal	Frequency	Percentage
International Journal of Physical Distribution and Logistics Management	14	13%	International Journal of Management & Information Systems (Online)	1	1%
International Journal of Logistics Systems and Management	7	6%	International Journal of Productivity and Performance Management	1	1%
IIE Annual Conference. Proceedings	5	5%	International Journal of Supply Chain Management	1	1%
International Journal of Production Research	5	5%	International Journal of Sustainable Engineering	1	1%
Food Logistics	3	3%	International Journal of Technology Management	1	1%
Industrial Marketing Management	3	3%	International Review of Management and Business Research	1	1%
International Journal of Production Economics	3	3%	Investigacion Operacional	1	1%
Journal of Cleaner Production	3	3%	Inzinerine Ekonomika-Engineering Economics	1	1%
Supply Chain Management Review	3	3%	Jordan Journal of Mechanical and Industrial Engineering	1	1%
The International Journal of Logistics Management	3	3%	Journal of Business Logistics	1	1%
Computers and Operations Research	2	2%	Journal of Business Research	1	1%
Corporate Social Responsibility and Environmental Management	1	1%	Journal of Operations Management	1	1%
Omega	2	2%	Logistics Management (2002)	1	1%
Supply Chain Management: An International Journal	2	2%	Management Research News	1	1%
Annales Universitatis Apulensis : Series Oeconomica	1	1%	Management Research Review	1	1%
Asian Research Journal of Business Management	1	1%	Material Handling Management	1	1%
Book	2	2%	MIT Sloan Management Review	1	1%
Business Horizons	1	1%	Multinational Business Review	1	1%
Computers & chemical engineering	1	1%	Pharmaceutical Engineering	1	1%
Computers & Industrial Engineering	1	1%	Pharmaceutical Technology	1	1%
Conference paper	1	1%	Progress in Industrial Ecology	1	1%
Econometric Institute Research Papers	1	1%	Resources Conservation and Recycling	1	1%
European Journal of Operational Research	1	1%	Reverse Logitics Margazine	1	1%
foresight	1	1%	S.A.M. Advanced Management Journal	1	1%
Global Journal of Business Research	1	1%	South Asian Journal of Management Sciences	1	1%
Industrial Management and Data Systems	1	1%	Technological Forecasting and Social Change	1	1%
Information Technology and Management	1	1%	The Journal of Applied Business and Economics	1	1%
African Journal of Biotechnology	1	1%	Journal of Medical Marketing	1	1%
International Journal of Advanced Manufacturing Technology	1	1%	The Journal of the Operational Research Society	1	1%
International Journal of Business and Management	1	1%	Total Quality Management & Business Excellence	1	1%
International Journal of Business and Society	1	1%	Transportation Research. Part E, Logistics & Transportation Review	1	1%
International Journal of Business Science and Applied Management	1	1%	World Trade, WT 100	1	1%
International Journal of Engineering and Technology	1	1%	Zagreb International Review of Economics & Business	1	1%
Total			109		100%

2.10. Systematic Review Conclusion

The aim of this systematic review was to locate extant empirical literature on PRL practices in Nigeria, characterise by descriptive statistics the empirical studies, and justify the authenticity of the gap this study intends to fill. Hence, the three-stage approach delineated by Transfield et al. (2003) and the four-stage database interrogation process developed by Delbufalo (2012) were adopted for the operation. At the end of the data interrogation process, 109 articles were found relevant for this research based on the review protocol. Nineteen of the articles highlighted in grey in Table 2.4

Table 2.4 is considered most important to this study, although only 12 of the articles specifically addressed RL in the pharmaceutical industry. The remaining 93 empirical studies relate to RL management, which is the field in which PRL emerged.

Empirical evidence from the systematic review shows that interest in RL research has grown significantly in the academic community. This increased interest has contributed to the development of RL research both quantitatively and qualitatively (Rubio et al., 2008). However, the findings also showed that number RL research in pharmaceuticals is still relatively scant. Most importantly, the output of the systematic review confirmed the non-existence of RL research in the Nigerian pharmaceutical context and from the Nigerian PSC stakeholders' perspective.

Evidence from the SLR shows that the growth of RL research is not completely geographically widespread. This can be attributed to the relatively low level of socio-economic development, lack of incentives to that facilitate RL practices, and low level of awareness or interest in RL research in some developing countries such as Nigeria. In addition to the studies done in the USA and Europe, it will equally be beneficial to the body of knowledge to expand empirical research to the supply chain of other countries, especially developing countries.

The review also found that the majority of RL research did not discuss any underpinning theory. Evidence from the systematic review however, shows a gradual increase in the usage of theories in RL research in recent years. It is the aim of this exploratory study to contribute to this trend, and to fill the literature gap by developing a theoretically grounded knowledge of the RL practices from the Nigerian pharmaceutical perspective. To achieve this, it is important to understand the contributions and shortcomings of the 12 articles considered core empirical studies for this study.

2.11. Core Empirical Studies and Research Gap

Section 2.9 (Phase Two) of this thesis (P. 119) employed a systematic review of relevant literature using the three-phase approach delineated by Transfield et al., (2003). This section

discusses the contribution, and shortcomings of the twelve core articles (Table 2.11) identified in section 2.9.2 of this thesis (P. 122 - 128). Then, it summarises the resulting literature gaps. The implication discussing only these twelve articles is the focus it gives to the real issue this study intend to address (Primary research objective).

Table 2.11: Twelve Core RL Articles for this Study

Author	Year	Title	Country	Methodology
Teunter, R., Inderfurth, K., Minner, S. & Kleber, R.	2003	Reverse logistics in a pharmaceutical company: a case study	Germany	Case Study
S. Kumar, E. Dieveney and A. Dieveney	2009	Reverse Logistic process control measures for the pharmaceutical industry supply chain	USA	DMAIC Approach, Literature Review
Khan, A. & Subzwari, M	2009	Reverse Logistics in Pakistan's Pharmaceutical Sector	Pakistan	
Ngwuluka, Ndidi C.; Ochekpe, Nelson C.; Odumosu, Patricia O.	2011	An assessment of pharmaceutical waste management in some Nigerian pharmaceutical industries	Nigeria	Interview
A. E. N. Oko and A. D. Nkamnebe	2013	Reverse Logistics Management and Enviromental Sustainability Drive in Nigeria (Study of the Food and Drink Industries)	Nigeria	Interview, Questionnaire
S. Hejrani and H. S. Ko	2013	A Reverse Logistics Model for Medical Waste Management	USA	Genetic algorithm
M. I. Kabir	2013	Reverse logistics in the pharmaceutical industry	India	Literature Review
Shaurabh Singh, Saurabh Bharati and Moti Kumar	2013	Strategic Framework for Reverse Logistics in Pharmaceutical Industry	India	Not Specified
A. O. Somuyiwa and I. T. Adebayo	2014	Empirical Study of the Effect of Reverse Logistics Objectives on Economic Performance of Food and Beverages Companies in Nigeria	Nigeria	Survey, Questionnaire
S. A. Narayana, A. A. Elias and R. K. Pati	2014	Reverse logistics in the pharmaceuticals industry: a systemic analysis	India	System thinking, modelling methodology, Interview
K. O. Kwateng, B. Debrah, D. V. Parker, R. N. Owusu and H. Prempeh	2014	Reverse Logistics Practices in Pharmaceutical Manufacturing Industry: Experience from Ghana	Ghana	Interview, Questionnaire
Ying Xie and Liz Breen	2014	Bridging the gaps in the pharmaceutical reverse logistics in community pharmacy (NHS UK): A benchmark against battery reverse logistics systems	UK	Interview, Survey

Teunter et al. (2003) conducted an empirical study of RL in the pharmaceutical industry by conducting an in-depth case study research of RL in the pharmaceutical production of a German pharmaceutical company. The study identified and examined the different types of RL that take place during the production process. The research findings revealed that the two main recovery activities which are by-products recycling and solvent reuse driven by economic benefits. The scope of the research however excludes RL processes in other key aspects of the PSC such as the distributors, wholesalers and the retailers. Hence the research findings are

not only limited to the particular case-study company but also cannot be generalised to be an accurate reflection of RL practices in the Nigerian pharmaceutical companies.

Kumar et al (2009) conducted a research on the topic "RL process control measures for the Pharmaceutical industry supply chain" where they analyse the PSC using the DMAIC (Define, Measure, Analyse, Improve and Control) process for improvement of the RL in a recall to avert the possibility of harm to a consumer. The research pointed out that the majority of the RL for pharmaceuticals is handled through specialised third-party service providers and therefore the specific knowledge is well guarded, being a core competency. Although this research was conducted in the USA pharmaceutical context, the method of analysis can also be utilized as a diagnostic tool to understand the weaknesses in the existing supply chain and thus help in identifying the key areas for improvement within the organisation (Kumar et al., 2009).

In another study conducted in a developing country by Khan and Subzwari (2009) on the RL in Pakistan's pharmaceutical sector, a model that depicts RL is positively related to four factors (Regulatory & Customer service, Counterfeit Control, Distribution system, Modern IT) and its effective management, resulting in efficient supply chain performance was proposed. This model was tested and its validity confirmed with the exception of the anti-counterfeit relation to RL which was not conclusively accepted. Nevertheless, the research outcome was based on the social, economic and infrastructural experience of respondents in Pakistan's pharmaceutical industry supply chain. The model, however, may not necessarily reflect similar factors in other countries like Nigeria unless confirmed through an empirical study of the NPI which is currently non-existence.

One of the closest academic research derived from the SLR is the research conducted by Ngwuluka et al., (2011); the assessment of pharmaceutical waste management in some Nigerian pharmaceutical industries. The study revealed that the NPI generates both hazardous and non-hazardous wastes just like its counterparts in other countries of the world. The wastes are, however, not categorized, poorly managed, then majority of the health and safety

personnel having little or no modern knowledge of waste management. The industry lacks strict supervision by regulatory agencies.

The study further suggested that pharmaceutical wastes are improperly disposed and all secondary manufacturers discharged wastewater without removal of pharmaceuticals. The study clearly highlighted an urgent need for a well-functioning waste management system, training of health and safety personnel including regulatory authorities on waste management in the pharmaceutical industry. Waste management should be planned, documented, implemented, and sustained (Ngwuluka et al., 2011).

Although this study clearly indicated the poor state of waste management in the NPI, this evidence indirectly provides a picture of the state of RL practices in the NPI. Although waste management is related to RL, the two concepts are not the same. As the study revealed that pharmaceutical waste in Nigeria is poorly managed, there is a high probability that the RL flow of drugs including damaged and expired drugs is not well managed. To shed light on this aspect of the Nigerian pharma, it is the aim of this study to explore the NPI in order to generate an empirically informed and theoretically grounded knowledge of RL practices in the B2B private sector of the NPI.

Hejrani and Ko's (2013) research focused on a RL network model for efficient medical waste management. They proposed an innovative way to model the RL network for medical waste management by proposing a genetic algorithm to efficiently minimise the risk of cost for the medical waste management problem. They pointed out, however, the need to demonstrate the efficiency of the proposed method by comparing results from another method to optimize the model and adapting the model to different medical waste management scenarios. It can be noted that this is a USA based study.

The research by Kabir (2013) focused mainly on RL as it relates to the issues faced by pharmaceutical organisation. The outcome contributed to the market perspective by correcting the misconception of returns being a cost issue as market share can be maintain by retaining quality. The research utilised secondary research data obtained via literature review

throughout all sectors, websites, books and academic journal. The outcome provides a general perspective of drivers for RL in the pharmaceutical industry but failed to consider country-specific factors that differentiate or can potentially shape pharmaceutical industries of developing countries like Nigeria.

Singh et al. (2013) conducted an empirical study of research papers on the angle of RL process, characteristics of the medical waste recovery activities, features of RL, and IT implementation in the RL process. As a result, a strategic framework named the 5R Optimum Model (Reduce, Recycle, Reinforce, Report and Regulate) for PRL activity was proposed. The framework was designed to effectively manage total logistic system and properly regulate with centralize governing body. The research, however, focused mainly on the situation of pharmaceutical recovery in India. The applicability of the proposed framework in a country like Nigeria is yet to be confirmed.

Narayana et al. (2014) conducted a systematic analysis of the prevalent issues and complex interaction of factors affecting RL process in Indian PSC using the system thinking approach and modelling methodology. The study provided insights into the linkage between RL network design and critical return management process such as return avoidance, disposition, credit rules etc. (Narayana et al., 2014). The study was not only limited to the Indian pharmaceutical industry, but also limited by the paucity of empirical data at a national level in the industry, and lack participation from certain stakeholders. Thereby it lacked insight of return management between institutional buyers and pharmaceutical industry. Nevertheless, the research contributed to the increasing interest in the usage of qualitative research methods in business management, especially its capability to holistically study RL.

In 2014, Xie and Breen conducted a research on bridging the gaps in the PRL in community pharmacy (NHS UK) by benchmark against battery RL systems. The research revealed that the awareness and return rate for battery waste is higher than those of waste medicines. Furthermore, the engagement from actors in battery RL is much greater and more active than those in the waste medicine RL. The research attributed this to the level of support and

enforcement from top management and proposed a profile of recommended action. As the research is focused on the PSC of UK community pharmacy, the feasibility of implementing the recommended actions both in the UK and in other countries like Nigeria is yet to be confirmed.

Nevertheless, Oko and Nkamnebe (2013), conducted research on RL management and environmental sustainability drive in Nigeria. The study generated data on the operation of companies in the Nigerian food beverage industries and the marketing intermediaries and customers of the companies. The research findings revealed that companies operating in the food and beverage industries in Nigeria are technologically biased in area of product quality for enhanced corporate efficiency and shareholders' welfare at the expense of RL programmes and to the detriment of the health standard of the general public.

The research thus recommends improved policies of social responsibility for the firms as well as enhanced regulatory and supervisory functions of the RL management programme of the firms by government regulatory bodies. The authors further emphasized that if the results of the study were adopted, it would improve the health and environment standard of Nigeria and generate good public image for companies operating in the country. This thesis shares a similar aim with Oko and Nkamnebe's (2013) work but differs in terms of the industry in which the research was carried out. The nature of the pharmaceutical industry is somewhat similar in terms of regulatory requirement but also differs in many ways from the food and beverage industry. Hence, it will be valuable to the body of knowledge to develop knowledge of RL practices in other industries.

Due to the limited scholarly works on RL in a developing nation like Nigeria, Somuyiwa and Adebayo, (2014) attempted to fill the gap in knowledge by evaluating the effect of RL objectives on economic performance of selected group of food and beverage companies in Lagos, Nigeria. The research findings revealed that the surveyed companies had been most effective in using RL to improve customer satisfaction, achieving compliance with environmental regulations as well as in extracting and recovering raw materials for use in the production of new products

but moderately effective in achieving RL objectives related to cost containment and improved profitability. According to Somuyiwa and Adebayo, (2014), these findings are consistent with the work of Daugherty et al. (2005).

Somuyiwa and Adebayo, (2014) however, recommended that for RL systems to be successful in the Nigerian food and beverage industry, top management must guide and support the implementation and also recognize the fact that, RL cannot be managed in isolation. This will facilitate the recognition of the strategic importance of the RL process. They further emphasised the crucial need to integrate all the functional areas that affect, or can be affected by the returned products. Despite the difference in nature of the pharmaceutical industry to that of the food and beverage industry, there is evidence that these research findings are applicable to the NPI. Thus, it will be valuable to the body of knowledge to examine the applicability of these findings in the NPI, and to develop knowledge of RL practices in diverse industries such as the NPI.

The closest academic research from the SLR is arguably the study conducted by Kwateng et al., (2014), who examined the RL practices in the pharmaceutical manufacturing industry in Ghana. Although research revealed a gap in the flow RL activities in Ghana; from drug returns to their disposal, the focus of the research is limited to the view of professionals (manager, assistant manager, supervisor and staffs) operating in pharmaceutical manufacturing companies in Ghana. Hence, the research lacks the perspectives of other stakeholders of the PSC industry, such as the customers, importers, distributors, wholesalers, retailers, pharmacies and hospitals. Furthermore, the research was focused on the Ghanaian pharmaceutical industry which might not be an accurate reflection of the phenomenon in the NPI due to the differences in market size, growth rate, infrastructure, regulatory bodies, and governmental policies etc.

Besides the fact that most RL research efforts focus on the automobile, electronic goods, paper recycling etc., research work has discriminately focused on countries like Netherlands, Germany and the USA (Rubio et al., 2008). The US pharmaceutical industry has been

occupying the leadership position in pharmaceutical development. However, the industry can no longer be content to focus only the US, Japanese, and European markets (Joshi, 2003) as there is ample scope to analyse the extent, criticality and implications of the RL practices in other industries and other geographical regions (especially emerging economies) to generate broader insights for practice and research (Narayana et al., 2014). Sarkis et al. (2010) further support this view as they pointed out that cultural, legal, social, political and a host of other macro-environmental variables will differ by location. Hence some of the research findings pertinent to a certain region may not be fully applicable in another region and locales (Sarkis et al., 2010).

Based on the result of the systematic review of 428 published articles, no RL research was found to specifically address RL practices in the NPI. Although 109 articles of these article were considered relevant as background knowledge to the thesis, including the twelve core articles discussed above, none of the articles provide specific insight from the Nigerian pharmaceutical perspective. Beside this, most articles on RL are practitioner-oriented and are in practitioner-related journals, rather than academic journals (Dowlatshahi, 2000).

The absence of insight from the Nigerian or African pharmaceutical perspective constitute a gap in literature which this study intends to fill. Hence, this study is of great importance as the outcome will fill important research gap, provide an empirically informed and theoretically informed insight of the phenomenon, and develop recommendations that will facilitate best practices.

2.12. Research Gap Problematization and the RQs

Considering the dominance of western perspectives and research on PRL, the purpose of this study is not based on merely filling gaps in literature but rather from a problematization

standpoint, to develop empirically informed and theoretically grounded knowledge of PRL from a different geographical context and perspective. Problematization is primarily an "endeavour to know how and to what extent it might be possible to think differently, instead of what is already known" (Foucault, 1985: 9). The concept of problematization does not primarily question how well some constructs or relationships between constructs represent a particular subject matter. Instead, it questions the necessary presuppositions researchers make about a subject matter in order to develop the specific theory about it (Foucault, 1985: 9).

A key task in generating RQs through problematization is to enter a dialectical interrogation between one's own and other meta-theoretical stances so as to identify, articulate, and challenge central assumptions underlying existing literature in a way that opens up new areas of inquiry (Alvesson & Sandberg, 2011).

1. Identifying a domain of literature
2. Identifying and articulating assumptions underlying this domain.
3. Evaluating them
4. Developing an alternative assumption ground
5. Considering it in relation to its audience
6. Evaluating the alternative assumption ground.

Alvesson and Sandberg (2011) further pointed out that the principles were presented in a sequential order mainly for the clarity sake. The actual problematization process is considerably more iterative than linear in character and the principles should not be treated as a list of fixed ingredients in a recipe but, rather, as important elements to consider in the problematization process. Beside the identification of research gap via the SLR, the systematic review also facilitates the problematization process of the research gap via the descriptive analysis presented in section 2.9.3 of this thesis (p. 129 – 140)

Based on the SLR findings, the review of core research articles, themes and theories underpinning this study, it is evident that empirical research on PRL is scant and has never

been done before in the Nigerian pharmaceutical context. This deficiency primarily justifies the need for this study in terms of facilitating literature availability but in terms of problem solving, effective implementation of RL programmes/systems is critical if a sustainable PSC is to be achieved in Nigeria. The need for RL program was indirectly echoed by Ngwuluka et al., (2011), emphasizing the need to sustain the environment by standard and environmental friendly methods of managing waste in Nigeria.

It is evident that RL plays a pivotal role in SCM. RL is however being studied in isolated fashion, in terms of the issues investigated, research methodologies applied, and the context addressed (Narayana et al., 2014). Most RL research efforts focus on the automobile, electronic goods, paper recycling, sand recycling and even carpet recycling industries (Narayana et al., 2014). RL researches discriminately focuses on countries like Netherlands, Germany and the USA (Rubio et al., 2008). Surprisingly, the volume of empirical studies on PRL research is still very low, considering the social and economic importance of the pharmaceutical industry both on a regional and global level. There is therefore ample scope to analyse the extent, criticality and implications of the RL practices in other industries such as the pharmaceutical industry and geographical regions such as the developing countries to generate broader insights for practice and research (Narayana et al., 2014).

Despite the social, economic and environmental benefits of implementing of RL systems as evident in the developed countries; the impending concerns about the environmental impact of pharmaceutical waste, the chaotic state of drug distribution in Nigeria, existence of expired and counterfeit drugs in circulation in Nigeria, academic research on RL practices in the NPI is arguably non-existent. The absence of empirically and theoretically grounded insight into RL practices of NPI is the problem this study intends to address by investigating the phenomenon in the private sector of the NPI through the following five RQs proposed for this thesis:

RQ 1: What are the characteristics of PRL practices in the B2B segment of the NPI?

RQ 2: What are the similarities and difference in the PRL practices of PSC stakeholders?

RQ 3: How do these similarities and difference influence PRL operations?

RQ 4: What are the facilitators, drivers, and inhibiting factors of PRL practices in Nigeria?

RQ5: Are there improvement opportunities envisaged? If yes, what are they?

Based on the answers to these five RQs, guided by the study's conceptual model, empirically informed and theoretically grounded knowledge of PRL practices for pharmaceutical products (drugs) in the Nigerian private sector will be developed including recommendations that can facilitate best practice. To conduct this research, prior understanding of the underpinning themes discussed in the next section is imperative.

2.13. Chapter Summary

The chapter has discussed the themes that underpin this study, to establish a background understanding of logistics, supply chain, fundamentals of RL, RL in Nigeria, pharmaceutical industry, and RL practices in the pharmaceutical industry. This chapter then discussed the SLR conducted for this study to understand, and characterise extant articles that address RL practices in the pharmaceutical industry and specifically in Nigeria.

As a result, this chapter has established a background understanding of the themes that underpin this study's research area, identified the contribution and the shortcomings of the extant empirical studies, identified the gap in literature, problematized the gap, and shaped the research context.

Before proceeding to the research methodology chapter of this thesis, it is imperative to first develop research framework, theoretical and conceptual framework that will guide this research. Hence, the next chapter presents the stage three of this research, which describes the logistics research framework and conceptual model employed.

RESEARCH STAGE THREE

CHAPTER THREE – RESEARCH FRAMEWORK AND CONCEPTTUAL MODEL

3.1. Introduction

Chapters One and Two discussed the background literature that shaped the research objectives for this thesis. Hence, this chapter presents the logistics research framework employed to carry out this exploratory study and the conceptual model that will guide the development of an empirically informed and theoretically grounded knowledge of PRL practices in the Nigerian private sector.

3.2. Development of Research Framework and Conceptual Model

The role of research in any field is to gain knowledge, understanding, and the creation of explanatory theory (Stuart et al., 2002). Research is an intricate and rigorous process that needs to be conducted in a controlled and structured manner. The majority of logistics literature and research, however, has been largely managerial in nature and lacks a rigorous orientation towards theory development, testing and application (Mentzer & Kahn, 1995). In as much as theory development is important in logistics research, real life practical application is equally important, though difficult to achieve.

In the light of this challenge in logistics empirical research, progress may be possible through the employment of a wide range of methodologies that expands to match the greater scope of the holistic interpretation of logistics (New & Payne, 1995). Mentzer and Kahn (1995) proposed a comprehensive framework located in positivist paradigm for logistics research to guide logistics researchers in adopting a rigorous and scientific approach to research in order to facilitate theory development. The structural framework employed for this study stemmed from Mentzer and Kahn's (1995) logistics research framework (Figure 3.1Figure 3.1).

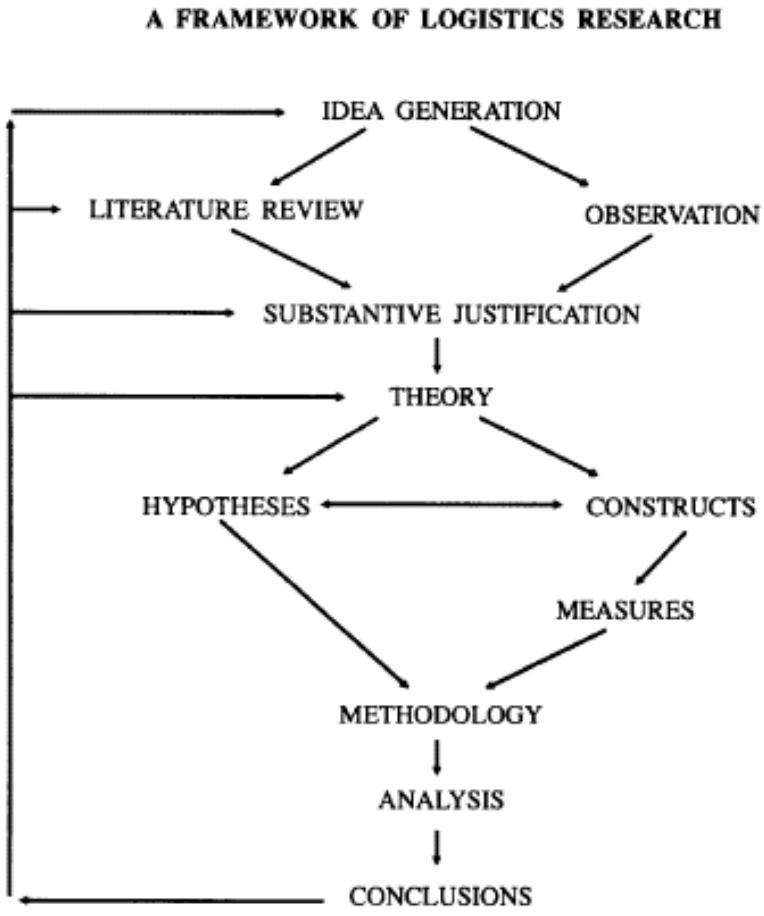


Figure 3.1**:** A Framework of Logistics Research (Mentzer & Kahn, 1995, 234)

Mentzer and Kahn's (1995) framework was built on the on strength of previous models that lack full explanation of various components of a research process, and their interrelation. Although the logistics research framework was developed 22 years ago, the framework is still relevant today as it provides a comprehensive perspective on the logistics research process. As depicted in Figure 3.2, the logistics research framework is an involved, continuous process that integrates three distinct research stages: Idea Generation to Substantive Justification, Theory Construction to Methodology and Methodology to Conclusions and Future Research.

It is, however, appropriate to note that other authors have proposed similar frameworks (Churchill 1979; Robson 2002) but Mentzer and Kahn's (1995) framework was adopted for this study due to its logistics background despite it being developed 22 years ago. The next

section discusses each stage of this framework independently to understand what each stage involves, how essential each stages, and how important the comprehensive attribute of this framework is to this exploratory study.

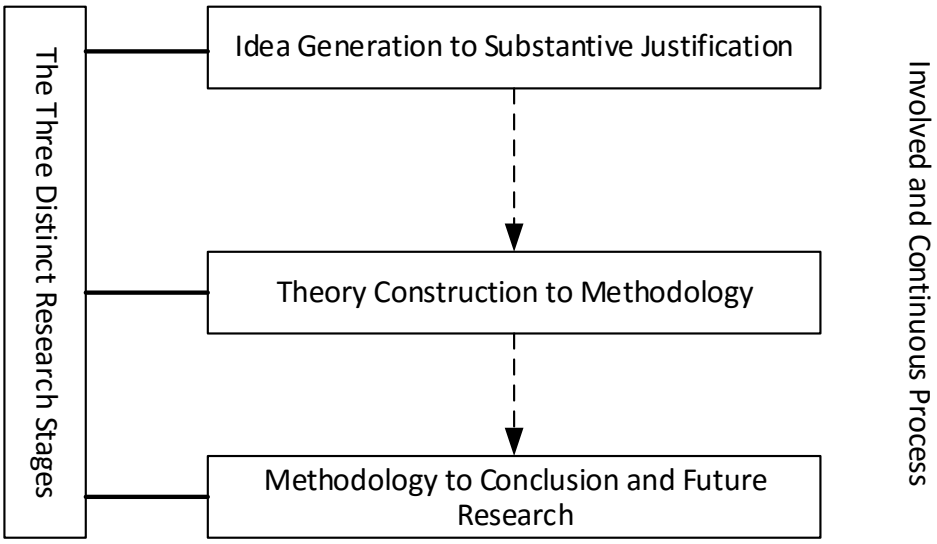


Figure 3.2**:** Logistics Research Framework: Integration of three distinct dimensions (Source: Mentzer & Kahn, 1995)

3.2.1. Research Stage One: Idea Generation and Substantive Justification

The research process begins with idea generation achievable via literature review, observations or both (Mentzer & Kahn, 1995). The literature review provides an historical perspective of a research area, and an in-depth account of independent research endeavour (Mentzer & Kahn, 1995) while observation helps establish general principles (Smith, 1981).

This research stage is essential for this study as the idea generation for this study began when the researcher worked as a RL Solution Engineer at a Netherlands-based company specialised in offering international RL solutions to organisations operating in Hi-tech & Electronics, Printing & Imaging, E-commerce & Retail and Fashion & Apparel industry. As a result, the researcher developed interest in RL. This interest was then contextualised for the pharmaceutical industry when the researcher worked as a global demand planner at a UK-

based PC. Coupling these with the researcher's academic background is in logistics, and SCM, the researcher developed a genuine passion for supply chain and logistics as well as their practices in the pharmaceutical industry.

With 60% of pharmaceutical production in ECOWAS countries domiciled in Nigeria (Aiswariya, 2014), estimates of over 10,000 unregistered patent and proprietary medicine stores in operation in Nigeria (Wambebe & Ochekpe, 2011), compounded by the menace of pharmaceutical waste, as well as fake and expired drugs in circulation, is alarming in the West African sub-region. This make RL an important operation required in the PSC industry and an interesting subject area to research. The recognition of the significance of RL in the pharmaceutical industry provides the researcher a justification of the research idea.

Furthermore, the absence of sufficient literature that addresses RL practices in the NPI makes it necessary to call for more empirical research in this subject area. Hence, signifying how essential this research stage is in providing substantial justification for this research idea which is to explore and develop knowledge surrounding the trends, the barriers and the actual practices of PRL in Nigeria.

3.2.2. Research Stage Two: Literature Review and Substantive Justification

The next essential stage after the generation and justification of a research idea for this study is literature review and substantive justification. The literature review and observation are the two forms of logical induction that promote substantial justification for the research and drive the formulation of RQs and conceptual framework (Mentzer & Kahn, 1995). Substantive justification derived from literature review serves as a mechanism to justify the value and significance of the research to the existing body of knowledge. In this study, a systematic review of extant literature between the years 1990 and 2017 was conducted to examine, characterise, and identify literature gaps.

The result of the SLR and the review of the twelve core articles revealed that very little empirical study has been conducted on the practice of RL in the pharmaceutical industry and none has been in the NPI. Only 9 published articles were found to address RL practices in the pharmaceutical industry and none addressed practices in the NPI.

This further confirms the deficiency in the extant academic literature as it excludes perspectives and experiences from other geographical regions and countries such as Nigeria. Besides this, most RL research mainly focused on automobile, electronics goods, paper recycling industry etc. as journal articles are predominantly Europe and USA based (Rubio et al., 2008). This knowledge gap provide substantial justification for this study, the importance of this research stage two in providing substantial justification, and the relevance of the Mentzer & Kahn, (1995)'s logistics research framework.

3.2.3. Research Stage Three: Theory Development (Conceptual Model)

The next essential stage after a substantive justification for the research, is the development of theory about the phenomena to be studied (Mentzer & Kahn, 1995). Hunt (1991) defined a theory as a systematically related set of statements including some empirically testable law-like generalisations developed to explain, predict, understand and control the research phenomenon in question. Hence, the veracity of a theory is judged by how well pre-existing theories are subsume, account for current irregularities, facilitate future discoveries and fit with preconceived beliefs of the research community impacted by the theory (Mentzer & Kahn, 1995).

In theory building research, a prior view of general constructs and themes in the area of research including their relationships is required (Voss et al., 2002). This shows how essential this research stage three and the relevance of Mentzer and Kahn, (1995)'s logistics research framework (Figure 3.1) in this study. According to Miles and Huberman (1994) prior view of

general constructs and themes can be achieved through the construction of a conceptual framework that underlies the research. The conceptual framework explains graphically and narratively the main things that are to be studied. This consist of the key factors, constructs or variables and the presumed relationship amongst them (Voss et al, 2002) presented below in Table 3.1.

The systematic review of PRL literature confirmed the relative newness of RL in logistics and SCM. Most RL articles are practitioner-based journals rather than academic journals (Dowlatshahi, 2000). Prior to 2003, there are no established references on RL theory (De Brito & Dekker, 2003). Hence, they developed a five perspectives content framework on RL which was later extended to a six perspective content framework by Xie and Breen (2014). This six perspective content framework served as the theoretical framework that guided the development of conceptual model, RQs, and data exploration of this study.

According to Mentzer and Kahn (1995), theories are directly linked to constructs. A construct is a scientific term used to organise knowledge and direct research in an attempt to characterise some aspect of nature (Peter, 1981). The constructs for this thesis are defined within the RL framework and theory which makes the . Theory provides both systemic and observational meaning; systemic by virtue of the constructs being defined within the framework and theory of RL, and observational by virtue of the constructs' explanatory power achieved via observable measures such as the RQs. This therefore operationalises the construct.

The exploration of PRL practice in the NPI, and the application of the RL framework in the NPI forms one of the core contributions of this thesis. Hence, it is important to identify relevant constructs from extant literature in order to fully operationalise this framework, and develop an empirically informed, and theoretically grounded insight of RL practices in the NPI.

Table 3.1**:** Key RL Constructs Identified from Literature

Reverse Logistics Constructs	
The why perspective	Environmental Concerns
The how perspective	Cost-Benefit Analysis
The what perspective	Transportation
The who perspective	Warehousing
The where perspective	Supply Management
Economic Reason	Manufacturing
Legislative Reason	Remanufacturing
Corporate Citizenship	Packaging
Corporate Social Responsibility	Reuse
Strategic Cost	Recycling
Resource Reduction	Stakeholder Commitment
Disposal with energy recovery	Top management support
Disposal in landfill	Incentive Systems
Overall Quality	Policy Entrepreneur
Customer Service	Vertical Coordination

Table 3.1 shows the constructs derived from existing literatures underpinned mainly by the RL framework and theories used to facilitate the development of theoretically grounded knowledge of RL practices in the private sector of the NPI. It is important to note that additional construct unknown at this stage were obtained from the empirical research data of this study. Details of the additional construct are presented in chapter five, section 5.3 (p.231 – 236) of this thesis. The six perspective framework gives structure to the fundamental content of RL system and their combination embodies the majority of issues that arise in implementing, monitoring and managing RL system (De Brito & Dekker, 2003).

1. The return reasons (why-returning).
2. Driving forces (why-receiving).
3. The type of products and their characteristics (what)
4. The recovery processes and recovery options (how)
5. The actors involved and their roles (who)
6. The location of the actors and facilities (where)

These six essential perspectives were considered in developing a theoretically grounded knowledge of RL practices in the private sector of the NPI. No author has done this before; this therefore is a unique contribution of this thesis to the body of knowledge. Figure 3.3 illustrates the basic principles by which RL practices in the B2B private sector of the NPI can be explored, understood and conceptualised. The definition and explanation of these six essential perspectives are presented in chapter two, section 2.4.4 (p. 65 – 81) of this thesis.

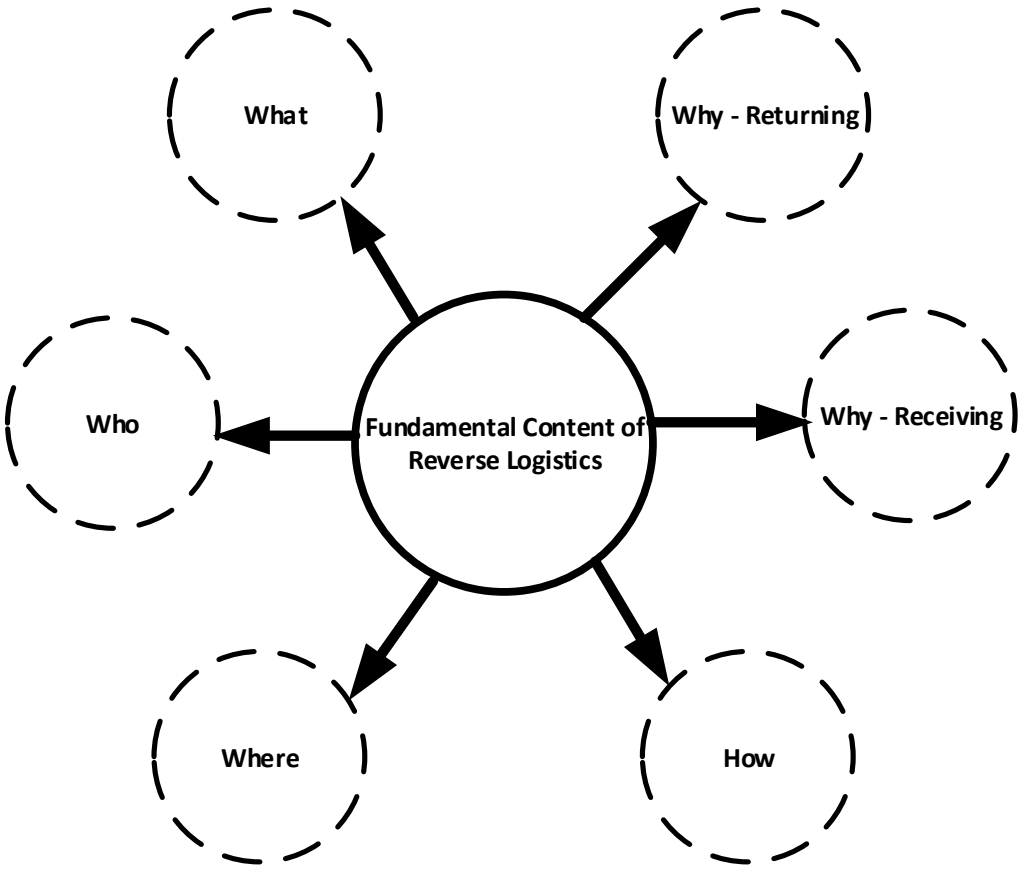


Figure 3.3**:** Fundamental Content of RL- Basic Conceptual Cycle

To further achieve a deeper understanding of RL in the NPI, a further conceptual model is presented in Figure 3.4; adapted from Dowlatshahi's (2000) version of RL theory and De Brito and Dekker (2003)'s six perspective RL framework. Dowlatshahi (2000) proposed a holistic view of RL by attributing from extant literature eleven insights or factors for the successful implementation of RL. This version of RL theory states that strategic factors in RL consist of

overall quality, customer service, environmental concerns, and legislative concerns, while the operational factors of RL consist of cost-benefit analysis, transportation, warehousing, supply management, remanufacturing, recycling and packaging.

The RL theory is important in the context of this thesis because insight on both the strategic and operational factors of RL must be gained in order to guide the development of a theoretically informed insight of RL practices in any given context, e.g. RL in the Nigerian B2B private sector pharmaceutical context. This version of the RL theory developed by Dowlatshahi (2000) is indirectly linked to the six essential perspective of RL developed by De Brito and Dekker. The why perspective of RL embodies the strategic factors while the what, how, who, and where perspectives of RL embodied the operational factors.

This wider framework, depicted in Figure 3.4 is employed in this study to facilitate a holistic exploration of PRL practices in the NPI. The framework takes into consideration both the strategic and operational factors of RL. The grey shading indicates the areas which are addressed as part of this thesis.

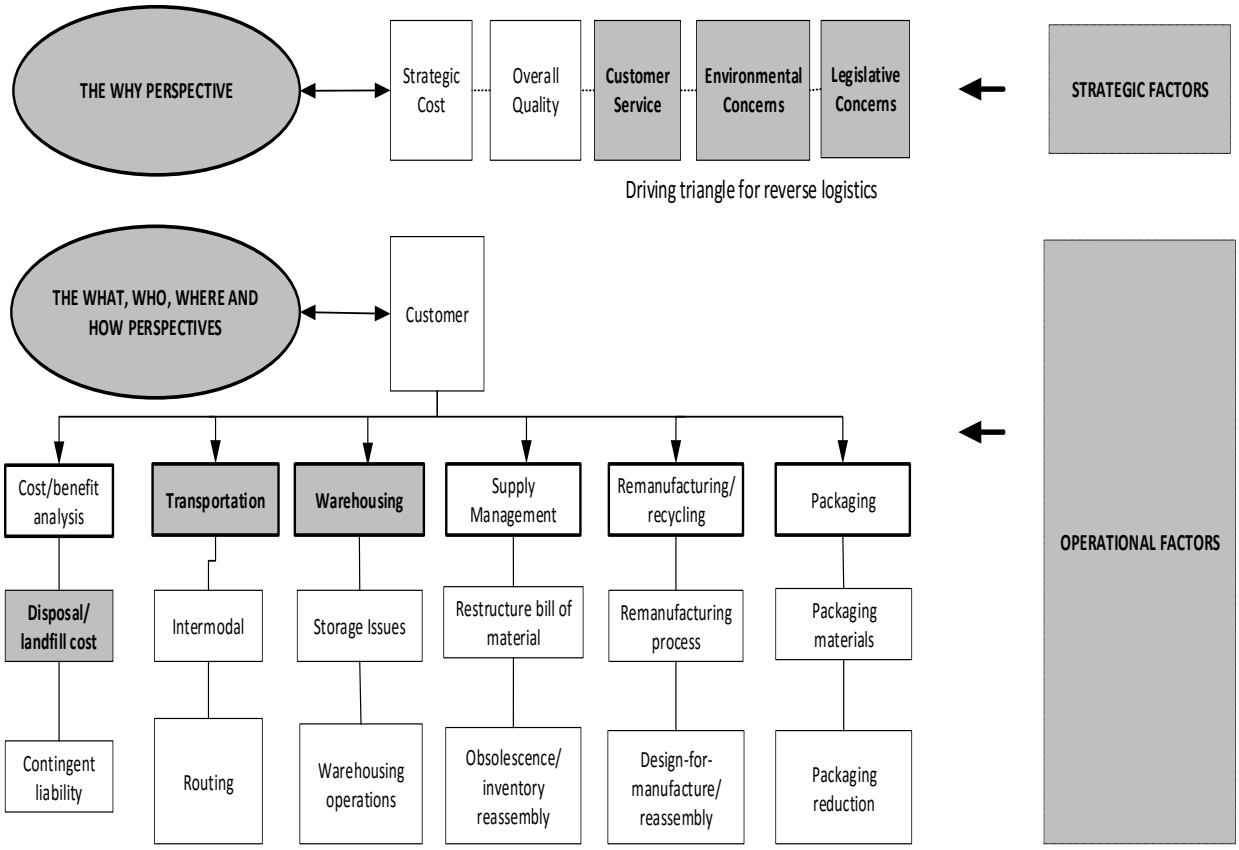


Figure 3.4: Conceptual model to examine RL practices in the NPI (Adopted from Dowlatshahi, 2000; De Brito and Dekker 2003)

Furthermore, RL activities involve multiple relationships between different stakeholders, and the firm. Hence, it is imperative to emphases the role different stakeholders such as shareholders, customers, suppliers, wholesalers/distributors, retailers, hospitals, regulatory bodies, NGOs etc. have on the RL system implementation of a firm (Álvarez-Gil et al., 2007). Figure 3.5 depicts the claims/influences of these stakeholders on a firm and the firm's corresponding responses. RL definitions adopted for this study implicitly depict the relationships between the firm and these stakeholders in the supply and value chain.

According to Álvarez-Gil et al. (2007), the flow of raw material is related to suppliers and the stream of finished goods clearly involves manufacturers, wholesalers, distributors, retailer and customers. Hence, activities related to RL imply complex relationships between individual

firms and multiple stakeholders. The survival and success of a firm is contingent on its capability to establish and maintain a relationship with its network of stakeholders (Post et al., 2002). Carter and Ellram (1998) portrayed these stakeholders as internal and external factors that drive and constrain RL activities (Figure 2.2). This corroborate the "why and who perspective" of RL proposed by De Brito and Dekker (2003).

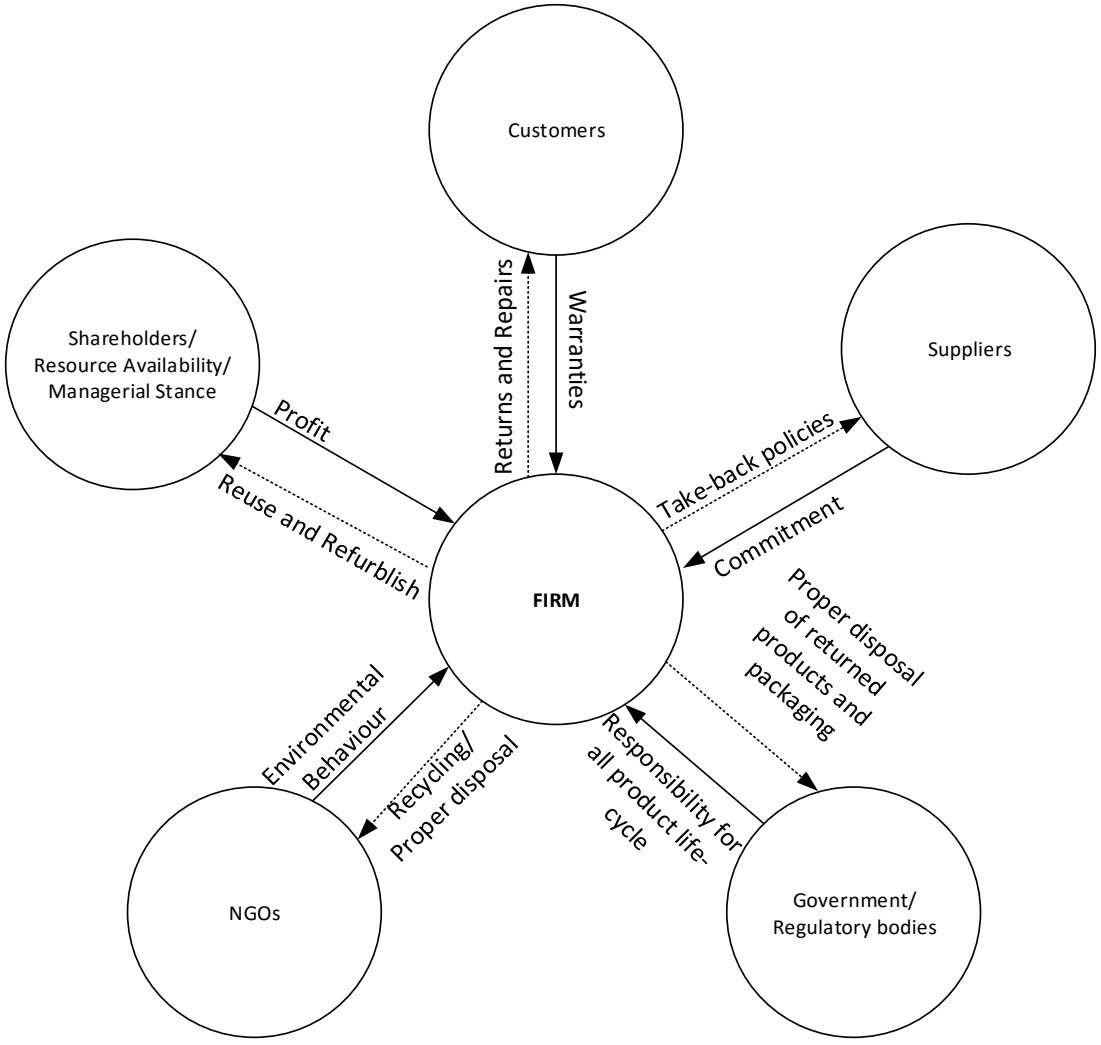


Figure 3.5: Stakeholders' claims/influences and firm's responses (Adapted from Álvarez-Gil et al., (2007, 466)

According to Donaldson and Preston (1995), the stakeholder theory is descriptive as it presents a model that describes the corporation as a constellation of cooperative and

competitive interests possessing intrinsic value; the stakeholder theory is instrumental as it establishes a framework for examining the connections, if any, between the practice of stakeholder management and the achievement of various corporate performance; the stakeholder theory is normative as it is used to interpret the function of the corporation, including the identification of moral or philosophical guidelines for the operation and management of corporations.

Hence, the capability of the stakeholder theory to describe, explain, and characterise stakeholders' influence on a firm justifies its relevancy to this study. The stakeholder theory is justified in management literature on the basis of its descriptive accuracy, instrumental power, and normative validity (Donaldson & Preston, 1995). The stakeholder theory combined with the RL theory and framework was employed as the lens through which to view this research, and in developing insight on the influences of stakeholders (internal and external) on PCs' PRL practices and the relationships among these stakeholders.

Throughout the literature review, the focus has mainly been on PRL in the developed world. Contrary to the status quo, this study explores PRL practices in Nigeria by considering a multi-faceted exchange among the B2B PSC stakeholders to establish an empirically informed knowledge of RL practices in the industry. The study is conducted from the operational perspectives of PSC stakeholders in Nigeria as stakeholders possess unique drivers, factors and issues that influence or complicate their operations.

The understanding of the type of RL programme implemented by PSC stakeholders, identification of factors that influence their managerial decisions to embark on RL operations, and the relationships between, and among the key stakeholders involved in RL activities will facilitate the development of a theoretically grounded knowledge of RL practices in the NPI.

Conceptual framework specifies the scope of a study and assumes some relationships (Miles & Huberman, 1994). Hence, Figure 3.6 depicts the final conceptual framework of the thesis, which draws together the key gaps that need to be addressed from the Nigerian

pharmaceutical perspectives. The answer to the following RQs guided by the study final conceptual framework will establish the required understanding of this unknown phenomenon:

RQ 1: What are the characteristics of PRL practices in the B2B segment of the NPI?

RQ 2: What are the similarities and difference in the PRL practices of PSC stakeholders?

RQ 3: How do these similarities and difference influence PRL operations?

RQ 4: What are the facilitators, drivers, and inhibiting factors of PRL practices in Nigeria?

RQ 5: Are there improvement opportunities envisaged? If yes, what are they?

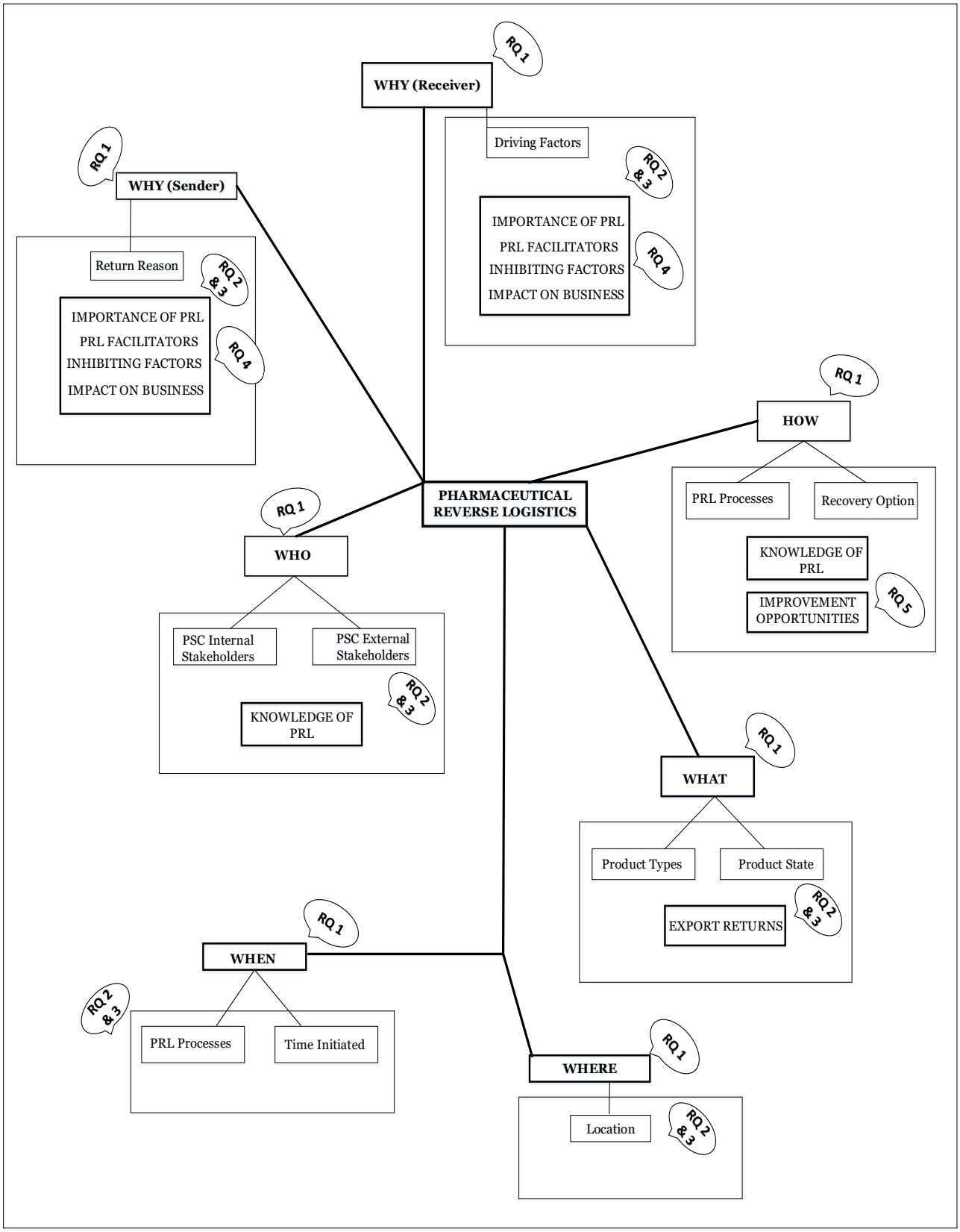


Figure 3.6**:** Final Conceptual Model of the Research Core Purpose

By addressing the five RQs, a broader theoretically grounded insight of RL practices in the private sector of the NPI will be obtained, as well as broader managerial insight for practitioners; insight required for making managerial decisions associated with cost savings, customer service, product quality, GMP, corporate citizenship and sustainability will be obtained. Hence, RQ 1 is designed to produce insight on RL activities by characterising RL activities, using the six essential perspectives of RL (the why (sender), the why (receiver), the what, the how, the who, and the where) and a new perspective called the "when perspectives". Further detail of the "when perspective" is presented in section 5.3 (p. 236) of this thesis. Hence, the empirical findings on each elements of the seven perspectives framework collectively contribute to the successful answer to the RQ1. Please see Section 7.9, (P. 338 - 371) of this thesis.

RQ 2 is designed to identify similarities and differences of PRL practices among PSC stakeholders investigated. Please see chapter seven (P. 322 – 371) of this thesis on how the empirical findings contribute to the successful answer of RQ2. RQ3 is designed to capture how these elements influence PRL operations. RQ4 is designed to identify firm-specific internal and external factors that drive or inhibit RL practices in the B2B segment of the NPI. Please see section 8.5, 8.6 and 8.7 (P. 422 – 427) of this thesis on how the empirical findings on "PRL Facilitators", "Importance of PRL", "Impact of PRL on Business", "Knowledge of RG", "Factors Hindering PRL" contribute to the successful answer of RQ3 and RQ4.

RQ 5 is designed to explore improvement opportunities that can facilitate best practices. Please see section 8.8 (P. 427 – 429) of this thesis on how the empirical findings on "Improvement Opportunities" contribute to the successful answer of RQ5.

This research will not only generate more awareness of RL practices in the pharmaceutical industry but will also encourage future RL researchers to explore RL practices in developing countries. This research will also encourage comparative studies of RL practices across industries and countries. Further details of future research direction are presented in Chapter Nine, section 9.3 (P. 449 - 452) of this thesis.

3.2.4. Research Stage Four: Methodology & Analysis

After the formulation of five RQs and the conceptual model for this study, the next essential step is to develop a robust research methodology to carry out the research (address the RQs) as depicted in Mentzer & Kahn, (1995) logistics research framework (Figure 3.1). Mentzer and Kahn (1995) stated that the choice of methodology is greatly influenced by previous research, the study objectives, the researcher's competencies, and the level of sophistication of the constituency for which the knowledge is intended. Hence, methodologies that have been successfully employed in previous research in the substantive area are more likely to give the current study a higher degree of acceptability within the researcher's scientific community (Mentzer & Kahn, 1995). Furthermore, the researcher's choice of research method is also guided by the extent of existing knowledge, the amount of time and other resources available, as well as the researcher's own philosophical underpinnings (Saunders et al., 2012).

This thesis adopted a multiple case research method, semi-structured interview data collection technique (face-to-face and telephone interview) in this stage four of this research. The data collection instrument was pilot tested before proceeding with the empirical study. This study adopted a three-phased data analysis process (within case, within case-category, and cross case-category analysis) in stage four of this research which informed the discussion and rational conclusion obtained from this study. Figure 3.7 depicts this data analysis process and Figure 3.8**Error! Reference source not found.** further visualises the operational framework that leads to the generation of novel insights on PRL, emergent concepts, and the RL framework from six to seven RL perspectives.

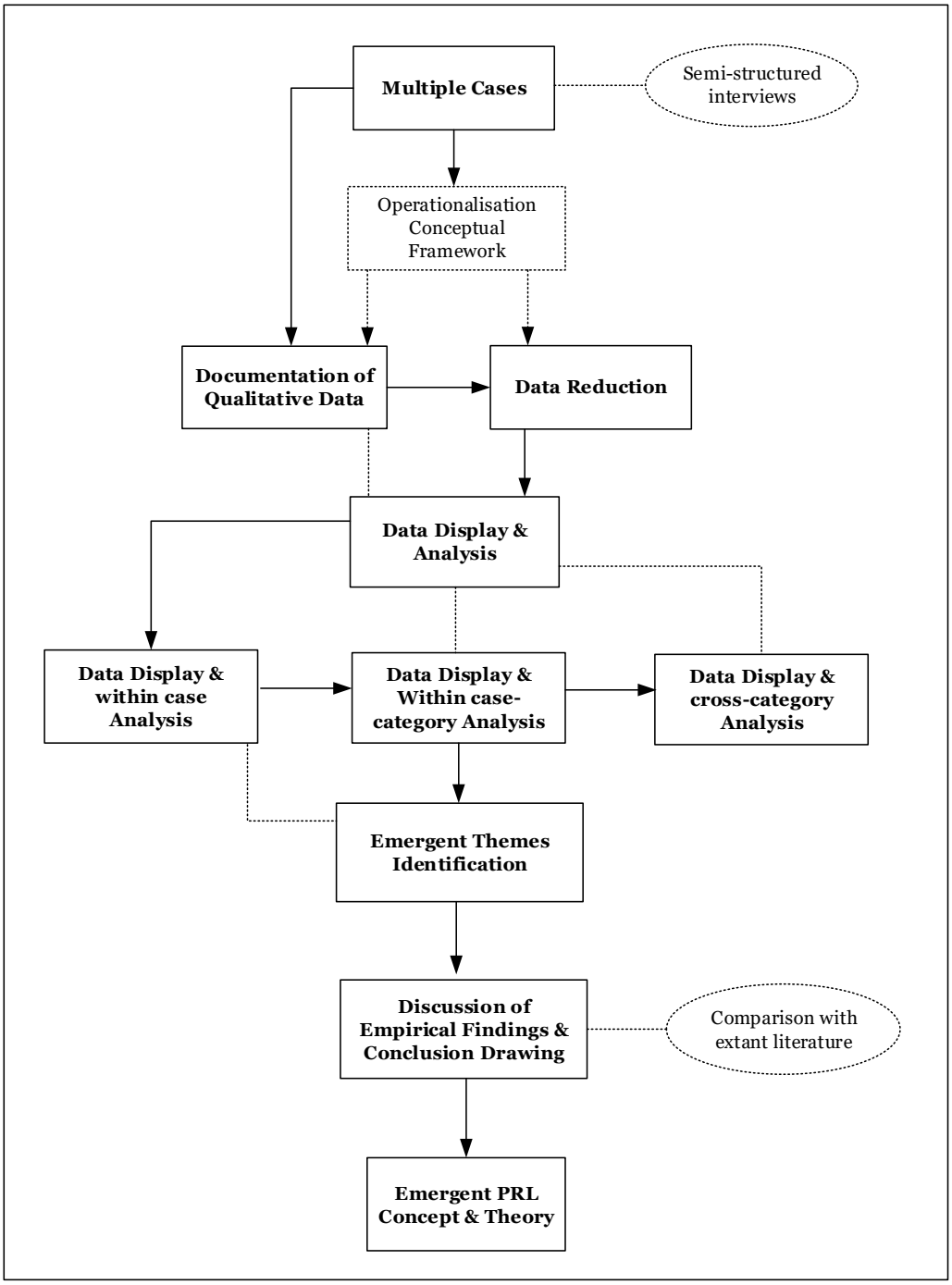


Figure 3.7: Applied Data Analysis Process leading to the Emergent Concept and Theory

3.2.5. Research Stage Five: Conclusions

The completion of the methodology and data analysis stage set the scene for the formulation of research conclusion and rational explanations about the research outcome (Mentzer & Kahn

1995). In this stage five, research findings (emergent concepts) was also compared with extant literature, to boost confidence in the research findings, deepen sight into the emergent concepts and extant theory, as well as to sharpening the limits of the generalisability of the research. The majority of the research done has been exploratory and has often consisted of anecdotal evidence (Carter & Ellram 1989). The review highlighted the lack of a theoretically grounded and holistic view of RL as only very recently have empirical studies been performed.

The implementation of this rigorous and scientific logistics research framework is beneficial to this exploratory study as each of the five essential research stages collectively facilitated the generation of theoretically grounded knowledge of RL practices in the B2B segment of the NPI. Hence, closing the literature gap on the subject matter, providing a framework to inform best practices and guidance towards future research. The thesis will refute or reaffirm existing theory through replication, which potentially will foster the generation of new theories, thereby, acting as a link between extant theory and new. Following the five stages of Mentzer and Kahn's (1995) logistics research framework, the comprehensive perspective of this framework provides the rigorous and scientific approach which facilitate empirically informed and theoretically grounded knowledge of RL practices from the Nigerian pharmaceutical perspective. Comprehensive details of the research design are presented in chapter four, section 4.4 (p. 188 – 205) of this thesis.

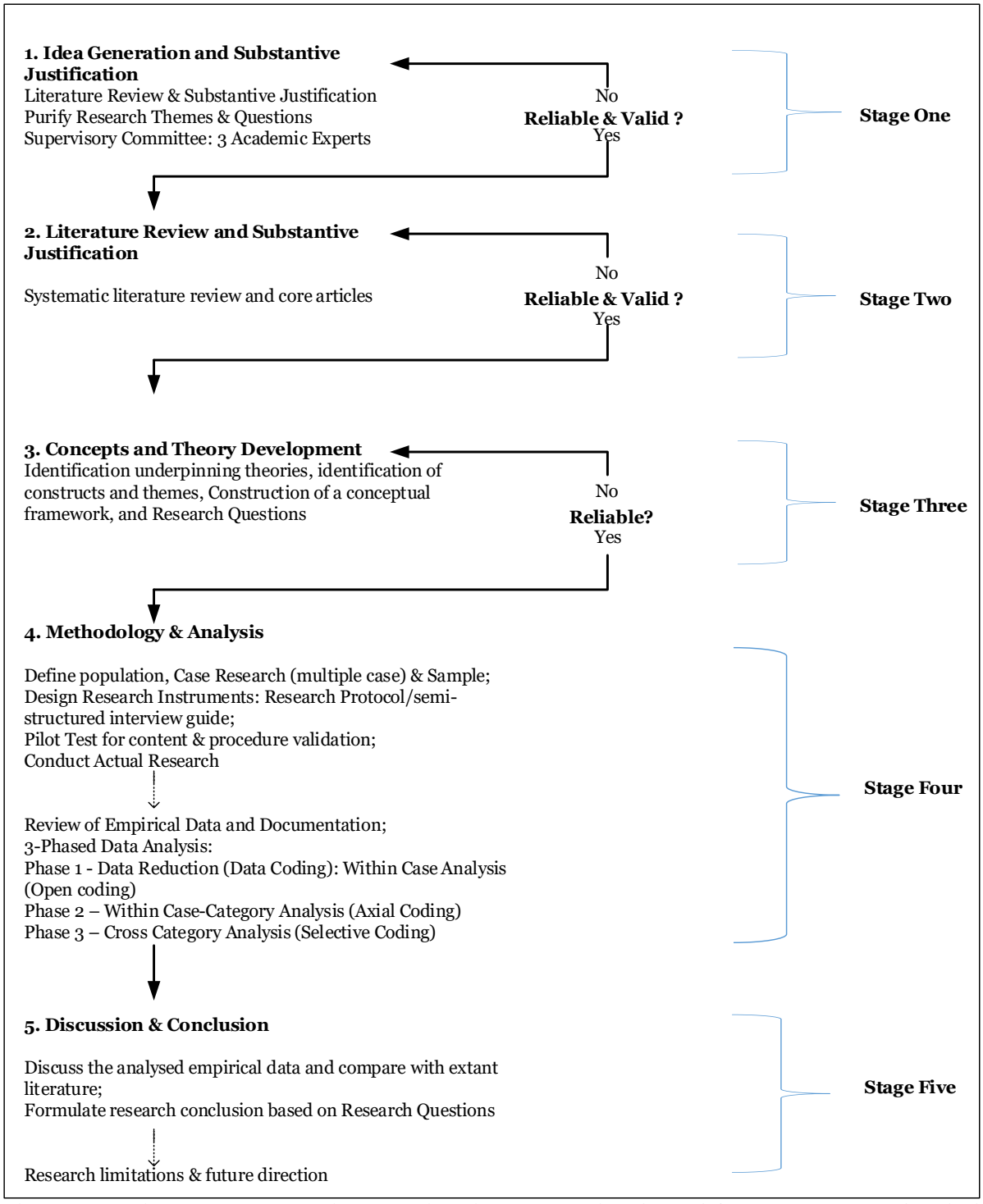


Figure 3.8: Five-Stage Research Operational Framework Adapted from Mentzer and Kahn's (1995)

3.3. Chapter Summary

This chapter has discussed the logistics research framework and conceptual model employed in this thesis. The Mentzer and Kahn (1995) and Churchill (1979) framework for logistics research has been examined and was adopted to ensure that this research follows a rigorous step by step research approach, and to enable valid and accurate conclusions to be drawn. In addition, the final conceptual model depicting the core research purpose (Figure 3.6), the three phase data analysis process depicted in the research operational framework (Figure**Error! Reference source not found.** 3.8), and the applied data analysis process (Figure 3.7) were employed in this study. Finally, the RQs were strategically used to address the identified gap, confirm, and extend the frontier of the existing RL framework.

The next chapter presents the stage three of this research, and describes the full research methodology for this thesis.

PART TWO – EMPIRICAL RESEARCH

RESEARCH STAGE FOUR

CHAPTER FOUR – RESEARCH METHODOLOGY

4.1. Introduction

Chapter three established the logistics research framework and conceptual model adopted for this thesis. This chapter discusses the research methodology employed for this thesis. Vedic philosophy views knowledge as a blend of three interacting elements: the process of knowing (methodology), the knower (the researcher) and the known (the result)" (Gummesson, 2002). A researcher's philosophical assumptions about human knowledge and about the nature of realities encountered in a research, shapes a researcher's understanding of the RQs, the research strategy, the methods used and the interpretation of findings (Crotty, 1998). Hence, it is imperative to establish the philosophical, ontological and epistemological framework that underpinned the research methodology employed for this study.

Hence, this chapter discusses the research methodology employed for this thesis by firstly restating the research objectives and RQs. Then, it discusses the philosophical underpinnings of this research with emphasis on theories and paradigms in logistics research, importance of rigor and relevance, as well as the researcher's paradigmatic position. This is followed by the comparison and contrast between quantitative and qualitative research method which sets the scene for the discussion of the role of triangulation in research. The research design for this study is then discussed alongside the associated research design issues and limitations. Finally, the chapter is summarised as a prologue to chapter four.

4.2. Research Objectives Revisited

As discussed in chapter Two, this thesis is fundamentally underpinned by the conceptual model in Figure 3.4, which stems from the combination of the RL framework developed by De Brito and Dekker (2003), the strategic and operational factors of RL developed by Dowlatshahi

(2000), and the stakeholder theory developed by Álvarez-Gil et al. (2007). The final conceptual model Figure 3.6 is the operational framework employed for this thesis. The identified constructs were investigated within the context of the nineteen selected PCs operating in Nigeria private sector including the RA. Below are the preliminary questions deduced from the literature investigated, and designed to achieve the overall purpose of this study.

RQ 1: What are the characteristics of PRL practices in the B2B segment of the NPI?

RQ 2: What are the similarities and difference in the PRL practices of PSC stakeholders?

RQ 3: How do these similarities and difference influence PRL operations?

RQ 4: What are the facilitators, drivers, and inhibiting factors of PRL practices in Nigeria?

RQ5: Are there improvement opportunities envisaged? If yes, what are they?

Addressing these five RQs will not only generate insight about the phenomenon investigated, but will also facilitate the closing of the identified research gap, and contribute to the body of knowledge by providing a different perspective PRL from the Nigerian pharmaceutical context. The research instrument employed to address the five RQs is presented in Appendix One (p.475).

Case research generally provides an excellent means of studying emergent practices (Voss et al., 2002). The use of multiple cases to research these RQs represents replication which in turn facilitates the development of a rich, theoretical framework (Ellram, 1996). Hence, a multiple case research method was considered the most appropriate method for this exploratory study. The full research methodology for the entire study is discussed under section 4.4 of this chapter but before then, let us examine the research philosophy that underpins this study.

4.3. Research Philosophy

Research philosophy relates to the development of knowledge and the nature of that knowledge. This is exactly what researchers do when embarking on research i.e. developing knowledge in a particular field (Saunders et al., 2012). All business research is conducted within a particular research philosophy often referred to as a paradigm (Saunders et al., 2012). One's philosophical assumptions about human knowledge and about the nature of realities encountered in a research, shapes one's understanding of the RQs, the research strategy, the methodology and the interpretation of findings (Crotty, 1998). Hence, the research philosophy adopted by a researcher can be thought of as the assumptions that underpins the way that the researcher views the world (Saunders et al., 2012).

According to Johnson and Clark (2006), besides conducting a philosophically informed research, it is equally important to comprehensively reflect on the philosophical choices and defend them in relation to other available alternatives. In this discussion, three major research philosophical positions, namely, ontology, epistemology and axiology will be examined. Each positions highlights important differences that shape the researcher's view about research process.

4.3.1. Ontology, Epistemology and Axiology

The study of ontology is concerned with the nature of reality (Saunders et al., 2012), and the nature of social entity (Burrell & Morgan, 1979). Crotty, M. (1998) defined ontology as the study of being. Researchers need to take a position regarding their perceptions of how things really are and how things really work (Scotland, 2012). Within ontology there are two distinctively opposing dimensions namely, the objective and the subjective dimension. Both are equally capable of producing valid knowledge by many researchers. Burrell and Morgan (1979) named the objective-subjective dimension as Realism and Nominalism.

The first dimension, objectivism (Realism) ontological dimension portrays the notion that social entities exist in meaningful reality external and independent to social actors concerned with their existence while the second dimension, subjectivism (Nominalism) asserts that social phenomena are created from the perceptions and consequent actions of social actors (Crotty, 1998; Brain, 2000). From a subjectivist perspective, social interactions between actors are continual process and the phenomena are in a constant state of revision (Saunders et al., 2012). It is therefore necessary to study the underlying details of a situation in order to understand what is happening; this gives raise to the term social constructionism, which views reality as being socially constructed (Saunders et al., 2012).

The central point of orientation in ontology is to determine whether social entities can and should be considered as objective entities that have a reality external to social actors or whether they should be considered social constructions built up from the perception of social actors (Burrell & Morgan, 1979). This is critical as ontological assumptions and commitments shape the way RQs are formulated and how researches are conducted (Bryman & Bell, 2007).

Epistemology concerns what constitute acceptable knowledge in a field of study (Saunders et al., 2012). The central point of orientation in epistemology is to determine whether the social world can and should be studied according to the same principle, procedures, and ethos as the natural sciences (Burrell & Morgan, 1979). Burrell & Morgan (1979) identified the two extreme positions in the field of epistemology which are positivism and anti-positivism (interpretivism).

In addition to the ontological and epistemological research philosophical assumptions that underpins the research approach, it is important to understand the role the researcher's values play in the research process. Axiology is a branch of philosophy that studies judgement about value (Saunders et al., 2012). Axiology considers the role the researcher's own value system plays in all stages of a research process. These values are of great importance if a credible research result is to be achieved (Saunders et al., 2012). Basically our value system guides us in all activities including the choices and decisions we make. Therefore, the researcher's choice

of philosophical approach is a reflection of the researcher's values, as is the researcher's choice of data collection techniques (Saunders et al., 2012).

4.3.2. Research Paradigms

The ontological and epistemological research philosophies in business research can be explored together through the concept of research paradigms, which are frequently used in social sciences (Saunders et al., 2012). The concept of paradigm is central to the research process in all area of study. Mangan et al. (2004) defined a paradigm as a very general conception of the nature of scientific endeavour within which a given enquiry is undertaken. A paradigm consists of the following components: ontology, epistemology, methodology, and, methods (Scotland, 2012).

Burrell and Morgan developed a four-fold categorisation of social science paradigms that reflect the major assumptions of management and business researchers about the nature of organisation and how they can be researched (Bryman & Bell, 2007; Saunders et al., 2012). These four paradigm (Figure 4.1) provide conceptual framework by which to understand the epistemological and ontological foundations of business research (Bryman & Bell, 2007).

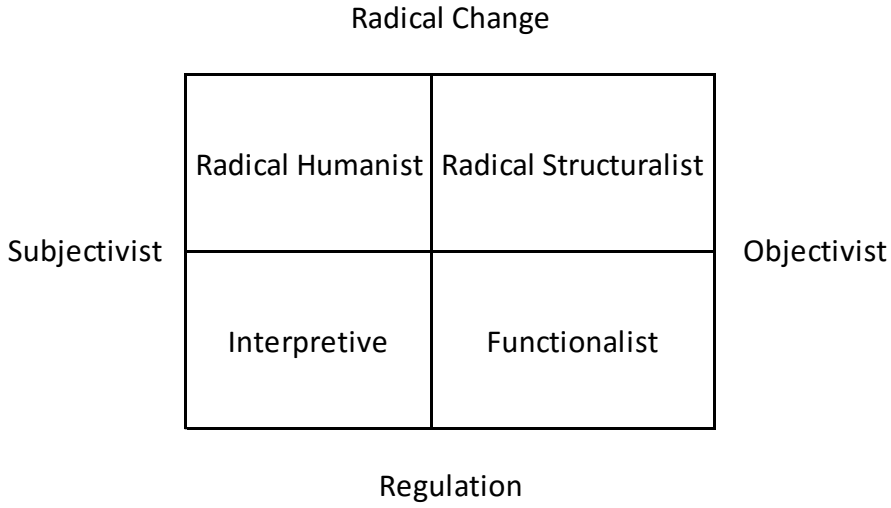


Figure 4.1**:** Four paradigms for the analysis of social theory (Burrell & Morgan, 1979, 22)

Burrell and Morgan (1979) illustrated the four paradigm as a matrix corresponding to two conceptual dimensions: subjectivist to objectivist and radical change to regulation. The subjectivist-objectivist dimension relates to the ontological positions discussed above. The radical change dimension relates to the adoption of a critical perspective on organisational life from the perspective of overturning the existing state of affairs or maintaining the status quo.

The radical change perspective argued that the aim of management and business research is to make a judgement about the way organisational affairs ought to be conducted and to make suggestions on how the status quo could be changed (Bryman & Bell, 2007). The regulatory dimension relates to the less judgmental and critical approach to organisational life as it advocates working with the existing state of affair (Saunders et al., 2012).

Plotting the assumptions along the two axes of objectivist – subjectivist and radical change – regulation provides the framework for the identification of the paradigmatic positions: Functionalist, Interpretative, Radical humanist and Radical structuralist (Bryman & Bell, 2007). These four paradigms are mutually exclusive as they offer alternative view of social

reality and to understand the nature of all four is to understand four different view of society (Burrell & Morgan, 1979).

Burrell and Morgan further noted in three points the purpose for designing the four paradigms: firstly, to help researchers clarify their assumptions about their view of the nature of science and society secondly, to offer a useful way of understanding the way in which other researchers approach their work and lastly to help researchers plot their own route through their research (Saunders et al., 2012).

The functionalist also known as positivist is the dominant epistemological position for the study of organisation based on a problem-solving orientation which leads to rational explanation (Bryman & Bell, 2007). This is the philosophical stance of the natural scientist (Saunders et al., 2012) where a researcher will prefer collecting data about an observable reality and search for regularities and causal relationships in order to create law-like generalisations (Gill & Johnson, 2010). A positivist researcher usually has an objectivist position in ontology and takes an unbiased stance in axiology (Shaw, 2013).

In the bottom left corner of the quadrant is the interpretative epistemological paradigm. This paradigmatic position opposes that of the functionalist as the former questions whether organisations exist in any real sense beyond the conception of social actors and advocates understanding based on the experience of those working within organisations (Bryman & Bell, 2007). Interpretivism advocates the necessity to understand differences between humans as social actors (Saunders et al., 2012). Crucial to the interpretivist philosophical strand is that researchers need to adopt an emphathic stance by entering the social world of the research subject with the aim of understanding their world from their point of view (Saunders et al., 2012). Hence, the researcher employed the interpretivism philosophical position in this study due to the exploratory nature of the goal.

The radical humanist views an organisation as an organisation from which individuals need to be emancipated as guided by the need for change (Bryman & Bell, 2007). A researcher that adopts this paradigmatic position would be operating from an interpretivist epistemological

position and subjectivist ontological standpoint. Finally, in the top right corner of the quadrant is the radical structuralist paradigm which view an organisation as a product of structural power relationships which result in conflict (Bryman & Bell, 2007). From this perspective, researchers will approach research with the aim of achieving fundamental changes based on an analysis of organisational phenomena and to understand structural pattern and the extent to which dysfunctionalities may be produced (Saunders et al., 2012).

Burrell and Morgan's (1979) four model paradigmatic framework has been criticised for being incommensurable. Burrell and Morgan argued that synthesis between the paradigms is not possible as they are contradictory in their pure form, being based on opposing meta-theoretical assumption (Burrell & Morgan, 1979). Jackson and Carter (1991) further defended the significance of the incommensurability of the paradigms as it protects diversity of scientific thought, which resists the hegemony of the positivist/functionalist approach in business research (Bryman & Bell, 2007). On the contrary, Reed (1985) argued that the overstatement of the differences between these paradigms leads to isolationism and hinders potential for creative development (Bryman & Bell, 2007).

Willmott (1993) acknowledged that the four paradigms challenge the intellectual dominance of the functionalist paradigm and open up possibilities for alternative paradigms within business and management. However, he criticized Burrell and Morgan's four-model paradigmatic framework for the central thesis being distinctly double edged, which has led to the polarization of methodological approaches. He therefore suggested that paradigms arise through critical reflection of the limitations, of opposing approaches (Bryman & Bell, 2007).

Supporting this approach is Tashakkori and Teddlie (1998) who further suggested that it is more appropriate for the researcher in a particular study to think of the philosophy adopted as a continuum rather than opposing positions. Saunders et al. (2012) however pragmatically asserted that even if philosophy is considered as a multidimensional set of continua, it is unrealistic in practice to choose one's position on each continuum. This set the scene for the

notion of pragmatism which advocates the acceptability of multiple philosophical positions in a study.

4.3.3. Logistics Research Issues, Philosophy, and Theory

Logistics is one of the sub-fields of management, appreciated in other managerial disciplines, and considered to be a vital business area. Managerial research relies on a complex web of conventions and rules, which determine what counts as research, and what does not. In practice this means that unless certain patterns are followed, research contributions are considered to be inadequate (New & Payne, 1995). This results in issues relating to the rigour and relevance of logistics research.

Researches in logistics are accepted based on their logical fulfilment of conventional criteria instead of their significance towards solving real world issues (New & Payne, (1995). The choice between these two ends appears to be salient for research in logistics whose real world is complicated. Nevertheless, abstract model building and exploration are by no means less relevant to research. It is, however, very difficult to perform a work that conforms to the academically accepted pattern of model building/optimization/simulation, which also fit with the complexity of the real world (New & Payne, 1995). This problem appears to be endemic in management research, as depicted crudely in Figure 4.2. Hence, there have been increased calls for empirically-based research in logistics.

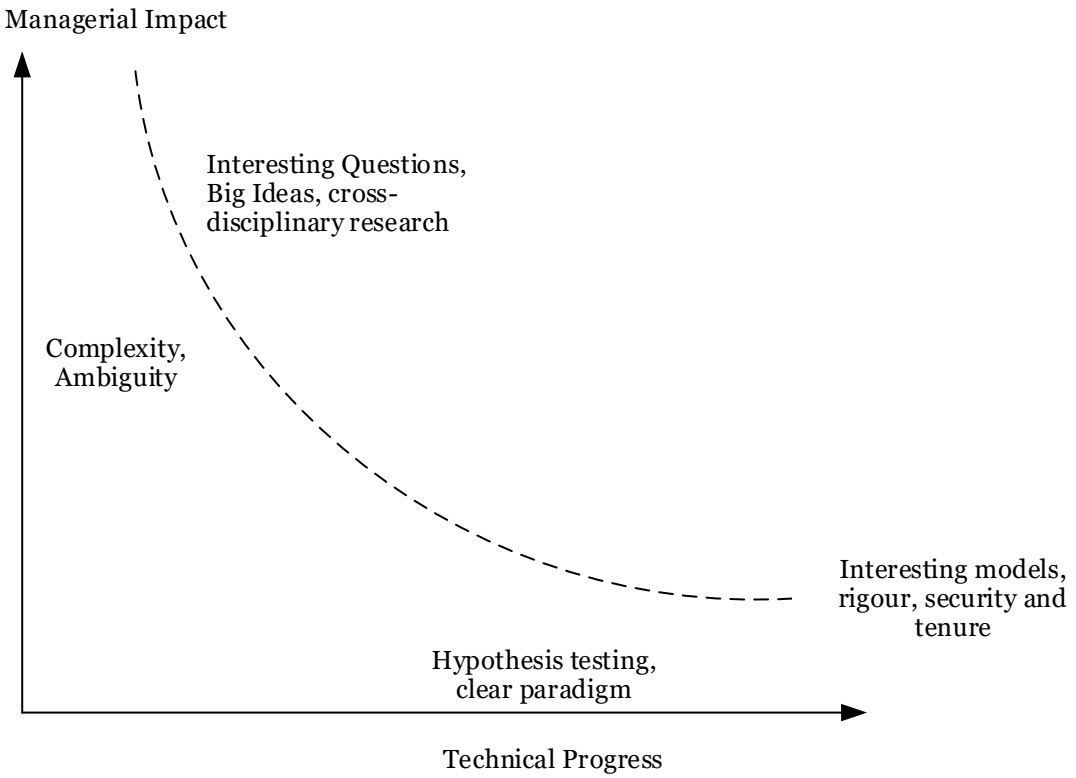


Figure 4.2: Academic research –abstract versus real issues (New & Payne, 1995: 62)

The formulation of presumed causal connection between practice, performance and the environment which determines the underlying justification for RQs, is a major challenge in conducting empirical logistics research (New & Payne, 1995). To buttress this point, New and Payne (1995) presented three possible frameworks for logistics research with different a priori assumptions about practice, performance and the environment. The three dimensions and their respective paradigms shown in the Figure 4.3 below show the non-straightforwardness of empirical research process as each dimensions justifies different types of RQs, and each generates different types of knowledge (New & Payne, 1995).

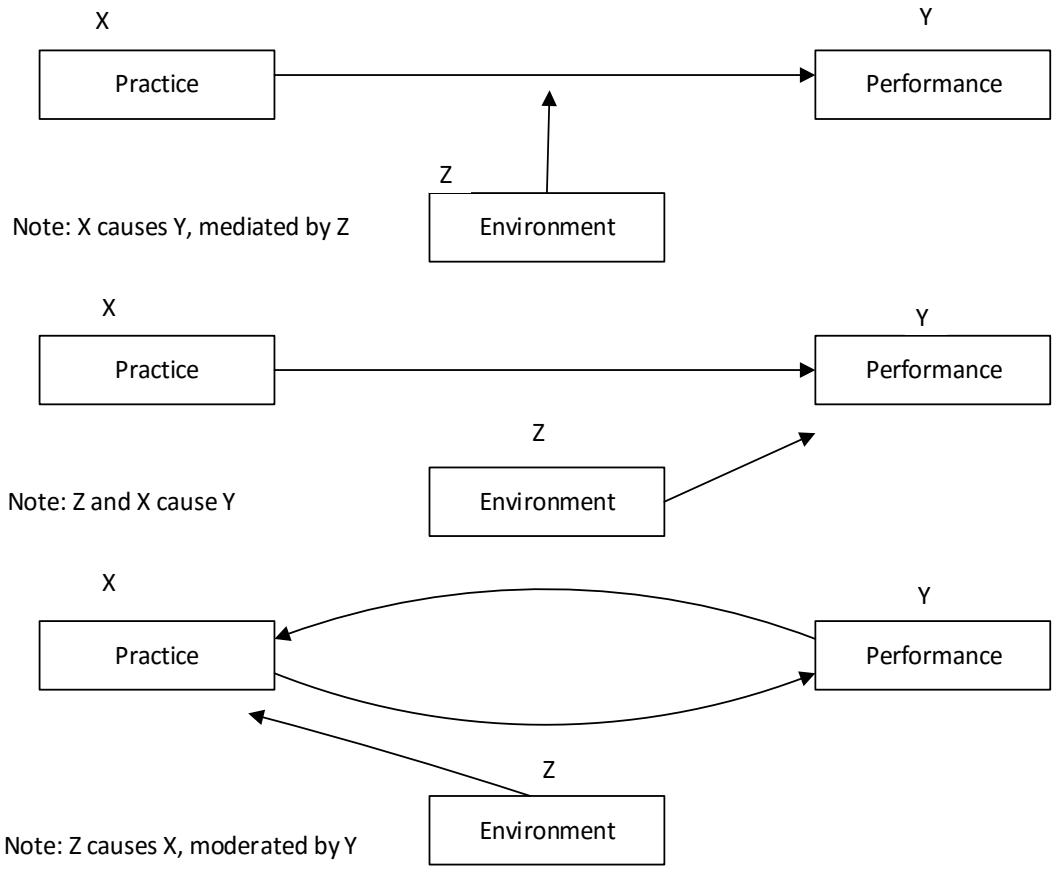


Figure 4.3**:** Three Frameworks for Empirical Logistics Research (New & Payne, 1995: 64)

New and Payne however cautioned that although sufficient definition and measurement of the elements might be achieved, the research will most likely be based on implicit and unarticulated relationship between these factors; since logistics management addresses operational system issues which span organisational boundaries; the holistic interpretation of logistics with a focus on SCM presents a set of commercial and managerial issues that stretches beyond technical issues of material and information flow (New and Payne, 1995). Hence, the expansion of the range of methodologies employed to match the wide scope of the holistic interpretation of logistics is also required (New & Payne, 1995).

Logistics is an integral component of SCM, and the latter is far too important to be considered as a temporary fad or a narrow field for a group of specialist researchers (New, 1997). Besides logistics being an integral component of SCM, the latter plays both a practical, and intellectual

pivotal role within managerial and economic research. Hence, research in logistics deservedly requires explanatory approaches that adopt multidisciplinary methodological pluralism (New, 1997).

Logistics research has been influenced immensely by economic and behavioural approaches to scientific study and both approaches have their foundation in the positivist paradigm (Mentzer & Kahn, 1995). Hence, the majority of logistics literature and research remains largely managerial in nature and lacks rigorous orientation towards theory development, testing, and applications (Mentzer & Kahn, 1995). In order to address the lack of rigorous orientation in logistics research, Mentzer & Kahn (1995) proposed a robust framework for logistics research housed on the positivist paradigm to assist researchers in developing rigorous research.

As discussed in chapter two, the proposed framework improved on the previous models and frameworks as it offers a comprehensive perspective on logistics research process (Mentzer & Kahn, 1995). The framework presented logistics research as an involved, continuous process that integrates three distinct dimensions: Idea Generation to Substantive justification, Theory construction to Methodology and Methodology to Conclusion and Future Research (Mentzer & Kahn, 1995).

The framework was utilised to evaluate all published literature in the Journal of Business Logistics (JBL) between 1978 and 1993 as shown in Figure 4.4 and the result revealed that logistics research is dominated by the positivist paradigm (Mentzer & Kahn, 1995). The dominance of survey followed by simulation and interviews suggests researchers' preference for the positivist paradigm and quantitative research methods in logistics research.

Category	Percentage of Articles Published in JBL
Survey	54.3%
Simulation	14.9%
Interviews	13.8%
Archival Studies	9.6%
Math Modeling	4.3%
Case Studies	3.2%

Figure 4.4: Percentage of Articles Published in JBL (Mentzer & Kahn, 1995:242)

Dunn et al. (1993) reviewed articles presented in four logistics journals between 1988 and 1992. The research findings show that majority of the published articles were based on survey/structured interviewing and simulation/modelling while only 2% were based on case studies/action research. Näslund (2002) also conducted a complementary study of 120 articles in three leading logistics journals. The study revealed that only 7% were case studies while the 35% used surveys. Sachan and Datta (2005) reviewed 442 articles from three leading logistics journals between 1999 and 2003. The outcome of their findings also confirmed the dominance of quantitative research methods such as surveys in the published articles.

The findings also indicated a gradual shift from quantitative towards more qualitative publications. This shift suggests an increasing acceptance of qualitative methods in logistics research. This increased acceptance of qualitative research method can be attributed to the fact that researchers are becoming more interested in the "how" and "why" RQs (Sachan & Datta 2005). While logistics is a difficult area for relevant empirical research, progress may be possible if the range of methodologies employed expands to match the greater scope of the holistic interpretations of logistics (New & Payne, 1995). The trend in management research is increasingly bending towards the use of methodologies and approach that create middle ground between the contrasting paradigm and perspectives (Manga et al., 2004). Mixed methods improve the veracity of research results.

With regard to the geographical region of publications, Samuel's (1997) research findings of dominating paradigms and methods used in three logistics/SCM journals indicated a distinctive difference in the preferred methods used in logistics research between the USA versus Europe. Survey-based research is predominantly used in the US research community while the European research community employ more qualitative research methods. Although this is a European-based study, the qualitative research method was employed primarily due to the exploratory nature of the study as the phenomenon has never been researched in the Nigerian pharmaceutical context.

4.3.4. Researcher's Philosophical Position

From an epistemological philosophical position, this research is primarily rooted in the interpretative paradigm, and from an ontological philosophical position, this research follows the subjectivist dimension. Crucial to the interpretivist philosophical strand is that researchers need to adopt an empathic stance by entering the social world of the research subjects with the aim of understanding their world from their point of view (Saunders et al., 2012). This research is therefore fundamentally underpinned by the combination of the researcher's interpretative philosophical position, the relative newness of RL as a research area, and the need to explore this phenomenon from different industry perspectives, and geographical contexts.

In the light of the researcher's philosophical position, the nature of the research, the purpose of the research, and the RQs, it is the proposition of this study that the interpretative research approach is most appropriate approach to adopt in conducting this exploratory study. The interpretive research is based on the belief that a deeper and richer understanding of a phenomenon is only possible through understanding the interpretations of that phenomenon from those experiencing it (Shah & Corley, 2006).

This study sought to generate an empirically grounded insight of RL practices in the private sector of the NPI through the perspective of PSC practitioners operating in the industry. As

the PSC practitioners are the actors practically involved in the supply, distribution and administration of drugs in the industry, it is the proposition of this thesis that PSC practitioners engage directly and indirectly in PRL practices. Hence, these actors represent valuable sources of information required for this exploratory study.

RL is an under-researched area of the NPI. Hence, this research is highly exploratory; the RQs are largely exploratory in nature, seeking to explore, understand, and characterise the phenomenon from the Nigerian pharmaceutical perspective. This study also aims to identify improvement opportunities that can facilitate best practice. Hence, this research employs multiple data collection techniques, and data sources to rigorously address "what, why, how, who, where, when" type questions, firmly positioned within the interpretivist paradigm.

4.4. Research Design

Research design refers to the basic plan or strategy of a research and the logic behind it, that will make it possible, and valid to draw more general conclusions from it (Oppenheim, 1992). The research design for this thesis is concerned with making the RQs researchable, by setting up the study and method of investigation in a way that produces specific answer to each of the RQs. According to Oppenheim (1992), a good research design should make it possible for the researcher to draw inferences from data in terms of generalisation, association, and causality.

4.4.1. Industry of Study

The industry of study (unit of analysis) for this thesis is the NPI. As discussed in chapter two, section 2.8.2 (p. 103) of this thesis, the NPI is made up of the private and the public sector. The private sector consists of the local PMs, multinational PMs, PIs, PWs, PRs, HBPs, and the RA. The public sector consists of the central medical stores, the federal medical stores, the state medical stores, regional hubs, HBPs, and RAs. This study focuses mainly on the PSC stakeholders operating in the private sector of the NPI. Thus, the study scope of investigation

is limited to the reverse flow finished drugs within and among a sample of PMs, PIs, PWs, PRs, HBPs, and the RA; highlighted in grey in

Figure 4.5. This thesis excludes RL operations of raw material and packaging material suppliers, RL activities during the drug production phase, RL operations in the public sector and end-users' perspective of PRL.

According to the UNIDO (2011), distribution of medicines in Nigeria is chaotic and involves too many different organisations and stakeholders. This inevitably suggests that PRL practices is not only an under-researched area in Nigeria due to the scarcity of empirical studies but also an under-developed area of the NPI due to the chaotic nature of drug distribution in the country when compared to the distribution network in developed countries.

Figure 4.5 depicts the model for medicines and medical supply in Nigeria. The model was adapted from Pharmaceutical Manufacturers Group of the Manufacturers Association of Nigeria (PMG-MAN), (2009), and Aiswariya, (2014)'s presentation on "Opportunities and Challenges in West Africa's (Ghana & Nigeria) Healthcare and Pharmaceutical Sector" held at the CPHI worldwide, in Paris. The content is based on information from the National Drug Policy and discussions with the FMoH, the PCN, NAFDAC, PMG-MAN and the WHO Country Office in Nigeria.

The Over-the-counter (OTC) drugs segment is quite large in Nigeria compared to prescription based drugs as significant proportion of the Nigerian population are yet to be covered by the National Health Insurance Scheme (NHIS) operational since 2005. Nigeria therefore has over ten thousand unregistered patent and propriety drug stores selling OTC products only. According to the PCN, there are 128 registered PMs, 724 drug distributors, 1543 registered PRs and 292 PIs in Nigeria (Aiswariya, 2014). As a result, more than 60% of pharmaceutical production in ECOWAS countries are domiciled in Nigeria (Aiswariya, 2014).

The NPI is vibrant, employing about five hundred thousand people in manufacturing and distribution. Hence, the private sector of the NPI is economically significant to the Nigerian economy and is therefore worthy of investigation.

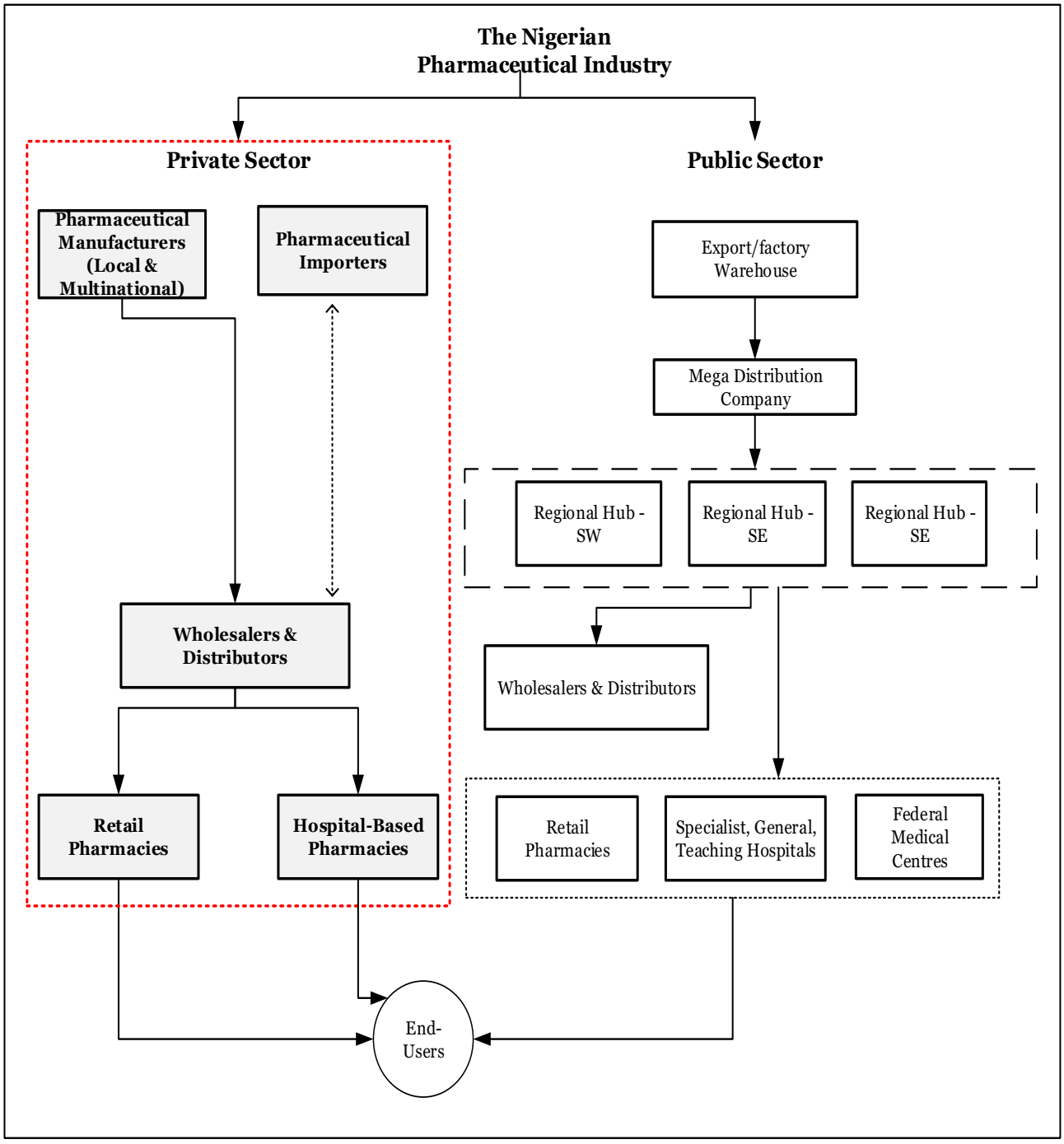


Figure 4.5: The Nigerian Pharmaceutical Supply Chain (Adapted from UNIDO, 2011; Frost & Sullivan, 2014)

4.4.2. Research Method (Multiple Case-Research)

The objective of this study is to explore PRL practices among a sample of private sector PSC stakeholders in Nigeria. The goal is to develop an empirically informed and theoretically grounded knowledge of RL from the Nigerian pharmaceutical perspective as well as to suggest improvement opportunities where possible. Thus, this research is both exploratory and descriptive in nature. As a result, the multiple case research design is considered a very important concept in this thesis as multiple case research method represents replications that enable the development of a rich, theoretical framework.

A case study methodology is highly desirable in exploratory research because it provides depth and insight into a little known phenomenon (Ellram. 1996). There are several options available in conducting case research such as the number of cases to be used, case selection, and sampling (Voss et al., 2002). Hence, case studies can involve single or multiple cases (Rowley, 2002). Single or multiple case studies can be used to describe a phenomenon, or predict outcomes based upon past occurrences in similar cases. However, the more cases that can be marshalled to establish or refute a theory, the more robust are the research outcomes (Rowley, 2002).

Depending on resource availability, fewer or single case research presents greater opportunity for depth of observation but the shortcoming is the limited generalisability of conclusion, models or theory developed from single case research (Voss et al., 2002). Furthermore, single case research includes the risk of misjudging a single event and exaggerating easily available data (Voss et al., 2002). Although risks exist in all case research, they are somewhat mitigated when events and data are compared across multiple cases (Voss et al., 2002). Multiple case research augments external validity and helps guard against observer bias (Voss et al., 2002). It is, however, argued that the depth of multiple cases may be reduced but this will only occur when research resources are constrained (Voss et al., 2002).

Nevertheless, multiple case research is applicable to either predict similar results among replications, or to show contrasting results, but for predictable, explainable reasons (Ellram, 1996). Hence, multiple case design is the preferred method for this thesis albeit a single case study was used as a preliminary or pilot study. The decision to adopt a multiple case research method for this study was also influenced by the primary purpose of this research, which is to explore the under-researched PRL practices in the private sector of the NPI by operationalising the seven perspective RL framework to generate an empirically informed and theoretically grounded findings.

4.4.2.1. Theory Development from Case Research

Case studies can be used to provide description, test theory or to generate theory (Eisenhardt, 1989). A more common application of a case study research is to build theory, which can then be tested using further case studies, survey data, or another relevant method (Ellram, 1996). The focus of this thesis is to explore PRL practices from the Nigerian pharmaceutical perspectives; generating insight by way of detailed description, and establish a theoretically grounded knowledge of the phenomenon using evidences from multiple case studies.

The initial definition of the RQ and priori specification of constructs are important in building theory from case studies. Despite the importance of these two initial activities, it is equally important to recognise that both are tentative in this type of research (Eisenhardt, 1989). This suggests that no construct is guaranteed a place in the resulting theory, no matter how well it is measured, likewise the RQs may also shift or changed during the research (Eisenhardt, 1989). Hence, the RQs and constructs underpinning this study were subject to amendments where necessarily during the course of this exploratory study.

Ideally, theory building research should start as close as possible to the idea of no theory under consideration and no hypothesis to test but it is impossible to achieve this idea of a clean theoretical slate (Eisenhardt, 1989). Although attempting to approach this idea is important because preordained theoretical perspectives or propositions may be bias and limit findings.

In theory-building research, no matter how inductive the approach may be, a prior view of general constructs or categories of the research area, and their relationship is required (Voss et al., 2002). Hence, this study identified the research area, established the research problem, and identified important variable/constructs with references, to extant theories and literatures.

Discussed later in section 4.4.5 (p. 200), the concept of a population is crucial in case research because the population defines the set of entities from which the research sample is to be drawn. This study's population is made up of PCs operating in the private sector of the NPI. The specification of this population reduces extraneous variation and clarifies the domain of the research findings.

In order to build a model applicable to all PSC stakeholders, nineteen PCs were purposefully selected for this study. Multiple cases within each PSC stakeholders group allows replicability of findings obtained from each type of PSC stakeholders. The purposeful and diverse sampling allows the domain of the research to be specified and increases the generalisability of the research findings. This facilitates theory building and insight across the various types of PSC stakeholders in the private sector of the NPI.

Theory-building research typically combines multiple data collection methods (Eisenhardt, 1989). Although this study employed a single data collection method (semi-structure interview), a combination of face-to-face, and telephone interview data collection technique was used to collect empirical data from multiple respondents, hence, facilitating data triangulation defined in section 4.4.11 (p. 223) of this thesis. A striking feature of theory-building research is the frequent overlap of data analysis and data collection. This gives researchers a head start in analysis, allowing necessary amendments to be made during the data collection process. The amendment can be in the form of additional cases to probe a particular theme that emerged, it could also be amendment to the data collection instruments (Eisenhardt, 1989).

The study took advantage of the freedom to make adjustments during the data collection process of a case research study. For example, additional questions were added, and amendments were made to the interview guide. This facilitated the probing of emergent themes and constructs. Furthermore, additional data sources were also added in the selected cases e.g. archival documents and observation. This further facilitated deeper understanding of each cases in as much depth as feasible. These alterations are required in a theory-building research if such alteration is designed to further solidify the theory or provide new theoretical insight (Eisenhardt (1989). Alteration is not a licence to be unsystematic in the study but rather for the researcher to take advantage of the uniqueness of specific cases and the emergence of new themes to improve the resultant theory. This flexibility is a controlled opportunism (Eisenhardt, 1989).

One key feature of case research is a staggering volume of data that need to be analysed for an explainable conclusion to be reached. Analysing data is at the heart of building theory from case research (Eisenhardt, 1989). Hence, a combination of within-case, within case-category, and cross case-category analysis of the empirical data was conducted in this study. As characterised in Table 4.1, the within-case analysis involves detailed case study write-ups for each site (Eisenhardt, 1989).

Table 4.1: Characteristics of Within, Cross-Case and Cross Category Analysis (Adapted from Eisenhardt, 1989; Strauss & Corbin 1990)

Within Case Analysis	**Within Case-Category Analysis**	**Cross Category Analysis**
Similar to Open coding technique of Strauss and Corbin's (1990)'s three-step coding scheme	Similar to Axial coding technique of Strauss and Corbin's (1990)'s three-step coding scheme	Similar to Selective coding technique of Strauss and Corbin's (1990)'s three-step coding scheme
Involves detailed case study write-ups for each site and data reduction	Involves the selection each category, searching for similarities and differences among the cases of the same category	Involves the selection of each category, and the identification of similarities and differences across categories
Enables familiarity with each case as a stand-alone entity	Counters the tendency of making premature and false conclusion associated with information-processing biases	Counters the tendency of making premature and false conclusions about the phenomenon of study.
This process allows unique patterns of each case to emerge before cross-case generalisation is reach	Establishes preliminary connections among cases of each categories	Identifies similarities and differences across categories and integrate empirical evidences into a cohesive whole.
Gives the researcher a rich familiarity with each case, and accelerate cross case comparison	Enables the researcher to go beyond initial impression of a single case by viewing the phenomenon from multiple perspective from cases grouped under the same category	

The case study write-up enable researcher to cope in the early stage of the analysis process with the enormous volume of data. This process allows unique patterns of each case to emerge before cross-case generalisation is reach. The process also gives the researcher a rich familiarity with each case, and accelerate cross-case comparison.

After the within-case analysis, within case-category/cross case analysis was conducted to counter the tendency of making premature and false conclusion associated with information-processing biases. According to Eisenhardt (1989), people are generally poor processors of information. This study defines within case-category analysis as a cross-case analysis of cases categorised under the same category (PSC stakeholder). Hence, the within case-category analysis involved selecting each category one by one, searching for similarities and differences among the cases categorised under each category (PSC stakeholder).

The final analysis is the cross category analysis, conducted to counter the tendency of making premature and false conclusions about the phenomenon of study. The cross-case analysis

involved the selection of each category, and the identification of similarities and differences across the six categories of PSC stakeholders, guided by the study's final conceptual model (Figure 3.6).

The seven perspective RL content framework is the final conceptual model (Figure 3.6) for this study, adapted to explore and develop an empirically informed and theoretically grounded insight of the PRL practices in the NPI's private sector. As discussed in chapter two, section 2.4.4 (p. 66) of this thesis, De Brito and Dekker (2003) developed and used the five perspective framework to generate a theoretically and holistic understanding of RL. Xie and Breen (2014) later adapted the framework to the six perspective content framework (Figure 3.3) and applied it in investigating the existing RL system for household waste medicines in NHS community pharmacies with the aim of benchmarking the system against battery RL system.

The use of the RL content framework gives context to RL systems, and their combination determines to a large extent the kind of issues that arise in implementing, monitoring and managing RL (De Brito & Dekker, 2003). From within-case, within case-category, and cross-case analysis and the overall impressions, additional themes, concepts, and even relationships between data variables emerged. The emergent frame was systematically compared with the evidences from each case so as to assess its fit with the case data. The central idea was to constantly compare the theory and empirical data, which in turn would lead to a theory that fits the data. A close fit is required in building a good theory because it takes advantage of the new insights, which yield an empirically valid theory (Eisenhardt, 1989).

Another essential feature of building theory from case research is the comparison of the emergent concepts, theory, or hypothesis with the extant literature. Examining literature which conflicts with the emergent theory is important because it increases confidence in the research findings. It also provides opportunities for more creative and frame-breaking modes of thinking (Eisenhardt, 1989). The result can give great insight into both the emergent theory and the conflicting literature, as well as sharpening the limits to the generalisability of the focal research (Eisenhardt, 1989). The applied data analysis model (Figure 3.7) also depicts the

theory development processes: data collection, data analysis processes, discussion and conclusion that leads to the study's emergent concept and theory.

4.4.3. Data Collection Locations

The NPI was chosen for this study because of the compelling outcome of the SLR conducted in this study as well as the pharmaceutical and RL issues discussed in the phase two section of Chapter Two. Nigeria has one of the most promising, and rapidly growing pharmaceutical markets in West Africa with more than 150 pharmaceutical formulation manufacturing facilities. For the purpose of this study, registered PCs operating in Lagos state, and the federal capital territory (FCT), Abuja were visited. This is because Lagos state is located in the south-west of Nigeria, and it accounts for 80% of the companies visited, while the FCT Abuja is located in the middle-belt region of the country, and it accounts for about 20% of the companies visited. The companies used during pre-testing were included in the actual interviews.

Over 50% PMs, PIs, PWs, and PRs of medicines in Nigeria are situated in Lagos (Ngwuluka, at al., 2011). This could be due to the proximity of the sea port as a number of drugs and most of the raw materials are imported. To date, Lagos still remains the commercial capital or commercial nerve centre of Nigeria, and Abuja the FCT. These attributes and the importance of these two states in Nigeria make both states appropriate locations to conduct this study.

4.4.4. Case Selection

As discussed in section 4.4.2, the multiple case research method was adopted for this study. The purposeful selection of appropriate cases was crucial for the successful completion of this study. According to Rowley (2002), cases need to be carefully selected so that they either produce similar results (literal replication), or produce contrasting results but for predictable

reasons (theoretical replication). Rowley (2002) further pointed out that case selection must be determined by the research purpose, questions, propositions and theoretical context including other constraints such as researcher's accessibility to empirical data, resources availability to support travel, data collection and analysis costs, and time availability.

It was therefore the decision in this study to identify a unit of analysis within a large organisation, rather than seek to study the organisation in its entirety. Hence, this study focuses on the RL aspect of business operation. The conventional way of sampling is to identify a population and select a random or stratified sample from that population. However, in case research, samples of cases are often built by selecting cases according to defined selection criterion (Yin, 1994). When selecting cases, it is important to consider the parameters or factors that define the population, which should be held constant across the sample (Voss et al., 2002). On this basis, the researcher consulted the Nigeria Health Finder web portal to review all legally registered PCs operating in Nigeria, and to make contact with those with potential interest in the research.

Approximately forty legally registered PCs were personally contacted by telephone as the goal was to explore their PRL operations in Nigeria. Some PCs are located far away from the researcher's location in Lagos and Abuja. Hence, these PCs were immediately disqualified due to distance, accessibility, time limitation, and travel cost issues. Some PCs were randomly eliminated because the researcher simply did not want to rely heavily on operation in only one particular type of PC. At the end, the case qualification operations yielded a list of nineteen PCs (cases) that expressed willingness to participate in the research.

As depicted in Table 4.2: Data Collection Matrix, the nineteen PCs (cases) were grouped into six different PSC stakeholders type (population): One local PM, three multinational PMs, four PWs, f1ve PRs, three HBPs, and one RA. Collecting data from multiple PSC stakeholders (categories) and PCs (cases) will strengthen the precision, veracity, validity, and stability of the empirical findings. The profiles of each cases are presented in detail in Appendix Two (p. 478) of this thesis.

4.4.5. Study Sample

The PCN confirmed 128 registered drug manufacturers, 724 drug distributors, 1,543 retail pharmacies and 292 drug importers operating in Nigeria (Aiswariya, 2014) as depicted in Figure 4.6. According to the Nigerian FMoH in collaboration with the WHO (2011), there are 13,199 licensed pharmacists, of which 2,051 work in the public sector. There are 5,483 pharmaceutical technicians and assistants (in all sectors).

The concept of a population is crucial in case research as population defines the set of entities from which the research sample is to be drawn. The selection of an appropriate population controls extraneous variation, and helps define the limit for generalizing findings (Eisenhardt, 1989). This study selected samples and cases from the aforementioned population of PCs, each of which are PSC stakeholders operating in the NPI.

The selection of six types of PSC stakeholders allowed the researcher to control environmental variation, as the focus on private sector PCs constrained variation associated with the differences between the private and public sector organisation. Thus, specification of this population reduces extraneous variation and clarifies the domain of the research findings as PSC stakeholders operating in the private sector of the NPI.

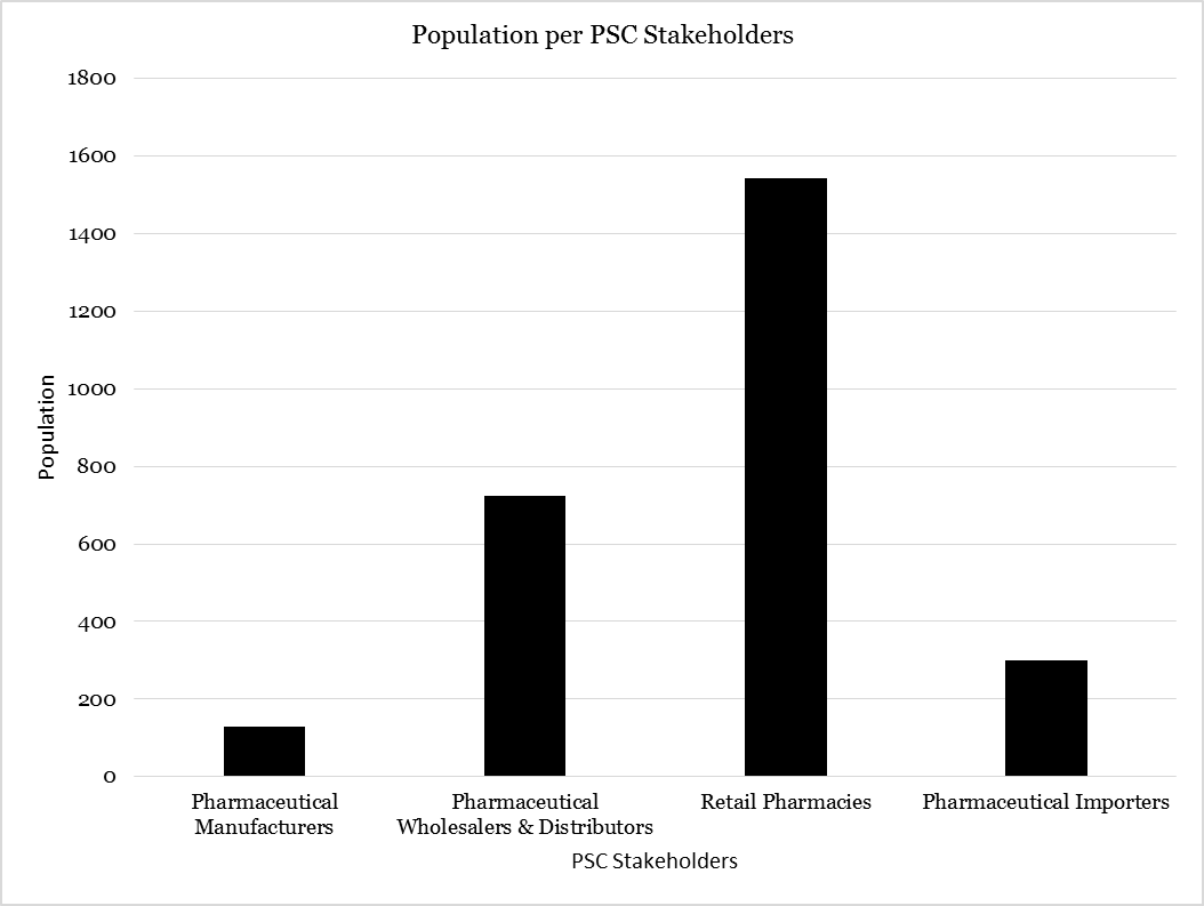


Figure 4.6: Four PSC Stakeholder Types and Population in Nigeria

This study used a purposive sample, as is generally the situation in case study and other qualitative research. The study also used diverse sampling so as to increase the generalisability of the research findings. Hence, the study's samples are selected from the population of six PSC stakeholders operating in the Nigeria. Profiles of each PSC stakeholders are presented in detailed in Appendix Two (p. 478). The samples (respondents) selected for this study were mainly PSC practitioners such as registered pharmacists, store manager, supply chain manager, logistics managers, regulatory affair officers, sales representatives, sales & marketing managers, and NAFDAC officers from the RA.

Table 4.2 depicts the six PSC stakeholders investigated in this study, their organisational type, respondents, location etc. The respondents were purposefully selected as they were involved in the physical distribution, and supply of drugs to meet market demand. Supply chain

managers, logistics managers and store managers (pharmacists) were selected because they are involved in the supply, storage, inventory management, distribution, sales, return handling, and disposal of drugs in the NPI.

Sales representatives and marketing managers were selected because they are not only involved in demand forecasting, marketing and sales of drugs but are also involved in the physical management of customer returns. The regulatory affairs manager was selected in order to gain insight from a regulatory perspective, and knowledge of RGs governing SEDD and counterfeit drugs. The RA official was also selected because of involvement in regulatory enforcement operations of all regulated substance in Nigeria. Hence the respondents were not only purposefully selected, but are also diversely selected.

Table 4.2: Data Collection Matrix

Pharmaceutical Supply Chain Stakeholders	Organisational Type	Targeted No. of Cases	Targeted No. of Interviews	Actual No. of Cases	Act No. of Interviews	% Cases	% Interviews	Cases	Respondents	Interview Recorded	Case Category CC	% Respondent/ CC	Location
Pharmaceutical Manufacturers (	Multinational Manufacturers	3	6	3	3	100%	50%	A	Supply Chain Manager	No	CC1	19%	Lagos
								B	Regulatory Affair Director	No			Lagos
								C	Sales Representative	Yes			Lagos
	Local Manufacturer & Importer	2	4	1	1	50%	25%	D	Regulatory Affair Manager	Yes			Lagos
Pharmaceutical Importer (PI)	Importer & Distributors	4	8	2	2	50%	25%	E	Logistics Manager	No	CC2	10%	Lagos
								F	Sale and Marketing Manager	Yes			Lagos
Pharmaceutical Wholesalers (PI)	Wholesalers	4	4	4	5	100%	125%	G	Pharmacist (Store Manager)	Yes	CC3	24%	Lagos
								H	Pharmacist (Business Owner/Store Manager)	Yes			Lagos
								I	Pharmacist (Store Manager)	Yes			Lagos
								J	Pharmacist (Store Manager)	Yes			Lagos
Pharmaceutical Retailers (PR)	Retail/Community Pharmacies	4	4	5	5	125%	125%	K	Pharmacist (Business Owner/Store Manager)	Yes	CC4	24%	Lagos
								K2	Pharmacist (Business Owner/Store Manager)				Lagos
								L	Pharmacist (Business Owner/Store Manager)	Yes			Lagos
								M	Pharmacist (Store Manager)	Yes			Lagos
								N	Pharmacist (Business Owner/Store Manager)	Yes			Lagos
Hospital-Based Pharmacy (HP)	Hospital Pharmacies	4	8	3	4	75%	50%	O	Pharmacist (Head Of Unit)	No	CC5	19%	Lagos
								P	Pharmacist (Head Of Unit)	Yes			Abuja
								Q	Pharmacist (Assistant Director General)	Yes			Abuja
Regulatory Authority (RA)	Regulators	1	2	1	1	100%	50%	R	Regulatory & Disposal Officer	Yes	CC6	5%	Abuja
	Total	21	34	19	21	90%	62%					100%	

The study's sample scope excludes PSC stakeholders such as raw material suppliers, packaging material manufacturers, and end-users due to time availability, and resource constraints.

4.4.6. Data Collection and Research Instruments

Case studies typically combine data collection methods such as archives, interviews, questionnaires, and observation (Eisenhardt, 1989). The underlying principle in collection of data in case research is that of triangulation (Voss et al., 2002). This thesis utilised qualitative semi-structured interview method to collect qualitative data from multiple PSC practitioners operating in the selected PCs.

Semi-structured interview was the primary data collection technique employed in this study. The use of interview is a viable method among other methods to gather valid and reliable data that are relevant to RQ(s) and objective(s) (Saunders et al., 2012). The advantage of using interview in this study is that it offers the researcher possibilities of modifying the line of inquiry following up an interesting response and investigating underlying motives in a way that postal and other self-administered questionnaires cannot (Robson, 2002).

The lack of standardisation associated with the degree of flexibility in an interview method raise concerns about reliability. Bias in interview is another concern which is difficult to rule out in interview methods. To mitigate the effect of these shortcomings, a high degree of professionalism of the researcher is required (Robson, 2002). Nevertheless, interview has the potential of providing rich and highly illuminating material (Robson, 2002) which is a major reason for its appropriateness for this exploratory study. Interviewing can be time-consuming; anything under half an hour is unlikely to be valuable while anything going over an hour may be making unreasonable demands on busy interviewees (Robson, 2002). To prevent this issue, the interview sessions for this study took about forty-five minutes to an hour.

According to Saunders et al. (2012), the nature of an interview should be consistent with the RQ(s) and objectives, the purpose of the research and the research strategy. One typology of

categorising interviews is the level of formality and structure. Hence, interview can be structured, semi-structured or unstructured (in-depth). The semi-structured interview data collection technique was employed in this study as it suited the interpretivist nature of enquiry; it provides a deeper understanding of issues, structures, processes, and policies that permeate participants' stories, hence, giving a fuller appreciation of the complexities and difficulties of change (Brashear et al., 2012).

The semi-structured interviews performed at each of the nineteen case research organisation were guided by the interview guide (case study protocol), which helped facilitate the reliability of the qualitative data collected. The reliability and validity of research findings can be via a well-designed research protocol (Yin, 1994). The case research protocol designed for this study includes the interview guide, and the general rules followed in using the research instruments (Appendix One, p. 475).

The semi-structured interviews were conducted face-to-face and by telephone, following the interview guide/research protocol. Face-to-face and telephone phone semi-structured interview were done complementarily as some information not captured during the face-to-face interview were captured in the follow-up telephone conversation with the respondents. Some of the interview were conducted primarily over the phone due to time constraint, distance and respondents' convenience. This did not affect the overall quality of the data rather it improves the depth of the data as some of the respondents tend to be more comfortable outside their place of work and on the telephone. The interview questions was designed to explore, characterise, and establish an in-depth understanding of PRL practices in the NPI.

4.4.7. Pilot Test: Semi-Structured Interview

An interview is a flexible and adaptable way of finding things out (Robson, 2002). A list of themes, constructs, and questions to be covered during the semi- structured interview were developed in advance. The interview questions were the same for all stakeholders although the respondents play different roles in PSC, and PRL network. Prior to the actual semi-structured

interview, the interview questions were first pilot tested for validity and reliability. According to Saunders et al (2012, 606), "a pilot test is a small-scale study to test a questionnaire, interview checklist or observation schedule, to minimise the likelihood or respondents having problems in answering the questions and of data recording problem as well as to allow some assessment of the questions' validity and the reliability of the data that will be collected".

Although pilot- test may be costly, it will actually save time and money in the end (Oppenheim, 1992). Oppenheim (1992:47) also emphasised the need for pilot testing "Questionnaires do not emerge fully-fledged; they have to be created or adapted. Fashioned and developed to maturity after many abortive test flights. In fact, every aspect of a survey has to be tried out beforehand to make sure that it works as intended." In like manner, it was important to conduct pilot test prior to the semi-structured interview to ensure that the collected data would address the RQs as required and intended.

In this thesis, a fully-fledged pilot semi-structured interview was not conducted but instead the interview questions were tested on two PSC practitioners operating within the private sector (Retail and hospital-based pharmacies) in Lagos, which enabled further improvement of the questionnaire. Academic experts were also asked to comment on the representativeness and suitability of the interview questions and positive feedback about the question was received.

The interview question was then pilot tested for execution issues, time taken to complete the interview, typos, content validation, and elimination or rephrasing of questions which produced undesirable response. At the end of the pilot-test, the feedback was reviewed; typos was corrected, and questions under the "how perspective" and "when perspective" were rephrased in order to obtain a more accurate account of these phenomena in practice. The end of this process sets the scene for the actual empirical study.

4.4.8. Semi-Structured Interview

Semi-structured interview is widely used in flexible designs, either as the sole method or in combination with others (Robson, 2002). Semi-structured interviews are associated with the phenomenological paradigm, and qualitative methodology. This is because the questions are likely to be open-ended and probe to explore the research topic in some depth (Collis & Hussey, 2003). In semi-structured interview, the researcher has a list of themes and open questions to be covered during the interview. Easterby-Smith et al. (2003) suggested that semi-structured interviews are appropriate when:

1. It is necessary to understand the construct that the interviewee uses as a basis for his or her opinions and beliefs about a particular matter or situation;

2. Interviewer aim to develop in-depth understanding of the respondent's world so that the researcher may influence it either independently or collaboratively;

3. The step by step logic of a situation is not clear;

4. The subject matter is highly confidential or commercially sensitive;

5. The interviewee is reluctant to be truthful about the issue other than confidentially in a one to one situation.

As the research phenomena of this study is at an exploratory stage, using a semi-structured interview technique facilitated an in-depth understanding of the phenomenon that is being studied as briefly discussed in section 4.4.6 (p. 204 – 205) of this thesis.

4.4.8.1. Content of the Semi-Structured Interview Guide

In semi-structured interview, the content which is prepared in advance consists of a set of items and alternative subsequent items depending on respondent's, probes and prompts, and

the sequence of questions (Robson, 2002). The set of items constructed for the semi-structured interview are open questions which impose no restrictions on the content or manner of the reply, other than the subject area. Hence, open-ended questions were designed for this interview. According to Robson (2002), open-ended questions are flexible; facilitating more depth and understanding of the subject area. Open-ended questions enable the testing of the limit of respondent's knowledge. Open-ended questions also encourage co-operation, and rapport between the interviewer and the interviewee. This facilitates a more accurate assessment of the respondent's view. The disadvantage, however, lies in the possibilities of the interviewer losing control which can make interview data more difficult to analyse when compared data obtained from closed questions.

In order to enhance the depth of the data collected, prompt and probe questions were used. A probe is a device to get interviewee to expand on a response when an interviewer intuit that they have more to give (Robson, 2002). It is a term used to describe follow-up question, after the respondent has given a first answer to the main question (Oppenheim, 1992). This devise was employed in developing the interview questions for this study. The scope to probe is one of the main advantage of interviews over postal questionnaires but they are one of the major source of interview's bias (Oppenheim, 1992). Prompts suggest to the interviewee the range of or set of possible answers that the interviewer expects (Robson, 2002). In this study, a list of possibilities (not exclusive) for some questions were read out by the interviewer. Prompts were used in a consistent manner with all the interviewees.

The researcher also adopted a pre-structured case outline in developing the interview guide. The pre-structured case is an excellent way to deal with the recurrent problem of data overload in qualitative studies (Miles & Huberman, 1994); it makes it easy for the respondents to review report for accuracy and for the researcher to locate the data related to a particular issue across all cases (Ellram, 1996). This semi-structured interview guide was used as a standard format for all the cases in this study. A copy of the semi-structured interview guide is presented in Appendix One (p. 475) of this thesis.

The questions in the semi-structured interview guide were structured under seven major headings: The case profile, the five perspectives of RL and Improvement Opportunities. Each headings (constructs) was followed with sub-questions such as business type, product type, types of returns, stakeholders, return process, return policies, drivers, impact of these activities on business operation, and how the practices can be improved. In conducting the semi-structured interview for this study, the following sequence of activities and questions was followed as depicted in Figure 4.7.

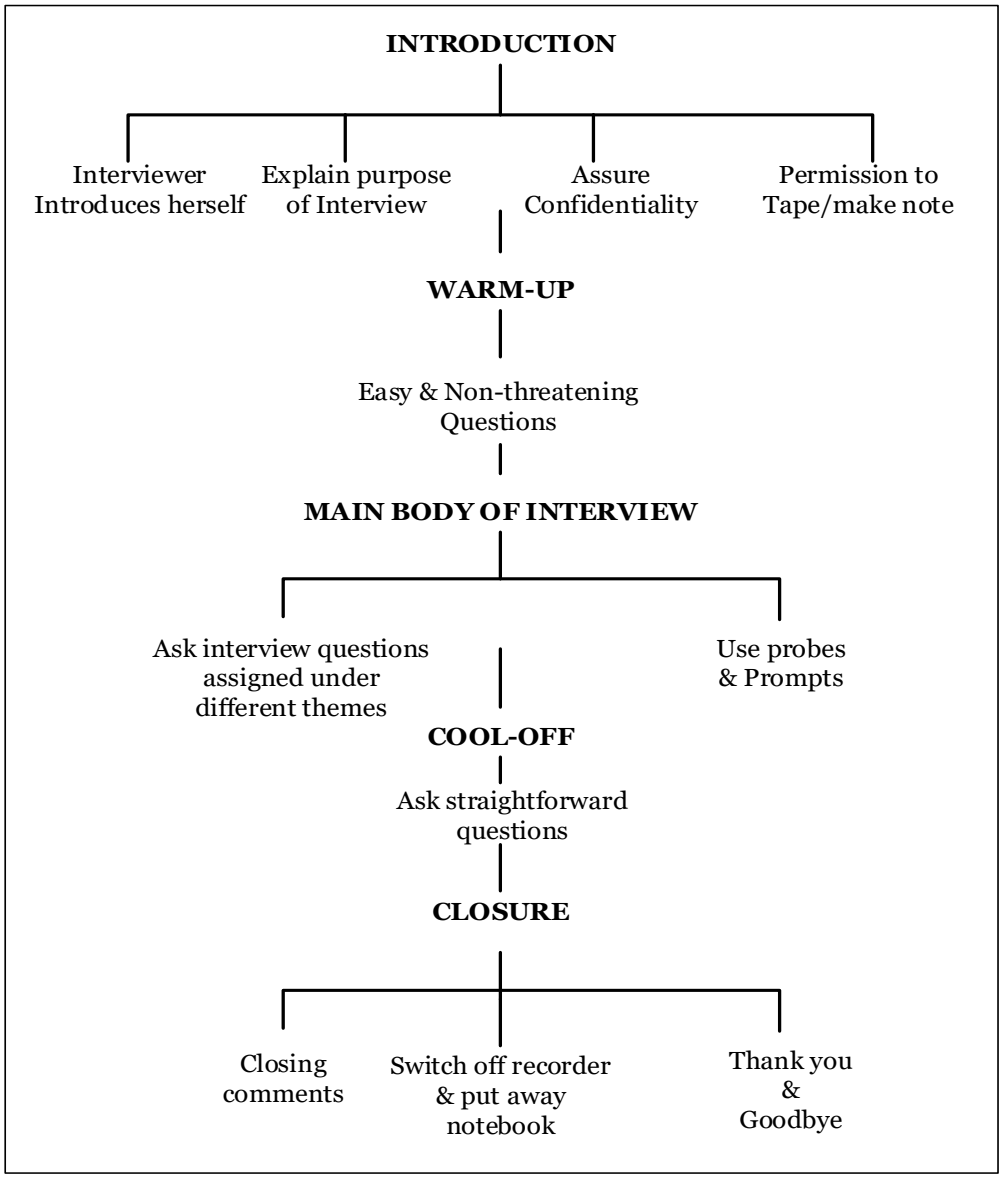


Figure 4.7**:** Applied Semi-structured Interview Schedule (Adapted from Robson, 2002)

4.4.9. Data Analysis

The researcher's job is hardly finished when data collection has been concluded even when conducted systematically. The majority of important data usually comes from analysing and interpreting what the respondents are trying to articulate (Stuart et al., 2002). Data analysis processes used in case study research may come from quantitative or qualitative disciplines, depending upon the type of data gathered (Ellram, 1996). In this study, the qualitative data were gathered via semi-structured interview. A key issue in case research analysis is the volume of data (Voss et al., 2002). Hence, once data are collected as illustrated in Figure 4.8, they need to be documented immediately and coded (Voss et al., 2002).

4.4.9.1. Data Documentation

The first step after data collection is a detailed write up of each site (Voss et al., 2002). Detailed write ups was done immediately after each site visit in order to maximise recall, to facilitate follow-up, and to fill gaps in the data. Documentation of the qualitative data in this study involved typing up of notes taken during the semi-structured interview, transcription of recordings, documentation of ideas, and insights that arose during or subsequent to each site visit. This process produced case narrative accounts of each semi-structured interview. The accuracy of documentation can be increased by letting key informants review draft reports (Voss et al., 2002). Hence, each interviewee was presented with a draft copy the interview report to review for amendment where necessary.

After a full transcription (audio recording and field notes), documentation, review of the semi-structured interviews data from the audio recordings and the field notes, the next line of action is to analyse the data. Miles and Huberman (1994) suggested that three concurrent stages should be followed in qualitative data analysis namely data reduction, data display and conclusion drawing/verification.

4.4.9.2. Data Reduction

Data reduction refers to the process whereby the mass of qualitative data obtained (interview transcripts, field notes, observations etc.) are reduced and organised through coding, writing summaries, writing memos, discarding irrelevant data and so on (Miles & Huberman, 1994). Decisions about what to select, what to summarize, what to exclude, and how to organise the data, are analytic choices. Central to effective case research is the coding of observation and data collected in the field so that incidents of phenomena can be coded into categories (Voss et al., 2002).

It is important to try to reduce research data into categories (Miles & Huberman, 1994). Coding is the organisation of raw data into conceptual categories; each code is effectively a category into which a piece of data is placed. After a full transcription, documentation, and review of the semi-structured interviews, empirical data were uploaded into NVIVO coding software in order to initiate the coding process.

The researcher thoroughly read through the entire corpus of empirical data per cases, and used categories technique to identify verbatim statements made by respondents about the phenomenon. Relevant verbatim statements that shed light on the constructs that make up this study's conceptual framework, and RQs were identified, and grouped into individual constructs accordingly. It is important to note that the study's conceptual framework is underpinned by the five RQs, content framework of RL, the stakeholder theory, and concepts designed to further address the RQs.

The data coding approach employed in this study was similar to the open-coding method, which is the step one of the three-step coding scheme suggested by Strauss and Corbin (1990): step one is the open coding, step two is axial coding and step three is selective coding. Open coding is a method used to break down case study data in order to analyse, conceptualize, and develop categories for the data (Ellram, 1996). Through the use of open coding in this study,

the empirical data from cases were systematically broken down, examined, coded and categorized.

Concepts are regarded as the building blocks of theory and open coding is an analytical process by which concepts are identified and are developed in terms of their properties and dimensions (Voss et al., 2002). The coding process employed in this study is also similar to the process of thematic analysis which involves careful reading and reviewing of the data in order to recognize emerging themes, patterns and relationships that describe a phenomenon (Fereday & Muir-Cochrane, 2006). This process helps to summarize segments data (Ellram, 1996) and facilitate theory building.

The end result of this coding process was the summaries of all the nineteen cases, which constituted the within case analysis of this study. Within-case analysis is defined as detailed write-ups of each case in terms of the research subject areas (Eisenhardt, 1989). Further details of the within case analytical process are discussed in chapter five and the nineteen cases are presented in detail in Appendix Two (478).

Only the open-coding method was employed specifically for the data reduction process for this study, as further data reduction risks the loss of relevant data required for other analytical operations. The other two steps in Strauss and Corbin's (1990) coding scheme were employed for the data display, and analysis operations of this study. Having addressed the data reduction processes employed in this study, the scene for the next two stages of this study is set: data display and conclusion drawing/verification. Both stages are considered data analysis stage (Voss et al., 2002).

4.4.9.3. Data display and Analysis

The first step in this stage is to analyse the pattern of data within cases (Voss et al., 2002). A data display is a visual format that presents information systematically to facilitate valid conclusion by user (Voss et al., 2002). To draw conclusions from the mass of data, Miles and

Huberman also suggested that a good display of data, in the form of tables, charts, networks and other graphical formats is essential. The overall idea of data display is for the researcher to become intimately familiar with each case as a stand-alone entity, and to allow the unique patterns of each case to emerge before seeking generalisation across cases (Eisenhardt, 1989).

The data reduction operation described above resulted in detailed display of nineteen case study write-ups, which constituted nineteen within-case analyses. Hence, an array or display of empirical data was constructed as presented in Appendix Two (p. 478). The systematic search for cross-case pattern is a key step in case research, and an essential for enhancing the generalisability of conclusions drawn from cases (Voss et al., 2002). As this is a multiple case research study, within case-category/cross-case, and cross-category analysis were key activities in the data analysis process of this study, aimed at enhancing the validity, reliability, and generalisability of the research findings, since deliberately seeking confirmation from multiple data sources leads to more reliable result (Voss et al., 2002).

Eisenhardt (1989) pointed out that humans are generally poor processor of information, as they generally tend to leap to conclusions based on a limited set of data, influenced by elite respondents, ignorance of basic statistical properties and inadvertent dropping of conflicting evidence. Conducting a within case-category/cross-case, and cross-category analysis is an attempt to counter these deficiencies.

After the completion of the data reduction/within case analysis, a second data display similar to that used for the within case analysis was constructed. The second step of Strauss and Corbin's (1990) three-step coding scheme was employed. Axial coding is a set of techniques that makes connections among categories developed in open coding (Ellram, 1996). The objective of axial coding is to regroup, and link categories into each other in a rational manner (Voss et al., 2002). This approach focuses on interactions and conditions which helps provide greater insight into the data (Strauss & Corbin, 1990). Hence, axial coding was used to establish preliminary connections among each case summaries per PSC stakeholder's type by

rereading each case summaries, identify similarities and differences between cases. This resulted in the conceptualisation of the empirical findings per PSC stakeholder.

This study considers this operation as a within case-category or cross-case analysis. The overall ideal of this within case-category/cross-case analysis was to force the researcher to go beyond initial impression of a single case by viewing the phenomenon from multiple perspective of all the cases grouped under the same PSC stakeholder (category). Cross-case analysis improves the likelihood of accurate and reliable theory i.e. a close fit to the data and also enhances the probability of capturing the novel findings which may exist in the data (Eisenhardt, 1989). Although in this study, within case-category analysis improves the likelihood of accurate and reliable theory, it cannot be generalised across the six categories. Hence, cross-category analysis is required. Further category-specific details of the analysis are presented in chapter six and further discussed in chapter seven of this thesis.

After the completion of the within case-category analysis, a third data display was constructed. The third step of Strauss and Corbin's (1990) three-step coding scheme was employed. They defined selective coding as the process of selecting the central category of the analysis, and relating it to other categories; validating and further developing categories. The process further facilitates the integration of theory into a cohesive whole (Strauss & Corbin, 1990). This study therefore used the selective coding approach to identify similarities and differences among the six categories (PSC stakeholder types) and integrate empirical evidences into a cohesive whole.

The overall ideal of this cross-category analysis was to force the researcher to go beyond initial impression presented by a single category case, through the use evidence emerging from diverse PSC stakeholder type/category. In the process, both contradictory, as well as confirmatory data was searched for in the data as it is important to avoid being selective in choosing data. Researchers must avoid what is referred to as confirmation bias, or the tendency to seek out and report data that supports their own ideas about the key findings of

the study (Miles & Huberman, 1994). The PRL practices per categories and their connections forms part of the outcome of this study.

Figure 4.8 depicts the key concurrent activities that constitutes the data analysis guide employed in analysing the entire qualitative data obtained from the semi-structured interviews conducted in this study.

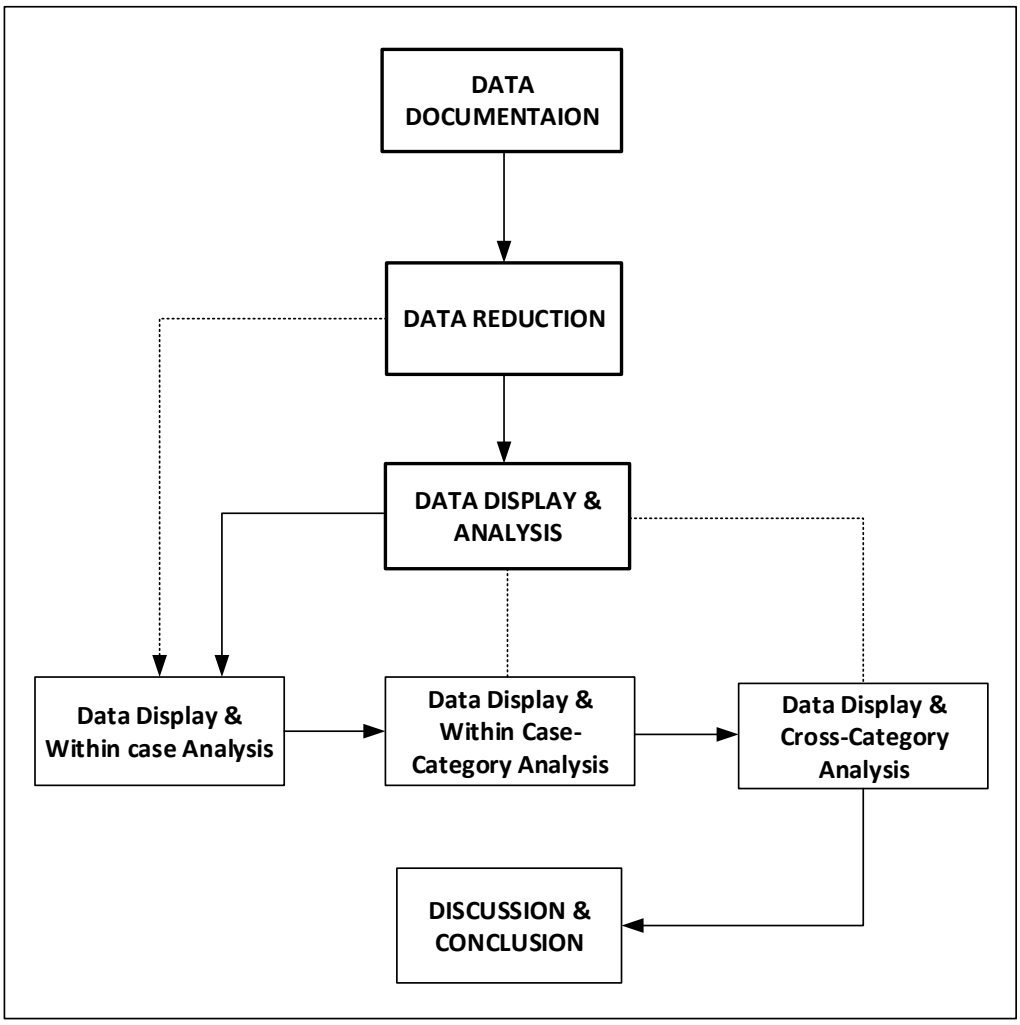


Figure 4.8**:** Framework for Case Research Qualitative Data Analysis (Adapted from Miles & Huberman, 1994; Voss et al., 2002)

4.4.10. Research Quality Issues

Voss et al (2002) emphasised the importance of paying attention to reliability and validity in case study research. The quality and rigour of a research design can be evaluated based on the validity, reliability and generalisability of the research result (Easterby-Smith et al., 2003). Validity is concerned with the extent to which the research findings accurately represent what is actually happening in the situation (Collis & Hussey, 2003) while reliability on the other hand refers to the extent to which a researcher's data collection techniques or analytical procedures yield consistent results (Saunders et al., 2007). The meaning of the term reliability however varies with the research philosophy of a researcher (Easterby-Smith et al., 2003).

Reliability and validity have a number of dimensions: external validity, internal validity, construct validity and reliability (Yin, 1994). Depicted in Figure 4.9, this thesis considers these dimensions in the research design and are outlined in the

Table 4.3. The first consideration in research design quality is the external validity of the research result. External validity reflects how accurately the research results represent the phenomenon studied, establishing generalizability of results (Ellram, 1996). External validity is also the knowing of whether a study can be generalised beyond the immediate case study (Yin, 1994). In this study, the researcher conducted nineteen case researches. Although six to ten cases are enough to provide compelling evidence to support or reject an initial set of propositions (Rowley, 2002).

Table 4.3**:** Reliability and validity in case research (Yin, 1994: 33)

Test	**Case study tactic**	**Phase of Research in which tactic occurs**
Construct validity	Use multiple sources of evidence	Data collection
	Establish chain of evidence	Data collection
	Have key informants review draft case study report	Composition
Internal validity	Do pattern matching or explanation building or time-series analysis	Data analysis
External validity	Use replication logic in multiple case studies	Research design
Reliability	Use case study protocol	Data collection
	Develop case study database	Data collection

The second consideration in research design quality is the reliability of the research result. Saunders et al. (2012) emphasised the importance of the reliability of research result in research design quality. Reliability is the extent to which a study operation can be repeated, with the same result (Yin, 1994). Researchers adopting positivist philosophical assumptions focuses on the precision of measurement and the replicability of experiment; both enhance the reliability of research. There is, however, the risk that the validity will be low. Researchers adopting interpretive philosophical assumption focus on capturing an in-depth and meaningful explanation of a phenomena which in turn enhances the research's internal validity.

The criticisms of both the positivist and interpretivist paradigms are addressed by combining methods (Mangan et al. 2004). By combining methods, flaws associated with various research methodologies can be compensated and their strengths can be leveraged to generate results that are not only generalizable but also internally valid (Mangan et al., 2004). This exploratory study, however, employed a single method associated with the interpretivist paradigm, as validity of the empirical findings is very critical.

In a case study context, there are two keys to reliability: the use of a case study protocol, and case study database (Ellram, 1996). The reliability and validity of a case research data are enhanced by a well-designed research protocol (Yin, 1994). A case research protocol includes the interview guide, procedures and general rules that guide the use of the research instruments, as well as a clear identification of who or from where different sets of information

are to be sought (Voss et al., 2002). It is always good practice to have a case study protocol, and even more important in multiple-case research methodologies so as to ensure reliability (Ellram, 1996). Hence, an interview guide/research protocol was not only designed for this study, but was also revised substantially based on feedback from academic and industry experts.

Based on the interview guide/research protocol, research in each case involved on-site visits. All PSC practitioners who agreed to participate in the research were informed about the research both via the phone and face-to-face to prepare them for the interview session. Copies of the interview guide were also shared in order for the respondents to be aware of the types of questions to expect and the types of documents that might be requested. A standard form of the letter of introduction and overview of the RQ is included in Appendix One (p. 475).

To further corroborate the empirical evidence, and provide a formal assembly of evidence separate from this report, a case study database was established, as this helps to enhance the reliability of the research. The case study database includes a copy of the completed interview guide for each organisation, any additional notes taken outside of the interview guide, and a detailed write-up of each case.

The third consideration in research design quality is construct validity. Construct validity deals with the establishment of the proper operational measures for the concepts being studied (Voss et al., 2002). Construct validity refers to the ability of readers of the case research to follow the case study data and analysis from the initial formulation of the RQs to its final conclusions (Ellram, 1996). Ellram further pointed out the three elements associated with the establishment of construct validity: using multiple sources of evidence, establishing a chain of events, and having key informants review in case study research.

In the nineteen cases researched in this study, multiple interviewees were interviewed using the same interview guide, complemented with data obtained via observation and literatures to give greater breadth and better validity to the empirical findings. Interviewees were PSC practitioners involved in drug sale, dispense, distribution, storage, and disposal as the

researcher sought to interview practitioners with the greatest direct involvement in PRL. This mitigated the risk of respondents' subjectivity, and enhanced the reliability of the research result.

Ellram (1996) pointed out the need to establish and maintain a chain of evidence in order to achieve construct validity. In this thesis, academic and industry experts reviewed the interview guide, RQs, and the summary copy of the case reports. Each case's research report was reviewed for logic, flow, clarity, content, and editorial changes. These activities provided an external verification that the research has a logical flow and chain of evidence. As part of this external verification process, each case report draft was also reviewed by interviewees/respondents for necessary corrections/amendments, hereby enhancing the construct validity of the research.

The fourth consideration in ensuring the quality of the research design is the internal validity. Internal validity was defined by Voss et al., (2002) as the extent to which a causal relationship can be established whereby certain conditions are shown to lead to another conditions. Although internal validity is irrelevant for those case studies that are solely exploratory or descriptive in nature, it is however highly important for explanatory case studies (Ellram, 1996). Internal validity, is important in explanatory case studies where researcher aim to demonstrate that some outcome was caused by an independent variable (Yin, 1994).

This study aims to generate an empirically informed and theoretically grounded insight of PRL practices using a seven perspectives RL content framework. As this study is not only exploratory but also explanatory and descriptive in nature, this makes internal validity an important factor in the research design of this study. Internal validity in case study research involves making proper inferences from the data, considering alternative explanations, using convergent data, and related tactics (Ellram, 1996). This process will be illustrated in the data analysis sections of this thesis.

Besides the need for research results to be valid and reliable, research results also need to be generalizable. Generalisation can only be achieved if case study design has been appropriately

informed by theory, and evidently adds to the established theory (Rowley, 2002). The method of generalisation for case studies is analytical generalisation in which a previously developed theory is used as a template with which to compare the empirical results of the case study (Rowley, 2002). Hence, the greater the number of case studies that shows replication, the greater the rigour with which a theory has been established. Case study method has been criticized and perceived as not being generalizable. This misconception is best addressed by replicating case studies and verifying patterns through multiple case research (Ellram, 1996).

Multiple case study results may be more generalizable than the results of a single case study, which tends to be very specific (Ellram, 1996). This is why multiple case research methodology was adopted for this study. This study's research design therefore addressed both the need for more rigorous logistics research (Mentzer & Kahn, 1995) and also recent calls for the use of qualitative research procedures in logistics research to help build logistics theory (Mangan et al., 2004; Näslund, 2002). This study focused on capturing an in-depth, meaningful descriptions of PRL practices in the private sector of the NPI.

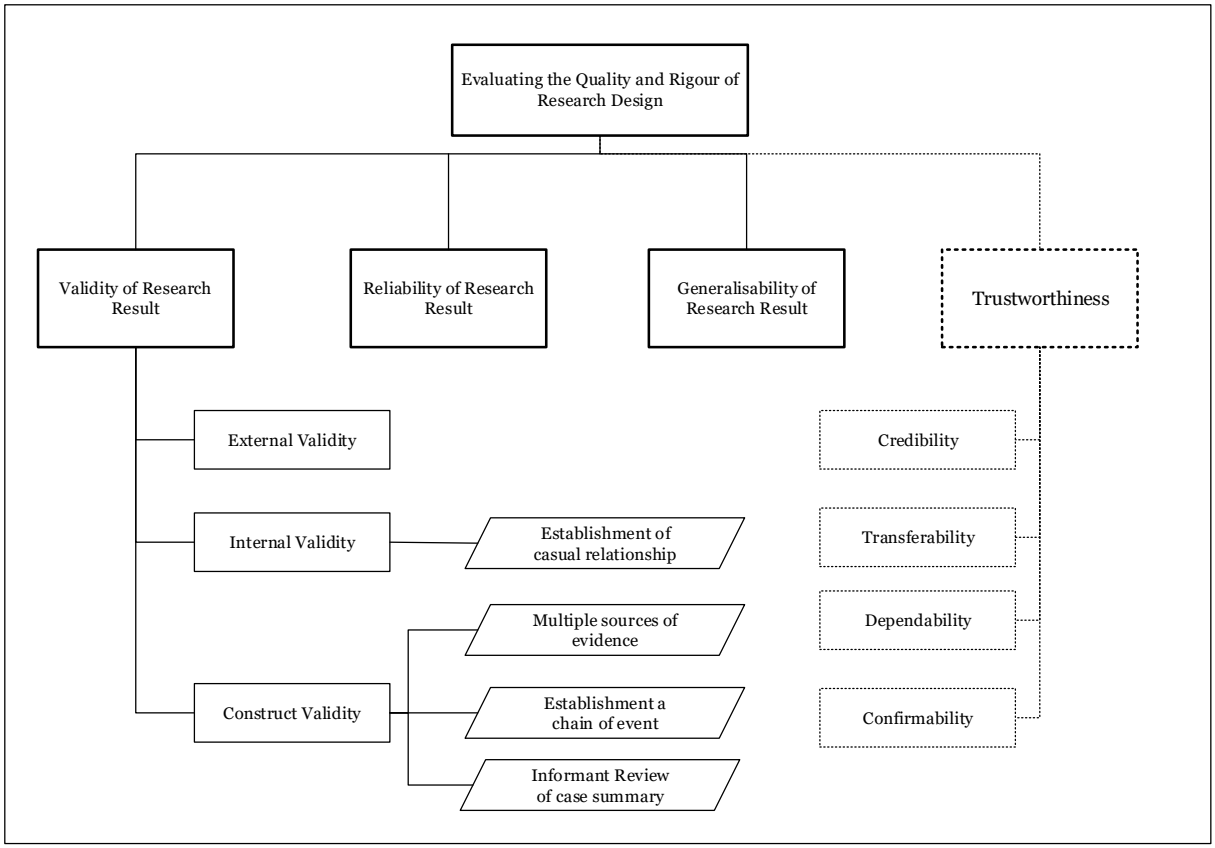


Figure 4.9: Dimension Considered in Research Design Quality

Regardless of the nature of the research activity and the paradigmatic assumptions, it seems to be commonly accepted in logistics research that the traditional criteria of internal validity, external validity, construct validity and reliability determine the research quality (Halldorsson & Aastrup, 2003). However, some authors argue that these conventional quality views originate from quantitative/positivistic ideals, it might be artificial to use these traditional criteria to justify the quality of a qualitative research (Halldorsson & Aastrup, 2003). This exploratory logistics research is primarily rooted in the interpretative paradigm. It is therefore useful to also be aware of the four alternative criteria of trustworthiness in evaluating quality for qualitative research (Figure 4.9).

Trustworthiness is the combined qualities of credibility, transferability, dependability and confirmability (Erlandson et al., 1993). The awareness of these alternative views should influence the quality criteria applied within the field of logistics (Halldorsson & Aastrup, 2003).

Viewing truth-value as credibility is parallel to the conventional notion of internal validity described above. Transferability is the extent to which the study is able to make general claims about the world; this is parallel to the conventional terms external validity and generalizability. The notion of dependability is parallel to the conventionally termed reliability. Confirmability is parallel to the conventional view on objectivity or external validity (Halldorsson & Aastrup, 2003).

4.4.11. Triangulation

According to Ticehurst and Veal (2000), triangulation gets its name from the land surveying method of fixing the position of an object by measuring it from two different positions. The logistics field might not reach its full potential if all its research is conducted within a narrow methodological domain It is therefore necessary to use both quantitative and qualitative research methodologies if the development and advancement of logistics research is to be achieved (Naslund, 2002). This view further favours the use of a multi paradigmatic approach to logistics research.

According to Mangan et al. (2004), Mentzer and Flint (1997) advocated the use of different methodologies in logistics research to triangulate on the true nature of the phenomenon. In recent decades, research is generally increasing towards the use of multiple approaches, which provides a middle ground between the contrasting positivist and phenomenological paradigms (Mangan et al., 2004). Eisenhardt (1989), Mintzberg and McHugh (1985) used qualitative data supplemented by frequency counts in their work on the National Film Board of Canada, and Eisenhardt and Bourgeois (1988) combined quantitative data from questionnaires with qualitative evidence from interviews and observations.

Most researchers (Voss et al. 2002; Eisenhardt, 1989; Yin, 2014) comment that the central theme in triangulation is data collection by more than one method, which in turn leads to greater validity and reliability of data. Yin (2014) and Ma and Norwich (2007) preferred the

use of a case-study research method that integrate multiple data collection method, and multiple data sources instead of single data source to explore a wider range of issues, in different contexts in order to gain deeper insight into the phenomenon under investigation.

Triangulation is one of the great strengths of case studies as compared with other research methods because evidences can be collected from multiple sources to corroborate the same fact or finding (Rowley, 2002). Triangulation is strongly recommended by researchers to increase the validity, reliability and overall quality of the research (Bryman and Bell, 2015; Ma & Norwich, 2007). Easterby-Smith et al. (1991) identified four different types of triangulation:

1. Data triangulation, where data are collected at different times or from different sources;

2. Investigator triangulation, where different investigators independently collect data;

3. Methodological triangulation, where both quantitative and qualitative techniques are employed;

4. Triangulation of theories, where a theory is taken from one discipline and used to explain a phenomenon in another discipline.

Triangulation helps in reduce bias in data sources, methods and the investigator (Collis & Hussey, 2009). The use of methodological triangulation in research helps to compensate for the flaws, and leverage the strengths of the various available methodologies (Mangan et al., 2004). Despite this attribute, methodological triangulation was not employed in this study because of the problem it presents at the philosophical level, which can lead to conflicts between paradigms. In addition, methodological triangulation was not employed due to the time limitations and resource constraints of this study. Instead, data and theory triangulation were employed.

The data and theory triangulation employed enhance the veracity and the rigour of this logistics research; it enhances the deeper understanding of the unknown phenomenon as well

as the validity, reliability, and generalisability of the research findings. This triangulated approach also facilitates multidimensional insights into the phenomenon being studied.

4.5. Research Ethics

Research ethics relates to the question of how well a researcher formulates and clarifies a research topic, designs a research and gains access to data, collects data, processes and store data, analyses data and writes up the research findings in a moral and responsible way (Saunders et al., 2012). In this study, the researcher ensured that the research design employed is methodologically sound and morally defensible to all those involved. The researcher adopted the deontological philosophical standpoint which argues that the ends served by the research can never justify the use of research which is unethical (Saunders et al., 2012). Therefore, the following guidelines were followed to ensure that the overall research operation followed ethical considerations:

1. Obtain and adhere to the University ethics guidelines set for the conduct of research;
2. Ensure the consent form is submitted to the university research ethics committee;
3. Recognise the voluntary nature of participants and the right to withdraw partially or completely from the process;
4. Obtain organisational consent from the participating organisation;
5. Inform the interviewee about the purpose and nature of the research;
6. Interviewees were requested to propose the interview date and time according to their convenience and availability;
7. Ensure that the interview guide was sent before the actual interview;

8. Obtain interviewee's permission for recording for the purpose of ensuring the interviewee's meanings and comments are properly interpreted;

9. Advise interviewee of their right to turn off the recorder at any time;

10. Assure confidentiality of data provided by interviewees and anonymity of any attributed comments;

11. Abstain from offering monetary incentives in order to obtain access and data;

12. The interview transcripts were sent to the respondents for two purposes, first, to validate that the interviewer had understood them correctly and second, in case they wanted to change anything from a confidentiality perspective;

13. Present interviewee with draft copy of the interview report for review and amendment where necessary.

4.6. Chapter Summary

This chapter has established the philosophical, ontological and epistemological framework and viewpoint that underpins the research methodology employed for this study. This began with the restating of the research objectives, and RQs. The chapter discussed the philosophical underpinnings of this research with emphasis on theories and paradigms in logistics research, importance of rigor and relevance, as well as the researcher's paradigmatic position. The research design for this study was established, and the research methodological approach discussed in the light of other alternative research methodologies, advantages, and limitations. The research instruments employed for this study was pilot tested for execution issues, timing, typos, and content validation, which set the stage for the actual empirical study discussed in the next chapter.

CHAPTER FIVE: RESEARCH EXPERIENCE AND WITHIN-CASE ANALYSIS (PHASE ONE)

5.1 Introduction

The previous chapter discussed and justified the methodological approach employed in data collection, documentation, reduction, display, and analysis for this study. This chapter discusses the research experience, introduces the actual empirical study, and the within-case analysis conducted. Thus, this chapter is divided into three sections.

The first section describes the researcher's research experience in Nigeria i.e. issues that affected the researcher's data collection activities in Nigeria, factors that shape or affect the quality of the data, as well as the measures employed to mitigate their effect. The second section introduces the Phase One of the data analysis process i.e. the introduction of the nineteen within-case analysis, and where the detailed write-ups are located in the thesis. The third section defines the constructs that will be used to structure the presentation of the analysis, and to generate insights from the empirical data obtained from the field study.

5.2 Researcher's Research Experience in Nigeria

The researcher set out to conduct semi-structured interviews with PSC practitioners operating in six different PSC stakeholder organisations as pointed out in section 4.4.4 (p. 199). As shown in Table 4.2, a total of thirty-four interviews was initially secured, out of which six with PSC practitioners from each of three multinational PMs was planned but only three from each organisation were successfully conducted. Four interviews with PSC practitioners at two indigenous PMs were planned but only one was successfully conducted. Four semi-structured interviews with PSC practitioners at two PIs were planned but only two were successfully conducted.

Eight semi-structured interviews with PSC practitioners from four different HBPs were planned but only four were successfully conducted. Furthermore, four semi-structured interviews with four superintendent pharmacists working at four different PW were planned, and a total of five interviews was successfully conducted. Four semi-structured interviews with four superintendent pharmacists working at four different PRs were planned and a total of five interviews was successfully conducted. A semi-structured interview with a RA's official directly involved in the management of submitted pharmaceutical product was also successfully conducted.

The data collection exercise therefore produced a total of twenty-one semi-structured interviews, which is 62% of the total number of planned interviews. Nineteen per cent of the respondents were from PMs, 10% from the PIs, 24% from PWs, 24% from PRs, 19% from HBPs, and 5% from the RA. Majority of the empirical data collected are however based on the view of single respondent from multiple PCs investigated. The use of single respondent might be sensible for one-man company such as community and retail pharmacies investigated but not for multinational or larger PCs due to the risk of bias of a single respondent. This risk was however mitigated by interviewing PSC practitioners from 19 different PCs including 4 different PMs.

This issue was further contained through the use of extant literature to triangulate the data for both confirmatory and contradictory purpose. Be that as it may, further containment of this issue could have been achieved through the use of archival record of the companies to triangulate and provide additional depth to the interview data. This was however not explored due to accessibility and trust issues encountered at the PCs investigated.

Besides the factors that precluded data collection in Nigeria discussed in the sext section, the researcher's data collection exercise stopped at interview number twenty-one as data saturation was achieved at this point (Data appearing repetitive). Hence, PRL practices specific to each PSC stakeholders were captured from the twenty-one semi-structured interviews.

The researcher's inability to conduct all the semi-structured interviews in face-to-face meetings with respondents was compensated via multiple telephone interviews, and follow-up interviews when necessary. Hence, a total of twelve face-to-face semi-structured interviews was conducted, while the remaining nine semi-structured interviews were conducted via the telephone until data saturation was achieved. The telephone interview method was adopted as a complementary data collection method due to time constraint and limited resource available for face-to-face interview in Nigeria.

5.2.1. Factors precluding data collection, and mitigation measures

In addition to time and resource constraints, Figure 5.1 depicts an overview of all factors that precluded the researcher's data collection activities in Nigeria.

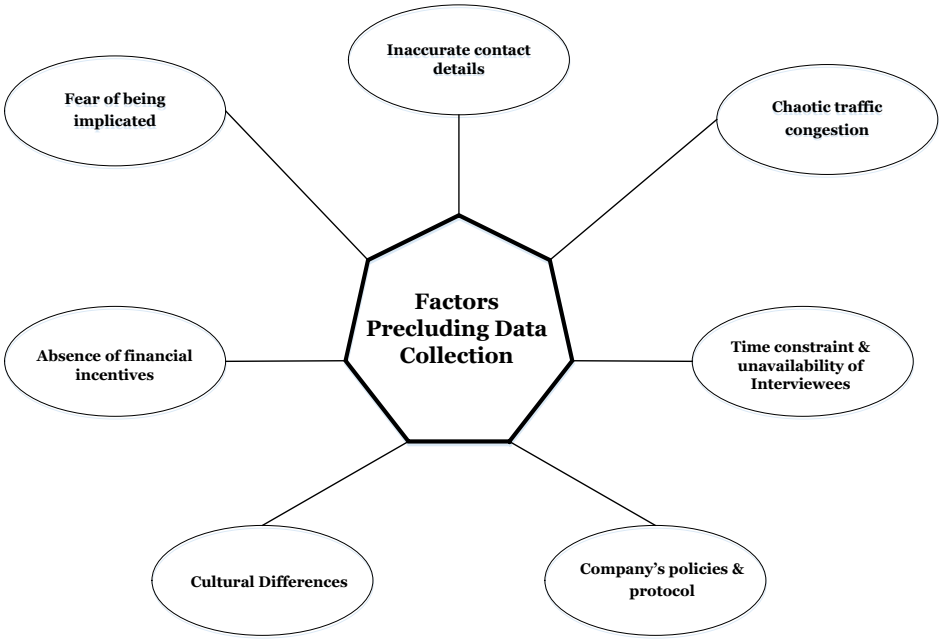


Figure 5.1: Factors Precluding Data Collection

1. Inaccurate contact details

It was extremely difficult to arrange interviews with pharmaceutical practitioners in Nigeria without physically visiting Nigeria. This can be attributed to fact that the contact details

published on the majority of the PCs' websites are either incorrect, or non-functioning. Telephone numbers were not accessible there was no response to emails. As a result, it was practically impossible for the researcher to request permission or gain access to PCs without first physically visiting Nigeria.

2. The chaotic traffic congestion

The chaotic traffic situation and congestion in Lagos was another major challenge that affected the number of interviews that could be done in a day. On an average, it took approximately from two and half to three hours to travel from one part of Lagos State to another, especially if the PCs were not located in the same local government area as the researcher. The enormous amount of time wasted in Lagos traffic, coupled with the harsh weather conditions, were very exhausting. This factor contributed to the low number of face to face interviews that could be conducted in a day. The impact of this factor was mitigated by being on the road early in the morning, in order arrive at the site on time.

3. Time constraint and unavailability of interviewees

Interviewees were not always available on time, since the interviews were scheduled during their working hours. Some of the interviewees were too busy to be interviewed during working hours while some tended to be hasty during the interviews. In order to mitigate the impact of this factor, the researcher adopted the use of telephone interview. The researcher requested the telephone numbers of the interviewees and arranged telephone-based semi-structured interviews with the interviewees at an agreed time convenient for them. This method of interview not only ensured an uninterrupted conversation but also provided a platform for follow-up questions where needed.

4. Company's policies, and protocol

Some PC do not have a policy of granting interviews, especially with interviewers from foreign institutions. This factor also limited the number of PCs that could be accessed for interviews. This factor, coupled with the aforementioned factors, precluded data collection but did not

shape or affect the quality of the data collected. The following factors can affect the quality of the data collected.

5. Cultural Differences: Social Interaction

Physical interaction, the right connections and trust are important elements required in order for a researcher to successfully conduct research in Nigeria. The best approach to gaining access to PCs in Nigeria is by being connected to the right people and by engaging in social interaction with potential respondents so as to build trust. This requirement therefore made it imperative for the researcher to physically visit Nigeria, to establish relationships and to build trust with the PCs and the interviewees.

Furthermore, it is a question of who you know in Nigeria that matters, not necessarily the novelty or the merit of one's research. Based on this observation, the first three days of the visit to Nigeria were dedicated to establishing physical contacts and interactions with PSC practitioners. This was done via professional contacts, relatives, and direct walk-in to PCs.

6. Absence of financial incentives

Considering the Nigerian culture, interviewees' hastiness during interviews can be attributed to the absence of financial incentives for granting the interview. With this understanding, it is a normal practice in Nigeria to offer financial incentives in order to obtain consent for interview, encourage interviewee participation, and improve the quality of information being shared. The researcher was, however, aware that offering such financial incentives would be a violation of the University of Hull research ethics. Hence, the researcher abstained from such practices and explored other ethical options such as building trust with the interviewees, reassuring interviewees that the information shared would be strictly for the research purpose, confidential and anonymous. Despite these reassurances, only three of the interviewees consented to sign the research questionnaire. Nevertheless, more than 70% of the interviewees consented to be recorded during the interview.

7. The fear of being implicated

Considering the peculiar nature of the NPI, and the previous negative reputation of the industry, exploring PRL practices can be considered a sensitive research topic. Some respondents tended to be wary of individual interested in inquiring information about their PRL practices. Employees of such PCs tended to be cautious and diplomatic in sharing information about their operations; thereby protecting their job and the interest of their company from possible harm. This attitude can be attributed to the nature of the drugs (counterfeit, adulterated, short-dated, expired and damaged drugs) that characterise the PRL flow.

In the light of the previous negative reputation of the NPI, some of the interviewees from PMs were somehow reluctant at first to grant the researcher audience. This attitude could be attributed to the fear of being investigated by an undercover agent from the regulatory authorities, or an undercover agent from their competitors. This attitude could also be attributed to the concern that the distribution of counterfeit, adulterated, and re-distribution of expired drugs is probably still a practice in the pharmaceutical industry.

The impact of these factors on the research activities was mitigated through a proper identification of the researcher as a genuine University of Hull research student, adequately informing the interviewees about the primary purpose of this research, reassuring them as to the confidentiality and anonymity of the research as well as interviewing only PSC practitioners directly involved in RL operations.

Having discussed the researcher's research experience in Nigeria, the next section re-introduces the conceptual framework adopted in this study for understanding PRL practices in Nigerian private sector.

5.3 Framework and Constructs for Understanding PRL

In theory building research, a prior view of general constructs, categories, variables, and themes in the area of research including their relationships is required (Voss et al., 2002). This

can be achieved by constructing a conceptual/theoretical framework that will underlie the research (Miles & Huberman, 1994). As discussed in chapter three, 3.2.3 of this thesis, the constructs used for designing this study's conceptual framework stemmed from the six perspective RL content framework developed by De Brito and Dekker (2003), insights from extant RL literature and from the empirical data obtained for this study. Figure 3.6 is the final conceptual framework adopted for understanding PRL in this study. The framework graphically depicts the main things (Constructs) that were addressed in this study. Each constructs were used to explore the empirical data obtained from the field and to structure the analysis presentations.

Theories are directly linked to constructs, and constructs provide both systemic and observational meaning (Mentzer & Kahn, 1995). This study's construct is systemic by virtue of being defined within the RL framework, and observational by virtue of its explanatory power acquired via the RQs. Hence, the constructs are operationalised i.e. empirical data were analysed and presented within the context of the sixteen constructs (Table 5.1) of the conceptual framework (Figure 3.6) to address the RQs.

The researcher thoroughly read through the entire corpus of semi-structured interviews data per cases uploaded into NVIVO coding software, and used categories technique to identify verbatim statements made by respondents about the phenomenon being studied. Relevant verbatim statements associated to each construct were identified, and grouped into each existing constructs. Additional constructs were also developed when verbatim statement that provide new insight are identified. Although the six different perspectives of RL was defined in section 2.4.4, the definition of each construct as employed in this empirical study are presented below.

Table 5.1: Constructs Employed for Understanding PRL

Identified Constructs
Case Profile
Export Return
Importance of PRL Practices
Knowledge of RG
Factors Hindering Compliancy
PRL Facilitator
PRL Impact on Business Operation
The What Perspective of PRL
The Why Perspective of PRL (Receiver)
The Why Not Perspective of PRL (Receiver)
The Why Perspective of PRL (Sender)
The Why Not Perspective of PRL (Sender)
The How Perspective of PRL
The Who Perspective of PRL
The Where Perspective of PRL
The When Perspective of PRL
Improvement of PRL Practices

Export Return

In this study, the term export return (ER) is used to classify drugs that are sourced from foreign pharmaceutical manufacturers and subsidiaries, imported into Nigeria by registered pharmaceutical entity such as multinational pharmaceutical manufacturers operating in Nigeria, pharmaceutical importers, distributors, wholesalers, and NGOs, primarily for consumption in Nigeria, and then need to be returned to the source for exchange, refund, proper disposal or any other purposes. Such drugs are classified as ER and are often EDD drugs. The research findings of study identify the PRL activities associated with ER as well as factors shaping PRL strategy employed by each company investigated.

Importance of PRL Practices

This construct provides empirical evidence about the operational and strategic importance of PRL practices to the PCs investigated. The PCs investigated have different vision, mission, goal,

structure, and strategies. Hence, it is important for the purpose of this exploratory study to explore this phenomenon from the perspective of PSC practitioners operating in the private sector of the NPI.

Knowledge of RG

This construct provides insight about the level of knowledge of RG possessed by the pharmaceutical companies, and PSC practitioners operating in the private sector of the NPI, as well as the level of their commitment in adhering to the RG governing the handling of EDD drugs.

Factors Hindering Compliance

This construct describes the factors hindering pharmaceutical companies (manufacturers, importers/distributors, wholesalers, retailers, hospital pharmacies etc.) from complying or adhering to the RG for handling EDD drugs.

PRL Facilitator

This construct describes the systems/mechanisms that facilitate the implementation PRL practices employed by the PSC companies investigated for this study. This theme captures the systems setup or existing between channel partners to facilitate PRL practices both within companies and between channel partners.

PRL Impact on Business Operations

This construct reveals the impact of PRL practices on the day to day business operations of the pharmaceutical companies investigated for this study. This includes PRL impact on companies' operational cost, revenue, profitability, daily operations, corporate reputation, services to customer, capacity to compliance with contractual obligations, and regulatory requirements.

The "What Perspective" of PRL

Xie and Breen (2014) defines the "what perspective" of RL as the products entering the RL network (product-ins) and the products leaving the RL network (product-outs). In this study, the "what perspective" of PRL was identified by considering the type and state of drugs entering the PRL network, as well as the type and state of drugs leaving the PRL network. This perspective identifies the characteristics of drugs that makes PRL attractive or compulsory.

The "Why Perspective" of PRL (Receiver)

In this study, the "why perspective" of PRL deals with the issue of why returned drugs from customers are accepted or received by PCs. This perspective identifies the factors driving PCs to engage in PRL practices. The "why not perspective", however, deals with the issue of why customers' returns are rejected or not accepted by PCs. Hence, this perspective describes factors hindering PCs from engaging in PRL practices.

The "Why Perspective" of PRL (Sender)

In this thesis, the "Why Perspectives" deals with the issue of why drugs are returned back to the source by senders (end-consumers, PI, PW, PR, HBP). This perspective describes the senders' perspective of what motivates the reverse flows of drugs (return reason). The "Why Not Perspective" of PRL (Sender) however deals with the issue of why drugs are not returned back to the source (Suppliers). This perspective describes the factors hindering reverse flows of drugs from the senders' perspective.

The "How Perspective" of PRL

The "how perspective" of PRL abroad how PRL works in practice i.e. drug returning, collection, inspection, sorting, and recovery processes such as resale, reuse, redistribution, incineration, or proper disposal. A viewpoint of PRL can therefore be obtained by considering this

perspective as it provides insight on the processes carried out and how value is recovered in the reverse chain.

The "Who Perspective" of PRL

The "who perspective" deals with the issue of who is executing the PRL activities i.e. the actors and their roles in implementing PRL. In this study, this perspective provides insight on who is executing various PRL activities within PCs, and the PSC network.

The "Where Perspective" of PRL

The "where perspective" of PRL deals with the physical network structure where the actors are located, and where drugs are collected and processed. In this study, this perspective provides insight on the physical structure where PRL actors are located and where the PRL activities take place.

The "When perspective" of PRL

The "when perspective" of PRL was designed for this study to provide insight on when key PRL activities such as drug returning, collection, inspection, sorting, and recovery processes (resale, reuse, redistribution, incineration, or proper disposal) are initiated in the PRL network. This perspective generates a novel insight in this thesis as this phenomenon has never been addressed in extant literature.

Improvement Opportunities

Based on the improvement opportunities envision by the PSC practitioners interviewed, this construct captures and describes improvement measures suggested by the interviewees. Having defined each construct in the conceptual/theoretical framework designed for this exploratory study, the next section presents their operationalisation in the within case analysis conducted for this study.

5.4 Within-Case Analysis (Phase One Analysis)

As discussed in section 4.4.4 and 4.4.5 of this thesis, this study's empirical data was gathered by purposefully interviewing selected PSC practitioners operating within the six identified segments of the NPI's private sector. Table 5.2 highlights the specific settings of each segment, the PCs, and their respective elements such as year of establishment, organisational type, PSC stakeholder type, product type, product source, and customer type. These elements were selected as each directly or indirectly influences PRL practices and the strategy adopted by the PCs.

As depicted in the Table 5.2, the nineteen organisations investigated are considered case research companies and each is coded alphabetically. This coding approach was employed in order to maintain the distinctiveness of each case research company and to maintain the anonymity of each organisation. Hence, the first case research company was coded as CRA (Case Research A), the second was coded as CRB (Case Research B) consecutively until the nineteenth case research company coded CRR (Case Research R).

Table 5.2: Nineteen Case Settings

Case Companies	Established	Organisational Type	Stakeholder Type	Product Type	Product Source	Customer Type
CRA	1972	Multinational	Finished Product Manufacturer	Nutritional Health Drinks, Oral Healthcare Products, Vaccines, and Prescription Drugs	In-house and Subsidiaries	Major Distributors
CRB	1976	Multinational	Finished Product Manufacturer and Importer	OTC and Prescription Drugs	In-house, and Foreign Supplier	Distributors, Wholesaler, Hospital Pharmacies, Clinics, and Government Hospitals
CRC	1944	Multinational	Manufacturer	OTC and Prescription Drugs	In-house	Retailers, Clinics, Wholesalers, Hospitals
CRD	1995	Indigenous	Finished Product Manufacturer and Importer	Prescription Drugs	In-house and Foreign Supplier	Distributors, Wholesalers, NGO, and Hospitals.
CRE	1995	Indigenous	Importer and Distributors	Pharmaceutical products of various Therapeutical segments	Foreign Suppliers (Manufacturers)	Wholesalers, and Retailers
CRF	1999	Indigenous	Importer and Distributors	Branded, Generic pharmaceuticals and therapeutics products	Foreign Suppliers (Manufacturers), Contract Manufacturers	Wholesalers, Retailers, Hospitals, and Clinics
CRG	1993	Indigenous	Wholesaler	OTC (over-the-counter) and prescription medicines	Imports, and Indigenous Manufacturers	End-consumers
CRH	1995	Indigenous	Wholesaler	OTC (over-the-counter) and prescription medicines	Indigenous Manufacturers	Retailers, Hospitals and Clinics
CRI	1999	Indigenous	Wholesaler	Healthcare products such as medicines, nutritional supplements, natural remedies, home medical equipment, mobility aids and pharmacy services	Imports, Indigenous Manufacturers, Wholesalers	End-consumers
CRJ	2002	Indigenous	Wholesaler	OTC (over-the-counter) and prescription medicines	Imports, and Indigenous Manufacturers	End-consumers
CRK	2008	Indigenous	Retailer	OTC (over-the-counter), prescription medicines, nutritional supplements, natural remedies, home medical equipment, mobility aids and pharmacy services	Manufacturers, Registered Importers and Wholesalers	End-consumers
CRK2	2008	Indigenous	Retailer	OTC (over-the-counter), prescription medicines, nutritional supplements, natural remedies, home medical equipment, mobility aids and pharmacy services	Indigenous Manufacturers, International Manufacturers, and Registered Importers	End-consumers, Doctors with hospitals, Nursing homes and government hospitals
CRL	1995	Indigenous	Retailer	OTC (over-the-counter) and prescription medicines	Wholesalers	End-consumers
CRM	NP	Indigenous	Retailer	OTC (over-the-counter), prescription medicines, nutritional supplements, natural remedies, home medical equipment, mobility aids and pharmacy services	Indigenous Manufacturers, Wholesalers, and Registered Importers	End-consumers
CRN	NP	Indigenous	Retailer	OTC (over-the-counter), prescription medicines, nutritional supplements, natural remedies, home medical equipment, mobility aids and pharmacy services	Manufacturers and Wholesalers	End-consumers
CRO	1980	Indigenous	Hospital Pharmacy	Prescription medicines	Manufacturers and Oshodi Medical Store (OMS).	End-consumers
CRP	1985	Indigenous	Hospital Pharmacy	Prescription medicines	Manufacturers, and wholesalers	Retailers, Hospitals and Clinics
CRQ	1985	Indigenous	Hospital Pharmacy	Prescription medicines	Manufacturers, Wholesalers, Registered Importers	End-consumers
CRR	1994	Indigenous	Regulatory Authority	All drug products, substances, chemicals, bottled water and packaged food	All companies, and individual involve in the business of regulated products in Nigeria	All companies and individual involve in the business of regulated products e.g Manufacturers, Importers, Wholesalers (Distributors), Retailers etc

Within-case analysis involves detailed write-ups of each sites in terms of the research subject areas (Eisenhardt, 1989). Hence, this Phase One analysis process comprises detailed write-up, analysis, and presentation of the empirical findings. Write-ups from each of the nineteen cases are displayed in Appendix Two (p. 478) of this thesis in order to comply with the word limit requirement of this thesis. Utilizing the findings from each within-case analysis of each cases, the next chapter presents the corresponding within case-category analysis.

5.5 Chapter Summary

This chapter has discussed the researcher's research experience in Nigeria including issues that precluded the data collection activities, as well as measures employed in mitigating their effect. The chapter has defined the constructs and how they were used to explore the empirical data obtained from the field, and to structure the analysis presentations. This chapter has also introduced the nineteen within-case analyses conducted, and specified where the write-ups are located in the thesis. The next chapter therefore presents the phase two data analysis designed to compare similarities and differences among cases within categories.

CHAPTER SIX: WITHIN CASE-CATEGORY ANALYSIS (PHASE TWO)

6.1 Introduction

The within-case analysis of the nineteen cases feeds into this chapter within case-category analysis (Phase Two analysis), designed to compare similarities and differences between cases within categories. Hence, the case companies depicted in Table 5.2 are differentiated into six different case-categories (CC) as presented in Table 4.2. Six separate within case-category analyses were therefore conducted. It is important to note that this study considers within case-category analysis as the cross-case analysis of all cases categorised under the same PSC stakeholder (category). Hence, this chapter is divided into eight sections including the introductory section.

The following six consecutive sections present the within case-category analysis. Each section ends with a table that summarises the similarities and differences identified among the PCs. The last section of this chapter presents the emergent themes obtained as a result of within case-category analysis. The six within case-category analyses then feed into the cross-category analysis presented in chapter seven.

6.2 Case-Category One - Pharmaceutical Manufacturers

6.2.1 Case-Category One Settings

Table 6.1 is developed in this section to highlight the setting of each case research company categorised as PM; Case-Category One (CC1). The table depicts the organisational type, supply-chain stakeholder type, product type, product source, and customer type. These elements were specifically highlighted they influences the PRL operations of each case companies. According to the respondents, a major reason why EDD drugs cannot be returned to source is because of the legal ramification of such activities. Furthermore, the products and

customer type of each case company also determine the nature of the RCA between channel partners.

Table 6.1: Case-Category One Settings

Case-Category One (CC1)	Differentiating Features					
Case Companies	Established	Organisational Type	Stakeholder Type	Product Type	Product Source	Customer Type
CRA	1972	Multinational	Finished Product Manufacturer	Nutritional Health Drinks, Oral Healthcare Products, Vaccines, and Prescription Drugs	In-house and Subsidiaries	Major Distributors
CRB	1976	Multinational	Finished Product Manufacturer and Importer	OTC and Prescription Drugs	In-house, and Foreign Supplier	Distributors, Wholesaler, Hospital Pharmacies, Clinics, and Government Hospitals
CRC	1944	Multinational	Manufacturer	OTC and Prescription Drugs	In-house	Retailers, Clinics, Wholesalers, Hospitals
CRD	1995	Indigenous	Finished Product Manufacturer and Importer	Prescription Drugs	In-house and Foreign Supplier	Distributors, Wholesalers, NGO, and Hospitals.

The table shows that the CC1 (PM) are multinational and indigenous PCs in Nigeria specializing in manufacturing, marketing, and distributing OTC, pharmaceutical drugs and consumer healthcare products that meet international standards such as nutritional health drinks, oral healthcare and wellness categories. The table shows that most of the multinational case companies are long established pharmaceutical businesses in Nigeria; indicating a long history of PSC, and arguably PRL operation in Nigeria.

Some of these PMs also import prescription drugs (acting as wholesalers). The pharmaceutical products include treatments for asthma, malaria, depression, migraine, diabetes, heart failure, digestive conditions, hepatitis A and B, diphtheria, tetanus, whooping cough, typhoid and cancer. Some of these PMs have well over 200 different drug products and formulations across different therapeutic classes and pharmacological segments, provide offerings and options to prescribers and patients. From cardiovascular, anti-diabetic, chemotherapy, anti-retrovirals, psychiatry, analgesics, haematinics, nutraceuticals among many others.

In terms of sourcing, the table shows that majority of the drugs are produced in-house, while some are imported from subsidiaries, and foreign contract PMs. All the products are subject to Good Manufacturing Practice (GMP) and Good Laboratory Practice (GLP) for Quality Control. The types of customers served are mainly B2B customers such as major distributors, wholesaler, hospital pharmacies, clinics, retailers, and NGOs.

6.2.2 Export Returns

CRA being a multinational PM does not source drugs from external supplier or contract manufacturers but sometimes import drugs from its subsidiaries into Nigeria. There is no return flow of finished drugs back to these subsidiaries. CRB imports AI and some drugs from foreign manufacturers, but there is no return flow to these suppliers; likewise, CRC and CRD as they own and market their own drugs.

The non- existence of ER activities can be attributed to the legal ramifications of exporting EDD drugs. PCs are prohibited by law from exporting EDD drugs. The complexity and cost of the logistics activities involved are other inhibiting factors. Hence, PMs are responsible for the proper disposal of unusable drugs. To reduce the cost impact of disposing high volume of short-dated drugs, CRD sell these short-dated drugs at a discounted price to hospitals, donate them to staff and use some as samples.

6.2.3 Importance of PRL

According to respondents from each case company, PRL is a very important operation. Hence, there are procedures in place at these companies for the collection, sorting, storing and processing of returned and unusable drugs. CRB considers PRL practices very important as it enables the captured of valuable information such as the level of acceptability of the drugs, and consumers' perception. PRL practices encourage and provide a basis for CRC to invest in measures that facilitate adherence to contractual obligations, and regulatory requirements. PRL practices enable CRD to prevent the forward flow or circulation of EDD drugs in the market, thereby helping to protect and maintain brand integrity and corporate reputation.

Knowledge of RG

Respondents from CRA, CRB, and CRD acknowledged that there are standard guidelines and statutory provisions from the RA on bow companies should manage EDD drugs. According to

the respondents from CRA and CRC, the details of these directives were not known by them but by the quality department. All the respondents acknowledged their companies' compliance with RGs but also pointed out factors that hinder compliance. CRD confirmed that the RG requires companies to first notify the RA in writing when drugs disposal is required. The RA will then issue a Pay Advice for the disposal and destruction service.

6.2.4 Factors Hindering Compliance

The respondent from CRB confirmed that factors hindering compliance include the complexity of logistics operation involved in handling drug returns, the bureaucratic bottle-neck at the RA in processing submission applications, the lack of time, and capacity of the RA in ensuring proper disposal of the drugs. The cost of disposing and destroying unusable drugs hinders CRB from implementing PRL. CRC and CRD further pointed out the cost of destruction and greediness of some companies as factors hindering compliance to RGs.

6.2.5 PRL Facilitator

All the cases confirmed that drug return processes are facilitated by a RCA. Hence, SEDD drugs are returned by customers based on the RCA and are rejected when there is no RCA in place.

6.2.6 PRL Impact on Business Operations

PRL practices have impact on the CRA's operation in terms of labour hours required for managing the return processes, complexity of managing returns, EDD drugs inventory, and the additional cost return management activities incur. These return activities are considered to have cost impact on CRB's revenue and profit. Despite this negative impact, return activities are reported to facilitate regulatory compliance and adherence to professional ethics which ultimately lead to an improved corporate reputation. CRC and CRD also considered PRL as an

additional operational cost and a causes of loss in revenue. Nevertheless, the practice provides visibility on the type of drugs returned, product performance, public perception, and the level of acceptability of the drugs.

6.2.7 The "What Perspective" of PRL

According to RCA, these companies allow drugs such as unopened short-dated drugs (6 months to expiration), expired drugs, damaged drugs (tampered with before used or squeezed packs), defective drugs, adverse events etc. to be returned by customers. If by any chance drugs expire while in stock, the CRA will bear the loss, dispose of or destroy the drugs together with any other EDD drugs returned by customers. The kind of drugs normally returned by customers to CRB are damaged drugs such as those in squeezed packs.

6.2.8 The "Why Perspective" of PRL (Receiver)

CRA accepts drugs back from customers due to economic reasons, contractual obligation, regulatory requirement (legislative reasons), and for brand protection purposes. In practice, drugs are not normally returned by the customers (distributors) due to the business model requiring customers to take ownership of drugs once purchased. CRB accepts defective or damaged drugs back from customers in order to protect their brand image, corporate reputation, and the environment. CRC allows customer returns in order to adhere to their contractual obligation for drugs that are short-dated. Once there is no contractual provision for return, customers will not have the right to return usable, short-dated or expired drugs. CRD also accept drugs back from customers in order to fulfil its contractual obligation as well as to maintain good customer relationships and satisfaction.

6.2.8.1 The "Why Not Perspective" of PRL (Receiver)

EDD drugs are not returned to CRA due to the business model or nature of the RCA with the customers (Distributors) and drugs normally pass through systematic quality checks before release to customers. The cost of unusable drug disposal or destruction, and greed hinder CRB from accepting implementing PRL. CRC does not accepted drugs back if there is no contractual arrangement to do so. According to the respondent from CRC, drugs are usually not returned as these drugs were sold with long shelf-life.

6.2.9 The "Why Perspective" of PRL (Sender)

Customers (Distributors) return drugs to CRA only due to expiration, damage, or adverse events. The returns are mainly facilitated via a specific RCA. Customers return drugs back to CRB mainly due to damage. Customers return drugs back to CRC mainly due to the drugs becoming short-dated and RCA is in place to facilitate such returns. Customers return drugs back to CRD due to the loss of shelf-life while in stock as a result of slow sales. These drugs are returned to CRD for exchange based on a pre-purchase RCA.

6.2.9.1 The "Why Not Perspective" of PRL (Sender)

Expired and damaged drugs are not returned to CRA due to the operating model and RCA with the customers (Distributors) as they normally pass through systematic quality checks before being purchased and delivered to the customers (Major Distributors). Once the drugs are purchased, the customers take ownership of the stock and are responsible for proper disposal once expired.

If there is no contractual provision for return, customers will not have the right to return usable, short-dated or expired drugs to CRC. CRD does not return drugs back to its suppliers because the imported drugs are marketed and owned by CRD. It is also a waste of capital to

export unusable product back to the suppliers as the cost of export and logistics is high. To reduce the negative impact of having to destroy a high volume of short-dated drugs, CRD normally sells these short-dated drugs at a discounted price to hospitals, donates to their staff and uses them as samples.

Customers such as hospitals rarely return drugs as they ensure that the right quantity of drugs that meet their specific demand are purchased at any given time. The rate of consumption in hospitals are quite high so hospitals pharmacies generally follow the FEFO principle (First Expire First Out) when dispensing. According to CRD's respondent, most manufacturers and importers would want to conceal information about their expired drugs; this sometimes results in practices such as revalidation of product expiry date, carrying out the destruction exercise in-house.

6.2.10 The "How Perspective" of PRL

There are procedures in place at all the companies for the collection, sorting, storing and processing of returned and unusable drugs at all the manufacturers. Drugs are usually received back at CRA via the company logistics net-work, and unusable drugs (expired, damaged) are kept in quarantine upon receipt. Drugs are rarely returned to CRA due to the business model. Expired and damaged drugs in inventory are destroyed in-house in the presence of RA's officials. Hence, the company rarely forwards drugs to service providers

Drugs that expire while in inventory at CRB are usually removed from inventory, and quarantined together with those returned by customers. Damaged and expired drugs are normally submitted to the RA for destruction once every 3 to 4 years. CRB first notify the RA, and provide details such as the name of the drug, quantity requiring destruction, total value of the drugs, batch number, manufacturing date, expiration date etc. They pay the appropriate destruction fee, book an appointment with the RA, and then transport the drugs to the assigned regulatory facility.

There are therefore procedures at CRC for the collection, sorting, storing and processing of returned drugs that have RCA. There is no procedure for those without RCA but sometimes CRC does not accept drugs back from customers because the drugs were supplied to customer with a long shelf-life. The short-dated drugs (3 to 6 months to expiration) returned by customers are allocated to the sales representatives who then sell them to retailers at a discounted price, and also ensure that the drugs are sold out at the pharmacies. If the drugs are less than 1 month to expiration, the drugs will be withdrawn from circulation i.e. collected from the retail pharmacies and returned back to CRC. CRC will consolidate the returns with other quarantined returns, the RA will be notified, and a request for collection and destruction of the drugs.

It is the duty of the inventory controller at CRD to communicate the shelf-life of products close to expiration to the marketing and operations department. After which a decision is taken on when, by whom, and how to distribute such products. Some of these short-dated (6 months to expiration) drugs are donated to charity organisation, hospitals and staff and all are informed about the expiry date of the drugs. This strategy is implemented to prevent drug from expiring while in stock. Hence, CRD indirectly transfer the destruction responsibility to the other channel partners if the drugs are not consumed before final expiration. Not all products can be given to staff, as some are prescription-based drugs. Hence, these drugs are often distributed as samples to doctors or hospitals, where such products would be required by patients.

Drugs that expire while in inventory will be removed, collected and stored in quarantine. The RA will be notified requesting collection and destruction. The RA will give payment advice for the service. Once payment is made, a day, time and location is scheduled. The drugs will be dumped at the agency-approved location for destruction. A representative of CRD will be present during the destruction exercise and a certificate of destruction will be issued.

6.2.11 The "Who Perspective" of PRL

CRA's customers are mainly the distributors (Pre-wholesalers). CRA sells off drugs to the major distributors (pre-wholesalers) who then take ownership of the stock and are responsible for the distribution of the drugs to customers such as retailers, hospitals, wholesalers etc. CRA sales representatives inform the Sales officer of the major distributor (Pre-wholesaler) who in turn supplies the products to customers. The only customers that return drugs to CRA are the major distributors. The collection, sorting, storing, reporting and disposing of the returned drugs are done in-house together with NAFDA and sometimes with the distributors.

The RA acts as the regulator and enforcement body. The customers and channel partners, including internal management, service providers, and the government have influence on the way CRA manages returned drugs. The stakeholders at CRA responsible for the day to day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are the supply chain team, quality team, finance team and the sales department.

CRB's customers are mostly distributors, wholesaler, hospital pharmacies, clinics, and public hospitals. These customers return drugs to CRB when required. The management of the collection, sorting, storing, reporting and disposal process is done in-house with the RA official present. The actors/employees at CRB responsible for the day-to-day PRL activities are the warehouse manager, admin manager, sales manager and the quality team.

CRC's customers are retailers, clinics, wholesalers, and hospitals. The stakeholders that return drugs to CRC are mainly retailers and wholesalers. Stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the retailers, wholesalers, CRC and the regulatory agency.

CRD's direct customers are mainly distributors. The sales representatives sell drugs directly to wholesalers, NGO, and hospitals. Supply chain stakeholders that return drugs to the company are mainly the distributors. Distributors return drugs for exchange and then re-

distribute to retailers. Hospitals rarely return drugs as they ensure that the right quantity of drugs that meet their specific demand are purchased at any given time. The rate of consumption in hospitals are also quite high.

According to the CRD respondent, hospital pharmacies generally follow the FEFO principle when dispensing drugs. The stakeholders responsible for the collection, sorting, storing, reporting and disposing the returned drugs are CRD, the RA, and waste disposal service provider. The actors/employees within CRD responsible for the day-to-day PRL operations are the inventory controller, warehouse employee, customer service and sales representatives.

6.2.12 The "Where Perspective" of PRL

The stakeholders involved in the PRL operation of the companies are located in-house and the external stakeholders such as the distributors, waste disposal service providers (WDA) and the RAs are all located within Lagos State. As a result, their current location has no negative impact on the PRL operations. Some of the destruction exercises take place in-house, which makes the total cost managing PRL operation relatively low.

6.2.13 The "When Perspective" of PRL

The duration of time CRA keeps returned drugs before processing them varies depending on the reason for the return. Drugs are, however, rarely returned to the company due to the business model with the distributors. Drugs returned by customers to CRB are processed immediately upon receipt. This is to manage, resolve and prevent the escalation of drug related issues. Damaged and expired drugs are normally stored under quarantine and submitted to the RA for destruction once every 3 to 4 years.

When short-dated drugs (3 to 6 months to expiration) are returned by customers, such drugs will be allocated to sale representatives to sell to retailers at a discounted price. Once the drugs become less than 1 month to expiration, the drugs will be withdrawn from circulation. They

will be consolidated with other quarantined returns, the RA will be notified and a request made for collection and destruction of the drugs. CRD, on the other hand, normally stores unusable drugs under quarantine for about 6 months before processing.

6.2.14 Improvement of PRL Practices

The respondent from CRA acknowledged the existence of better ways of performing PRL activities and the company is exploring the use of technology (ERP systems) to improve communication among channel partners, improve product traceability capabilities, manage product inventory and reduce expired products inventory.

According to the respondent from CRB, there are no improvement measures envisaged as drugs returned by customers are processed immediately upon receipt for resolution and prevention of escalation. CRB is also working on further facilitating its drug return management process by encouraging public awareness of drugs' adverse effects and public education of what end-users should do with expired, damaged or any compromised drug. When asked about what the CRD is doing to improve its RL practices, no information was given. Table 6.2 shows a summary of the CC1 (PM) within case-category analysis presented above, highlighting the similarities and difference among the PM investigated. The next section presents the within case-category analysis of PI investigated.

Table 6.2: Case-Category One Summary

Case-Categories/ Themes	CRA	CRB	CRC	CRD
Organisational Type	Multinational	Multinational	Multinational	Indigenous
Stakeholder Type	Manufacturers	Manufacturer and Importer	Manufacturers	Manufacturer and Importer
Export Return	Non-Existence	Non-Existence	Non-Existence	Non-Existence
Importance of PRL Practices	Very Important	Very Important. It enables the capturing valuable information	Very Important. Facilitates adherence to contractual obligations and regulatory requirements.	Very Important. It helps prevent the circulation of EDD drugs in the market
Knowledge of RG	Acknowledge the existence of RG for handling EDD drugs	Acknowledge the existence of Regulatory Guideline for handling EDD drugs	Acknowledge the existence of Regulatory Guideline for handling EDD drugs	Acknowledge the existence of Regulatory Guideline for handling EDD drugs
Factors Hindering Compliancy	Company acknowledge compliancy to the RGs but pointed also pointed factors hindering compliancy.	Company acknowledge compliancy to the RGs but pointed also pointed factors hindering compliancy e.g Cost disposal, complexity of logistics, bureaucratic bottle-neck at the RA, the lack of time, and capacity of the RA to conduct proper destruction	Company acknowledge compliancy to the RGs but pointed also pointed factors hindering compliancy e.g cost of destruction and greediness	Company acknowledge compliancy to the RGs but pointed also pointed factors hindering compliancy e.g cost of destruction and greediness
PRL Facilitator	Pre-purchase RCA	Pre-purchase RCA	Pre-purchase RCA	Pre-purchase RCA
PRL Impact on Business Operation	Cost impact on profits, labour hours required for managing the return processes, complexity of managing returns, and EDD drugs inventory	cost impact on revenue, and profit. Facilitate compliancy to regulatory requirements, adherence to professional ethics which ultimately leads to the improvement of corporate reputation.	Additional operational cost, loss in revenue, provides visibility: type of drugs returned, product performance, public perception, and the acceptability of the drugs.	Additional operational cost, loss in revenue, provides visibility: type of drugs returned, product performance, public perception, and the acceptability of the drugs.
The What Perspective of PRL	Untampered SEDD Drugs	Damaged drugs	Untampered SEDD Drugs	Untampered SEDD Drugs
The Why Perspective of PRL (Receiver)	Economic reasons, contractual obligation, regulatory requirement (legislative reasons), and for brand protection purposes	Brand protection , protect corporate reputation, and the environment.	To adhere to their contractual obligation for SEDD drugs	To adhere to their contractual obligation for SEDD drugs, maintain good customer relationship and satisfaction
The Why Not Perspective of PRL (Receiver)	Business model or nature of the RCA with the customers (Distributors)	The cost of unusable drug disposal, destruction, and greed	If there is no contractual arrangement, drugs are sold with long shelf-life	No Data

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The Why Perspective of PRL (Sender)	Only due to expiration, damaged, adverse events. RCA	Damaged drugs	Loss of shelf-life and RCA in place to facilitate such returns	Loss of shelf-life while on stock as a result of slow sale
The Why Not Perspective of PRL (Sender)	Business model or nature of the RCA with the customers (Distributors)	Customer do not return drugs back if they are satisfied with the drug.	No RCA	CRD do not return imported drugs back to its suppliers because the imported drugs are marketed and owned by the importer. SD drugs are sold at discounted price to hospitals, donate to staffs and use as samples.
The How Perspective of PRL	There are procedure in place at all the companies for the collection, sorting, storing and processing of returned and unusable drugs at all the manufacturers. Drugs are usually received back at CRA via the company logistics net-work, and the EDD drugs are kept in quarantine upon receipt. Expired and damaged drugs in inventory are destroyed in-house in the presence of RA's officials.	There are procedure in place at all the companies for the collection, sorting, storing and processing of returned and unusable drugs at all the manufacturers. Drugs that expires while in inventory at CRB are usually removed from inventory, and quarantined together with those returned by customers. Damaged and expired drugs are normally submitted to the RA for destruction once every 3 to 4 years	There are procedure in place at all the companies for the collection, sorting, storing and processing of returned and unusable drugs at all the manufacturers. SD drugs returned by customers are allocated to the sales rep who then sell to retailers at a discounted price. Once the drugs becomes less than 1 month to expiration, the drugs will be withdrawn from circulation and returned back to CRC. CRC will consolidated with other quarantined returns, the RA will be notified, request for collection and destruction of the drugs	There are procedure in place at all the companies for the collection, sorting, storing and processing of returned and unusable drugs at all the manufacturers. Some of these short-dated (6 months to expiration) drugs are donated to charity organisation, hospitals and staff and all are informed about the expiring date of the drugs. Drugs that expired while in inventory will be removed, collated, stored in quarantine. The RA will be notified requesting for collection and destruction
The Who Perspective of PRL	CRA's customers are mainly the distributors (Pre-wholesalers) and sells to customers such as retailers, hospitals, wholesalers etc. The collection, sorting, storing, reporting and disposing the returned drugs is done in-house together with NAFDA and sometimes with the distributors. The stakeholders responsible for the day to day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are the supply chain team, quality team, finance team and the and sales department.	Customers are mostly distributors, wholesaler, hospital pharmacies, clinics, and public hospitals. The management of the collection, sorting, storing, reporting and disposal process is done in-house with The RA official present. The actors/employees at CRB responsible for the day-to-day PRL activities are the warehouse manager, admin manager, sales manager and the quality team.	CRC's customers are retailers, clinics, wholesalers, and hospitals. The stakeholders that return drugs to CRC are mainly retailers and wholesalers. Stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the retailers, wholesalers, CRC and the regulatory agency.	CRD's direct customers are mainly distributors. The sales reps sell drugs directly to wholesalers, NGO, and hospitals. The stakeholders responsible for the collection, sorting, storing, reporting and disposing the returned drugs are CRD, the RA, and waste disposal service provider. The actors responsible for the day-to-day PRL operations are the inventory controller, warehouse employee, customer service, sales representatives.
The Where Perspective of PRL	The stakeholders involve in the PRL operation of the companies are located in-house and the external stakeholders located within Lagos State. As a result, their current location have no negative impact on the PRL operations. Some of the destruction exercises take place in-house, which makes the total cost managing PRL operation relatively low.	The stakeholders involve in the PRL operation of the companies are located in-house and the external stakeholders located within Lagos State. As a result, their current location have no negative impact on the PRL operations. Some of the destruction exercises take place in-house, which makes the total cost managing PRL operation relatively low.	The stakeholders involve in the PRL operation of the companies are located in-house and the external stakeholders located within Lagos State. As a result, their current location have no negative impact on the PRL operations. Some of the destruction exercises take place in-house, which makes the total cost managing PRL operation relatively low.	The stakeholders involve in the PRL operation of the companies are located in-house and the external stakeholders located within Lagos State. As a result, their current location have no negative impact on the PRL operations. Some of the destruction exercises take place in-house, which makes the total cost managing PRL operation relatively low.

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The When Perspective of PRL	The duration of time CRA keeps returned drugs before processing them varies depending on type of reason for the return.	Drugs returned by customers to CRB are processed immediately upon receipt. EDD drugs are normally stored under quarantine and submitted to the RA for destruction once every 3 to 4 years.	Drugs returned by customers are processed immediately upon receipt. This is to manage, resolve and prevent the escalation of drug related issue.	Normally store unusable drugs under quarantine for about 6 months before processing.
Improvement of PRL Practices	Explore the use of technology (ERP systems) to improve communication among channel partners, improve product traceabilit, manage product inventory and reduce expired product inventory	Encouraging public awareness of drugs adverse effect and public education of what end-users should do with expired, damaged or any compromised drug	No Data	No Data

6.3 Case-Category Two – Pharmaceutical Importers

6.3.1 Case-Category Two Settings

Table 6.3 is developed in this section to highlight the settings of each case research companies categorised as Pharmaceutical Importers; Case-Category Two (CC2). The table depicts the organisational type, supply-chain stakeholder type, product type, product source, and customer type. These elements were specifically highlighted as they influence the PRL operations of each case companies. According to the respondents, major reason importers cannot return EDD drugs to the suppliers is because of the legal ramification of exporting such products. Furthermore, products sources, product type, and customer type of both case companies influence the nature of the RCA between channel partners.

Table 6.3: Case-Category Two Settings

Case-Category Two (CC2)	Differentiating Features					
Case Companies	Established	Organisational Type	Stakeholder Type	Product Type	Product Source	Customer Type
CRE	1995	Indigenous	Importer and Distributors	Pharmaceutical products of various Therapeutical segments	Foreign Suppliers (Manufacturers)	Wholesalers, and Retailers
CRF	1999	Indigenous	Importer and Distributors	Branded, Generic pharmaceuticals and therapeutics products	Foreign Suppliers (Manufacturers), Contract Manufacturers	Wholesalers, Retailers, Hospitals, and Clinics

The table shows that the case companies under CC2 (PI) are licenced indigenous privately-held pharmaceutical importers. Besides this, CRE is a marketing company, and partnership business incorporated in the year 1995 and licensed by PCN in the year 2000. Since its commencement of full operations in the year 2000, CRE has been engaging in sales, distribution and marketing of approved pharmaceutical products in Nigeria. CRE presently has over seventy-five registered pharmaceutical products in its stable and has been able to supply pharmaceutical products of various therapeutical segments such as Anti-Malarials, Anti-Infectives, Anti-Inflammatory, Anti-Helminthes, Anti-Hypertensive, Laxatives, Multi-vitamins among others. CRE's products are also marketed in some other countries in the West Coast of Africa.

CRF was founded in 1999 and engages in the importation, and distribution of innovative products ranging from discounted pharmaceuticals to therapeutics, offering consulting services to general consumers. The product range includes major branded and generic pharmaceuticals products manufactured under the WHO certified manufacturing facilities under the highest standard of Good. The imported pharmaceutical products are registered in Nigeria on behalf of overseas manufacturers in line with regulations of the RA in Nigeria, and other countries in Africa. CRF also act as a manufacturer's representative or sole agency for pharmaceutical products imported for sale in Nigeria and other countries in Africa and also enters contract manufacturing agreements to satisfy end markets demand.

6.3.2 Export Returns

There is no return flow of drugs from CRE back to its suppliers due to the distance (oversea), complexity of the logistics and the cost. CRF also does not return drugs back to its suppliers as the drugs usually undergo thorough inspection and quality checks before receipt from suppliers. Furthermore, it is legally prohibited to export expired products out of Nigeria. Hence, CRF takes full ownership of the drugs and ensures proper disposal of the drugs takes place if the drugs get damaged or expire in stock.

6.3.3 Importance of PRL

RL practices are very important to CRE as waste generation is almost inevitable for the company. Hence, the company has procedures in place for the collection, sorting, storing and processing of returned, damaged and expired drugs. RL practices are also considered very important at CRF due the importance of retrieving expired or defective drugs from circulation.

6.3.4 Knowledge of RG

The respondent from CRE and CRF acknowledged the company's awareness of guidelines governing the handling of returned, damaged, and expired drugs; pointing out that fines will be issued by the RA if expired drugs are found in saleable stock inventory of the company. All expired, damaged, and defective drugs must be collected, separated from saleable drugs and saved in a safe environment. The RA's office in the region or state must be informed so that proper disposal of the drugs can be done.

6.3.5 Factors Hindering Compliance

CRE identified ineffective governmental policies and enforcement as major hindrances to the company's compliance to RGs. According to the respondent from CRF, a factor hindering adherence to the RG is the complexity of the RL processes involved in managing expired, damaged, and defective drugs. According to CRF's respondent, most small to medium sized companies do not adhere to the RG for drug disposal, neither do they notify the RA about their drug disposal activities. As a result, the majority of these companies are able to save cost and time. The focus of the RA tends to be mainly on large pharmaceutical companies.

6.3.6 PRL Facilitator

Both CRE and CRF confirmed that there are SOR agreements in place between the companies and their customers. This RCA helps facilitates, drug return, refund, and exchange process between the channel partners. There are, however, no return agreements between the companies and their suppliers. The reasons for the non-existence of such RCA are associated to the factors mentioned under Export Returns.

6.3.7 PRL Impact on Business Operations

Increase in operational cost, reduction of revenue and profits are the primary impacts of PRL on the business operation at CRE. PRL, however, enhances compliance, of CRE to regulatory requirements/guideline, protects the environment from the adverse effects of improper disposal of drugs, and ultimately enhances corporate reputation of the company. The key challenge encountered at CRE when handling returned drugs inventory is the complexity of the manual processes, especially when it involves high volume and diverse products. The cost of warehousing and storage capacity are another major challenge. Likewise, the availability of labour and government approved sites to conduct for the destruction of expired drugs are also other challenges faced by CRE.

According to the respondent, PRL activities impact CRF's operation in a number of ways. Firstly, once drugs expire in inventory, they are usually written-off as a loss of potential revenue. Secondly, the collection of EDD drugs from the point of consumption, processing, storage, movement to the point of destruction, and the destruction exercise are cumulatively a cumbersome logistics process. The key challenges faced by CRF in processing expired drugs are the difficulty in securing an incinerator conduct the destruction exercise, and securing government approved dump-site for the destruction exercise.

According to the respondent, securing an appropriate dump site from the state government can be challenging especially if a particular dump-site is full, as finding an alternative dump-site can be tedious. This directly leads to longer lead-time before unusable drugs can be properly destroyed. Furthermore, the transportation of unsalable drugs from several locations is a very expensive and cumbersome. Despite these challenges, the respondent pointed out that these RL activities helps, to bring about accountability, transparency, and inventory control of expired/damaged drugs.

6.3.8 The "What Perspective" of PRL

Both CRE and CRF accept back short-dated or drugs nearing expiration from customers. At CRE, the short-dated returned drugs are usually converted to a mandatory order which are resold to customers within 3 months to expiration. CRF imports and supplies OTC, prescription drugs and ethical products. The company accepts drugs such as those with manufacturing defects, expired drugs, and SOR (Sales on Return) drugs back from its customers. These drugs are normally destroyed together with those that expired in stock.

6.3.9 The "Why Perspective" of PRL (Receiver)

CRE allows drugs to be returned by its customers only if the reasons for return are cogent enough, i.e. if the drugs are short-dated or nearing expiration at the point of purchase. CRF accepts drugs back from customers primarily to fulfil its contractual obligations. CRF usually has an SOR RCA with its customers. This RCA helps facilitate the drug return process. Damaged and expired drugs are also accepted back from customers in order to maintain good customer relationships, a good public reputation, and brand image. Drugs are received back from customers in order to prevent the sales representative from being invoiced for drugs that have been reported unusable or rejected by customers (accountability and control).

6.3.9.1 The "Why Not Perspective" of PRL (Receiver)

Drugs are not accepted back by the CRE and CRF if customers' reason for the return is not cogent enough, especially when there is no RCA in place between the companies and their customers

6.3.10 The "Why Perspective" of PRL (Sender)

Customers return drugs back to the CRE due to the drugs becoming short-dated on shelf, if there is a RCA in place between both parties to facilitate the return process. Drugs are also returned to CRE by customers when there are discrepancies such as over-supply and wrong delivery. Customers return drugs back to CRF due to product defect, damage or expiration. This return process is implemented with customers that have RCAs that cover returns with the company.

6.3.10.1 The "Why Not Perspective" of PRL (Sender)

Customers do not return drugs back to CRE and CRF if there is no RCA in place to facilitate the return process. However, the return of drugs from CRE back to its suppliers is non-existent due to the distance of the suppliers (oversea), complexity and cost of logistics involve. Return of drugs from CRF back to its overseas contract manufacturers is also non-existent as products normally undergo quality checks and inspections at the suppliers before release for transportation. These mitigate the risk of supplying short-dated, expired or damaged drugs, hence, mitigating the need for both companies to return products due to expiration, short-date and defect.

CRF also implements a strict procurement strategy of procuring the right quantity required to fulfil market demand. This prevents holding excess inventory as drugs that became expired due to non-sale cannot be returned to the suppliers. This is because all the drugs are imported and CRF is prohibited by law from exporting expired products from Nigeria. Hence, CRF takes full ownership for drugs once purchased and is responsible for the proper disposal of the EDD drugs.

6.3.11 The "How Perspective" of PRL

There are procedures in place for the collection, sorting, storing and processing of returned drugs at CRE. Drugs are usually received from customers in bin-card, and stored under quarantine in the warehouse. The duration of time CRE stores the returned drugs before processing depends on the product type, expiration date, and date of receipt of the drugs. The returned and expired drugs are usually destroyed via open-air burning by the RA.

There are no written procedures in place for the collection, sorting, storing and processing of returned drugs at CRF. According to the CRF respondent, the procedure is just known by staff as verbally communicated by the management and the operation is considered to be a very routine. Management at CRF do not consider it necessary to have written a procedure as the sales representatives are expected to know what to do. If drugs are not returned to CRF, such drugs will be considered sold, and the sales representatives will be invoiced for payment to CRF. It is therefore the sole responsibility of the sales representatives to initiate the return process immediately any of the drugs sold are reported defective, damaged or expired by customers. This is to prevent being invoiced for drugs that have been rejected by customers or reported unusable.

Although there are no documented procedures for returns, the verbally communicated procedure is strictly followed as the return transaction has direct impact on sale managers' sales account and commission. Once the defective products are collected by the sales rep from customer, the expired/defective drugs will be registered. On being declared expired, the drugs will then be itemised. The sales representative will notify CRF about the drugs to be returned, invoice the product back to CRF, and courier the drugs from various locations in Nigeria back to CRF's central warehouse in Lagos.

Once receipt is confirmed, the sales representative will then reconcile the account. CRF keeps the drugs consolidated with other inbounds (expired/damaged drugs) in a quarantined

storage for an average of 6 months before they are being transported in bulk to a government approved dump site in bulk for destruction.

6.3.12 The "Who Perspective" of PRL

CRE's customers are wholesalers and retailers while the suppliers are manufacturers. Supply chain stakeholders that returns drugs to CRE are wholesalers, while the stakeholder responsible for collecting, sorting, storing, reporting and disposing the returned drugs is CRE itself. Hence, PRL activities are done in-house involving the sales, the warehouse, the quality and the logistics team. The stakeholders that influence the way CRE manages returned drugs are the management, customers, and the RA. The actors/employees within CRE responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are the warehouse team, logistics team, and the sales representatives

Company F customers are wholesalers, retailers, hospitals, and clinics. The company suppliers are international contract manufacturers, and some international manufacturers. The supply chain stakeholders that return to the company are mainly wholesalers. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are courier services or transport service providers, CRF's warehouse team, quality department, Sales representatives, and the RA. The stakeholders that influence the way CRF manages returned drugs are the company management, the customers, and the RA. The actors/employees within CRF responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are customers, sales reps, courier companies/transporter, quality team, warehouse team, and the RA.

6.3.13 The "Where Perspective" of PRL

The stakeholders involved in the RL operation of CRE are located in-house and within the same state. Hence, location has no negative impact on RL operations and the processing

strategy of returned drugs as the company uses an ERP system to process information and the stakeholders are located within proximity. The stakeholders involved in the RL operation of CRF are in-house, within the state and regions of Nigeria. CRF sales points are dispersed all over Nigeria.

Hence, drug collection takes place at different locations across Nigeria to the central warehouse in Lagos. Drugs destruction exercise takes place in Lagos. The impact of location of stakeholders on the PRL processes in terms of the cost and complexity of the logistics involved. It is the management's strategic decision to use one central warehouse location in Lagos where all drugs collected from different customers and from different part of the country are warehoused until they are ready for destruction.

6.3.14 The "When Perspective" of PRL

The duration of time CRE keeps returned drugs before processing depends on the product type, expiration date, and date of receipt of the drugs. CRF consolidates and stores unusable drugs in a quarantined storage for an average of 6 months before destruction exercise commences. Furthermore, the handing process depends on the state and types of drugs in question. Some returned short-dated drugs are usually quality checked and then converted into a mandatory order to be resold to customers within 3 months to expiration. This is aimed at reducing loss and maximising sales before the drugs completely expire.

6.3.15 Improvement of PRL Practices

Improvement measures are being implemented at CRE to both improve its PRL processes and reduction of expired drugs inventory. CRE has improved its sales strategy to ensure sale of drugs before expiring on stock. The procurement strategy is also being improved to reduce the quantity of slow-moving drugs that are imported and discontinue the procurement of short-dated drugs from suppliers. The respondent from CRE also pointed out the need for a better

use of the ERP system to facilitate its inventory management, transactions and order fulfilment operations.

CRF engages in the training and re-training programs for staff on various protocols to observe when handling drug returns. The respondent suggested the transfer of RL responsibility from sales representatives to the logistics. This enables the process to be managed directly by the company to save cost, reduce inventory, improve operational efficiency. Table 6.4 is a summary of the CC2 (PI) within case-category analysis presented above, highlighting the similarities and differences among the PI investigated. The next section presents the within case-category analysis of the PW investigated.

Table 6.4: Case-Category Two Summary

Case-Categories/ Themes	CRE	CRF
Organisational Type	Indigenous	Indigenous
Stakeholder Type	Importer and Distributors	Importer and Distributors
Export Return	There is not return flow of drugs back to its suppliers due to the distance (oversea), complexity of the logistics and the cost.	There is no return flow of drugs back to the suppliers. It is legally prohibited to export expired products out of Nigeria
Importance of PRL Practices	PRL practices is very important as waste generation is inevitable for the company.	PRL practices is very important due the importance of retrieving EDD drugs from circulation.
Knowledge of RG	Acknowledged the company's awareness of RG for handling returned, and EDD drugs	Acknowledged the company's awareness of RG for handling returned, and EDD drugs
Factors Hindering Compliancy	Ineffective governmental policies and enforcement	Complexity of the RL processes involve in managing EDD drugs
PRL Facilitator	SOR agreement in place between the companies and their customers. This RCA help facilitates drug return, refund, and exchange process between the channel partners. No RCA with suppliers.	SOR agreement in place between the companies and their customers. This RCA help facilitates drug return, refund, and exchange process between the channel partners. No RCA with suppliers.
PRL Impact on Business Operation	Increase in operational cost, reduction of revenue and profits. Enhance compliancy to RG, protect the environment from the adverse effect of improper disposal, enhances corporate reputation. Complexity of the manual PRL activities, cost of warehousing, and storage. Availability of labour and government approved site to conduct the destruction exercise	loss of potential revenue, PRL is cumulatively a cumbersome and expenesive processes (storage and transportation), securing an incinerator conduct the destruction exercise, government approved dump-site for the destruction exercise. The PRL brings about accountability, transparency, and control of EDD drugs.
The What Perspective of PRL	SD drugs	EDD drugs, SOR Drugs
The Why Perspective of PRL (Receiver)	Allows drugs to be returned by its customers only if SD at the time of purchase	To fulfil their contractual obligations, maintain good customer relationship, good public reputation, and brand image. prevent the sales rep from being invoiced for returned drugs.
The Why Not Perspective of PRL (Receiver)	If customers' reason for the return is not cogent enough especially when there is no RCA in place	If customers' reason for the return is not cogent enough especially when there is no RCA in place
The Why Perspective of PRL (Sender)	Drugs SD on shelf, Discrepancies such as over-supply and wrong delivery.	Drug defect, damage or expired. This return process is implemented with customers that have RCA that covers returns with the company
The Why Not Perspective of PRL (Sender)	Customers do not return drugs back if there is no RCA in place to facilitate the return process. Return of drugs from the company back to its suppliers is non-existence due to the distance of the suppliers (oversea), complexity and cost of logistics involve.	Customers do not return drugs back if there is no RCA in place to facilitate the return process. A strict procurement strategy is implemented to procure the right quantity of stock required to fulfil market demand. This prevent holding excess inventory that could became expired due to non-sale
The How Perspective of PRL	There are procedures in place for the collection, sorting, storing and processing of returned drugs at CRE. Drugs are usually received from customers in bin-card, and stored under quarantine in the warehouse. The returned and expired drugs are usually destroyed via open-air burning by the RA.	There are no documented procedure for returns, the verbally communicated procedure is strictly followed as the return transaction has direct impact on sale manager sales account and commission. The sales rep registered the returned drugs, notify the HQ, invoice the product back to the HQ, and courier the drugs from various location back to the DC in Lagos where it will be quarantined for an average of 6 months before being transported to government approved dump site in bulk for destruction.
The Who Perspective of PRL	Customers are wholesalers, and retailers while the suppliers are manufacturers. Supply chain stakeholder that returns drugs to the company are wholesalers while the stakeholders responsible for the PRL activities is the company itself. PRL operations are influenced by the management, customers, and the RA. The actors within responsible for the day-to-day PRL activities are the warehouse team, logistics team, and the sales reps	Customers are wholesalers, retailers, hospitals, and clinics. The company suppliers are international contract manufacturers, and some international manufacturers. The SCS that return products are mainly the wholesalers. The stakeholders that influences PRL operations are the company management, customers, and the RA. The actors responsible for the day-to-day PRL operations are customers, sales reps, courier companies, transporter, quality team, warehouse team
The Where Perspective of PRL	The stakeholders involved in the RL operation of CRE are located in-house and with the same state.	The stakeholders involved in the RL operation of CRF are in-house, within the states, regions of Nigeria. CRF sales points is disperse all over Nigeria.
The When Perspective of PRL	The duration of time unusable drugs are kept before processing depend on the product type, expiration date, and date of receipt of the drugs	Consolidate and stores unusable drugs in a quarantined storage for an average of 6 months before destruction. Some returned SD drugs are quality checked and converted into a mandatory order for re-sell to customers within 3 months to expiry
Improvement of PRL Practices	Improve the sales strategy to ensure sale of drugs before expiring on stock. Procurement strategy is to be improved to reduce the quantity of slow-moving drugs imported and discontinuing the procurement of SD drugs from suppliers. Implement a better use of ERP system to facilitate its inventory management, transactions and order fulfilment operations.	Set-up employees' training and re-training programs on various protocols to observe when handling drug returns. Remove RL responsibility from sales rep and transfer responsibility to a the logistics department to manage. This saves cost, reduce inventory, improve efficiency of the return process.

6.4 Case-Category Three – Pharmaceutical Wholesalers

6.4.1 Case-Category Three Settings

Table 6.5 is developed in this section to highlight the settings of each case research company categorised as PW; Case-Category Three (CC3). The table depicts the year of establishment, organisational type, supply-chain stakeholder type, product type, product source, and customer type. These elements were specifically highlighted as they influence the PRL operations of each case company.

Table 6.5: Case-Category Three Settings

Case-Category Three (CC3)	Differentiating Features					
Case Companies	Established	Organisational Type	Stakeholder Type	Product Type	Product Source	Customer Type
CRG	1993	Indigenous	Wholesaler	OTC (over-the-counter) and prescription medicines	Imports, and Indigenous Manufacturers	End-consumers
CRH	1995	Indigenous	Wholesaler	OTC (over-the-counter) and prescription medicines	Indigenous Manufacturers	Retailers, Hospitals and Clinics
CRI	1999	Indigenous	Wholesaler	Healthcare products such as medicines, nutritional supplements, natural remedies, home medical equipment, mobility aids and pharmacy services	Imports, Indigenous Manufacturers, Wholesalers	End-consumers
CRJ	2002	Indigenous	Wholesaler	OTC (over-the-counter) and prescription medicines	Imports, and Indigenous Manufacturers	End-consumers

CRG, CRH, CRI, and CRJ are fully indigenous wholesale, retail and dispensing pharmaceutical organisations established for supply, retailing, and distribution of locally manufactured and imported drugs, as well as the provision of free consultation and counselling for customers by well trained professionals. These companies' retail outlets offer a comprehensive range of pharmacy services, such as dispensing of OTC (over-the-counter) and prescription medicines, blood pressure and cholesterol checks and food intolerance testing. The companies' product range includes medicines, nutritional supplements, natural remedies, mobility aids, dental care, special diet and sports nutritional foods, cosmetics, toiletries, perfumery, homeopathy and aromatherapy, along with a wide range of home diagnostic equipment.

These companies have several branches located in major cities of Nigeria except CRH with only one facility in Lagos State. In addition to sourcing from indigenous pharmaceutical manufacturers, these companies, apart from CRH, also import high quality pharmaceuticals,

groceries, beauty products, foods and much more. The companies' wholesale departments serve hundreds of supermarkets, retail pharmacies and hospitals, government healthcare centres in Nigeria.

6.4.2 Export Returns

These companies do not export EDD drugs to suppliers outside Nigeria due to the legal consequences. EDD are returned to local suppliers if there are RCAs to facilitate such returns.

6.4.3 Importance of PRL

All the wholesalers considered PRL very important. CRG considered PRL very important due to the aim of the company to maintain zero expired drugs on stock. Hence CRG practises RL in order to manage slow-moving and fast-moving stock and to determine an appropriate order quantity. PRL enables CRG to clear space on the shelf. Returned drugs are kept for an average of one month before processing so as to allow time for accumulation and for proper auditing of the drugs. This RL process is implemented so as to maximise sales and reduce customer returns.

According to the respondent, PRL activities have a very positive impact on CRH as they enable proactive removal of short-dated stock from inventory. They enable the identification of the split between fast-moving and slow-moving stock. They mitigate the risk of loss and wastage via the on time identification of short-dated drugs and the pushing of drugs nearing expiration into the forward chain such as channel partners e.g. hospital, clinics etc. to maximise sales and usage. CRH also benefits from implementing PRL as the system helps improve its corporate reputation and compliance to regulatory requirements.

According to CRI's respondent, PRL is very important as the practice helps improve product quality. Based on customers' feedback about a drug, this information enables CRI give feedback to the suppliers on issues encountered by customers and how the drugs can be

improved to meet customer needs. PRL also helps in improving corporate image, corporate reputation as well as competitive advantage over other competitors in the industry.

PRL is very important at CRJ as patients need to be supplied the expected quantity of drugs. By integrating the FEFO method of stock allocation and dispensing method in the PRL, CRJ is able to maximise sales, and mitigate the risk of drugs getting expired on stock without sale.

6.4.4 Knowledge of RG

CRG's respondents, acknowledged the lack of knowledge of RGs governing EDD drugs. The company employees are, however, aware of the company's policies and guidelines for handling EDD drugs. Damaged drugs must be removed from the shelf once discovered, short-dated drug must be removed from the shelf no late than one month to expiry. CRH's respondents acknowledged the lack of knowledge of RGs governing EDD drugs. On the contrary, respondents from CRI and CRJ both reported the presence of the RA and PCN guidelines governing the handling of returned, EDD drugs and compliance of the company.

6.4.5 Factors Hindering Compliance

According to each respondent, the reason for non-compliance to RG by CRH is the lack of adequate knowledge of the guidelines governing expired or damaged drugs. Considering the volume and the total value of the drugs to be destroyed, the impact of the loss on CRI's bottom line discourages compliance to RGs. The cost of destruction is the factor hindering compliance by CRJ. These factors adversely affect the effectiveness of PRL practices at the wholesalers investigated.

6.4.6 PRL Facilitator

CRI returns drugs back to suppliers based on the RCA.

6.4.7 PRL Impact on Business Operations

The impact of PRL on CRG is the loss of sales and delayed revenue when drugs are returned by customers. During the PRL processes, CRG faces different kinds of challenges such as the damage of the returned drugs during transport, theft of the returned drugs while in-transit, delay in response time, and delayed reimbursement of customers for the returned drugs. Delay is also encountered by CRG in getting the returned drugs accepted and exchanged by the suppliers. This challenge leads to the need for CRG to source alternative suppliers, which may increase the lead-time of drug supply

PRL activities have a very positive impact on CRH's operations as the practices facilitate the proactive removal of short-dated drugs from inventory. Hence, the split between fast-moving and slow-moving stock is easily identified. The identification of this split prevents wastage through a proactive identification of short-dated drugs and their transfer into the forward chain, which can maximise sales and usage by channel partners such as hospitals, clinics etc. CRH benefits from PRL as it helps improve corporate reputation and compliance to regulatory requirements.

PRL impacts CRI in several ways such as difficulties in achieving accurate stock reconciliation. This is because the returned drug has already been sold out of the inventory/system, and the returns must first be sent to the inventory management team, with satisfactory reasons for the return. According to the respondent, the stock reconciliation process is usually time consuming. Those drugs sent back to suppliers represent a loss of sales for CRI and also the management of the returned drugs is a time consuming process, characterised by long resolution lead-time, and difficulty to balance inventory.

To mitigate the impact of the loss of sales of returned drugs, CRI explores a variety of measures to push short-dated and expired drugs for sale. Some expired drugs (3 months after expiration) are sometimes re-audited, re-inspected, and quality re-checked by the manufacturers. If the manufacturers certify the drugs are good for consumption, the manufacturer will market

release the drug, CRI will then re-introduce the drugs into the forward chain. CRI is, however, mandated by law to inform all end-customers at the point of purchase that the drugs are good for use even though it is 3 months after expiry.

The impacts of PRL activities on the CRI are the effects of the logistics cost, loss of sales, and revenue. There are no challenges encountered at CRI when managing drug returns for destruction and exchange purposes. The drug return process for refund purpose can cumbersome. CRI would rather implement drug exchange instead of giving a cash refund. This sometimes causes some dissatisfaction of the customers.

6.4.8 The "What Perspective" of PRL

CRG allows wrongly ordered drugs to be returned by customers within 24 hours as long as they are untampered drugs with. Customers generally walk into the store to return drugs and they are generally untampered with, wrongly ordered or damaged drugs. CRG purchases finished drugs from suppliers and also normally returns drugs to suppliers when necessary. The drugs normally returned back to suppliers are expired drugs, drugs with damaged packaging, slow-moving drugs (returned under the SOR terms and condition).

CRH allows drugs to be returned by customers but customers do not usually return drugs. According to the respondent, it is very rare for customers to return products back except when the wrong product is sold or delivered to them. CRH purchases finished drugs from manufacturers and does not return drugs to the manufacturers as they always explore all options to avoid returns by selling short-dated drugs at a discounted price to hospitals, clinics, where the drugs will be consumed within a short period of time.

CRI allows drugs to be returned by customers. Drugs are always sold to customers in good condition. The only time customers return drugs are when they were wrongly purchased. This often happens when a patient sends another person to purchase the drug on their behalf. The drugs received back from customers normally are usable in-warranty drugs. CRI purchases

finished drugs from suppliers and will return drugs to suppliers if damaged, or expired upon receipt.

CRJ allows drugs dispensed from the store to be returned by customers. These may be expired, damaged or compromised drugs and untampered drugs. CRJ does not manufacture drugs but procures finished drugs from manufacturers. CRJ also returns drugs to suppliers when they are damaged, expired or defective. Drugs that expired while on stock that cannot be returned to suppliers will be recalled from stock, and sent to the RA for destruction.

6.4.9 The "Why Perspective" of PRL (Receiver)

CRG accepts drugs back from its customers in order to maintain a good customer relationship and satisfaction, and protect the company reputation. Furthermore, PRL is implemented so as to maximise sales and reduce customer returns. Suppliers accept the drugs back from CRG because of the RCA in the SOR, and to maintain a good corporate reputation.

CRH accepts drugs back from customers if customers provide proof that the drug was wrongly sold to them. This, however, rarely happen. The only circumstances whereby drugs will be returned from CRH to suppliers is when the drug has been reported defective, in cases of over-supply and when the wrong drug was received at CRH.

Expired drugs are normally not returned by customers but if by chance a customer returns expired drugs, the CRI normally accepts the returns, mainly to maintain customer satisfaction, and to protect the company's reputation. Drugs are also accepted back to prevent drug abuse and improper disposal. Based on the RCA suppliers, accept damaged and expired drugs back from CRI in order to maintain a good relationship and customer service experience.

CRJ accepts drugs back from customers because of expiry, damaged drugs, wrongly ordered drugs and to maintain customer satisfaction and corporate reputation.

6.4.9.1 The "Why Not Perspective" of PRL (Receiver)

CRH does not return drugs to the suppliers because all options are always explored to avoid this. Hence, CRH usually does not have reasons to return drugs to suppliers as short-dated drugs (6 months to expiry) are pro-actively sold to clinics and hospitals where the drugs will be consumed before expiring. Drugs will not be accepted back without proof of purchase by the customer.

6.4.10 The "Why Perspective" of PRL (Sender)

Customers return drugs to CRG due to quality issues encountered, expiration, damage, short-dated, and cost. CRG returns drugs to suppliers because they are, expired, damaged, or slow-moving drugs on SOR contract. Customers do not return drugs to CRH unless a wrong drug is sold to them. This rarely occur as CRH does not sell expired drugs to customers. Drugs are also returned to suppliers when reported damaged, or defective, or in case of over-supply and wrong delivery.

Many times the returned drugs to CRI are not damaged. Customers send products back mainly because they no longer want the product. Drugs are also returned to CRI when they were wrongly ordered or purchased. This often happens when a patient sends another person to purchase the drug on their behalf. Customers simply walk into CRI where the drug was purchased to return the drug for exchange or refund.

Expired drugs are normally not returned back by customers but if by chance a customer return expired drugs, the company normally accepts them mainly to maintain customer satisfaction, and protect the company's reputation. Drugs are also accepted back in order to prevent drug abuse and to prevent improper disposal. CRI however normally returns slow moving or expired drugs to suppliers based on RCA and for proper disposal. Customers/partners return back to CRJ due to expiration, damage, or wrongly ordered for exchange or refund.

6.4.10.1 The "Why Not Perspective" of PRL (Sender)

CRH usually does not have reasons to return drugs to suppliers as short-dated drugs (6 months to expiry) are pro-actively sold to clinics and hospitals where the drugs will be consumed before expiring. Based on the RCA, CRH returns damaged, or expired drugs to suppliers. Customers do not return drugs to CRH except in case of wrong delivery. According to the respondent, this is because CRH does not sell expired drugs to customers. CRJ does not return drugs to suppliers due to the absence of RCA for returns.

6.4.11 The "How Perspective" of PRL

There are procedures in place for the collection, sorting, storing and processing of returned drugs at CRG. On a monthly basis, the store pharmacy checks the store shelf or inventory for short-dated drugs, and sends expiring drugs to the warehouse on a weekly basis using the same truck in which new deliveries from the warehouse are made. Auditors in the warehouse will quality check the returned drugs. After certification or market release for re-sale, drugs that are months to expiration are sent back to the store to be sold at discounted price, some are donated to Charity organisations, primary healthcare centres, or federal medical clinics (based on regulatory approval) while some are returned to the supplier based on the SOR agreement.

If the drugs are not sold even after been discounted, drugs will be removed from the shelf and sent back to the warehouse for re-auditing, consolidation with other expiring drugs, recorded and write-off for destruction (burning) or returned to the suppliers, depending on the sales agreement. On a monthly basis, drugs with no RCA will be shipped to WDA who will destroy the drugs. Returned drugs are kept for an average of one month at WDA before processing. This allows time for accumulation and for proper auditing of the drugs.

There are procedures in place for the collection, sorting, storing and processing of returned drugs at CRH. On a daily basis, the shelf and stocks are checked for short-dated stock. Any

drug that is less than 6 months to expiration is considered short-dated and will be removed from the shelf and recorded as short-dated. The drugs will be set aside for sale at a discounted price to hospitals and clinics where the drugs will be consumed before the actual expiration date. Drugs that need to be returned to the suppliers are returned immediately after the return decision is made. The supplier will be contacted and given the product description and related information, the supplier will then arrange collection and exchange. No drug is allowed to expire on stock as the stock movement is closely and properly managed.

There are procedures in place at CRI for the collection, sorting, storing and processing of returned drugs. When a product is returned to CRI, customers are not refunded immediately except in special cases where it is necessary. If the drugs were wrongly ordered, the drug will be returned for exchange. The customer will be advised to return on a specific day for the exchange. Meanwhile, the procurement team and the distribution centre will be informed about the reason for the return in order for a return authorisation to be issued. The returned process is initiated immediately once a customer returns a product to the store. This is to avoid delay in providing the customers with a refund, exchange or any necessary feedback.

Drugs that expire while on stock at CRI are pulled out and separated from the saleable inventory. The expired drugs will be collated according to their manufacture date, expiry date, name, and brand. The designated DC procurement team will be notified. Once a return authorisation is given by the procurement team, the drugs will be sent to the DC and all necessary documents will be prepared for accountability and transparency purposes, as evidence that the expired drugs have left the store and sent back to the distribution centre. The procurement team will then make the decision on what to do with the drug.

Once the drugs are received at the DC, depending on the RCA with the suppliers, the drugs returned to the suppliers. According to the respondent, some suppliers have their own procedure for disposing of drugs so they ask customers to return the expired drugs to them. Those that cannot be sent to the suppliers, will be disposed of by the DC. The respondent, however, did not have knowledge of the disposal procedure. According to the respondent, the

company manages the return process efficiently and there are no better ways of performing the activities.

There are procedures in place at CRJ for the collection, sorting, storing and processing of returned drugs. In the retail store, the registered pharmacist coordinates the RL activities. Every sales personnel are allocated a shelf for which they are responsible and the person is responsible for the management of drugs on the shelf. Any drug that is expiring (6 months to expiration) on the shelf will be removed from the standard shelf, checked and then placed on a different shelf for short-dated drugs so that the pharmacist will dispense the drugs on a first to expire, first out basis even up to 1 month to expiration. This is aimed at maximising sales and mitigating loss of revenue.

Once a drug expires, it will be removed from the shelf, audited, documented, and stored in a different/safe place on the premises. The RA's officials responsible for drug collection will be contacted for collection and destruction. According to the respondent, there is no other way of performing these activities as the store implements effective FEFO inventory management, reverse movement and order fulfilment practices.

6.4.12 The "Who Perspective" of PRL

CRG's customers are end-consumers and suppliers are wholesalers, importers, and manufacturers. The supply chain stakeholders that return drugs to CRG are the end-customers. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are internal auditors, warehouse staff, procurement staff, store staff, and transport service providers. All the stakeholders have indirect influence on the way the company manages returned drugs but the RA have the greatest influence. The actors/employees at CRG responsible for the day-to-day administration, collection, sorting, storage, re-sale, reporting and disposal of the returned drugs are store managers (pharmacist), internal auditors, warehouse staff, procurement staff, and store staff.

CRH's customers are retailers, hospitals and clinics, while the suppliers are manufacturers. No supply chain stakeholder returns drugs to CRH except if the wrong drug is delivered to customers. The only reverse flow of drugs is that between CRH's retail outlets and the warehouse, which is an intra-company, collaboration and information sharing relationship. The actors at CRH responsible for the day-to-day administration, collection, sorting, storage, re-sale, reporting and disposal of returned drugs are store staff, store pharmacists, warehouse manager, quality team, and logistics manager.

CRI's customers are end-consumers and suppliers are importers, indigenous manufacturers and wholesalers. The supply chain stakeholders that return drugs to the company are end-customers. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the customers, retail outlets, distribution centre, procurement department, transport department, supplier, and the RA. Stakeholders that influence the way the CRI manages its return processes are the end-customers, suppliers, and the regulatory authorities. The actors/employees at CRI responsible for the day-to-day administration, collection, sorting, storage, re-sale, reporting and disposal of the returned drugs are the store managers, the pharmacist, Staff, procurement team, Quality team, warehouse team and Logistics team.

CRJ's customers are end-consumers while the suppliers are manufacturers, and some wholesalers. The supply chain stakeholders that return drugs to CRJ are mainly end-consumers. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the store pharmacist, sales staff and the RA. The stakeholders that influence the way the company manages returned drugs are the RA, the management team, pharmacists, and customers. The actors/employees within the company responsible for the day-to-day administration, collection, sorting, storage, re-sale, reporting and disposal of the returned drugs are the store pharmacist, warehouse staff, sales staff, and the RA.

6.4.13 The "Where Perspective" of PRL

Stakeholders involved in the PRL operation of CRG are located in-house, in the same State, and country. CRG has several retail pharmacies across the country with a central warehouse in each State. The location of stakeholders has no negative influence on the PRL operation as each states has its own central warehouse instead of one central warehouse, which could cause delay and complexity in the return process.

The stakeholders involved in the PRL operation of CRH are located in-house and distance of the stakeholders from the company has no negative impact on the collection, storage, and processing strategy of returned drugs.

The stakeholders involved in the PRL operation of CRI are spread across all corners of Nigeria as the company is a chain of retail pharmacy outlets. The influence/impact of location of stakeholders on the collection, storage and processing strategy is delay caused by the distances of CRI's retail outlets from central DC. CRI has been able to manage this challenge by allowing outlets/stores in different regions of the country to have different return delivery lead-time targets and lead-time to provide customers with feedback.

The stakeholders involved in the PRL operation at CRJ are located in-house and externally within the same region. Hence, distance or location of these stakeholders has no negative impact on the collection, storage, and processing strategy adopted by CRJ.

6.4.14 The "When Perspective" of PRL

CRG accepts wrongly ordered drugs back from customers within 24 hours as long as they are untampered drugs with. The returned drugs are kept for an average of one month before processing so as to allow time for accumulation and for proper auditing of the drugs. The frequency of returns to suppliers varies according to product and the respective SOR

agreement. Drugs are also returned from the store to the warehouse on a weekly basis if noticed during checks (monthly basis) and auditing.

No supply chain stakeholder returns drugs to the company except if the wrong drug is delivered to customers. In this case, the stakeholder might be retailers, hospitals or clinics, but such instance are rare. On a daily basis, the shelves and stocks is checked for short-dated stock at CRH. Drugs that need to be returned to the suppliers are returned immediately after the return decision is made.

The return process is initiated immediately once a customer returns a product to CRI. This is to avoid delay in providing the customers with a refund, exchange or any necessary feedback. Once a return authorisation is given by the procurement team, the drugs will be sent to the DC and all necessary documents will be prepared for accountability and transparency purposes, as evidence that the expired drugs have left the store and sent back to the distribution centre. Depending on the RCA with the suppliers, the returned drugs will be forwarded to the suppliers for proper disposal.

When a drug expires at CRJ, it will be removed from the shelf, audited, documented, and stored in a different/safe place on the premises. The RA's officials responsible for drug collection will be contacted for destruction arrangements.

6.4.15 Improvement of PRL Practices

In order to improve PRL practices, CRG is adopting the use of ERP system; a central software for managing inventory and stock at each store. There is also a commitment to providing prompt follow-ups on returns related issues to ensure corrective actions are implemented in all cases. CRG is also improving the logistics operation in terms of secured proper transportation and storage facility.

CRI explores various measures to push short-dated and expired drugs for sale. Some expired drugs (3 months after expiration) are re-audited, re-inspected, and quality re-checked by the

manufacturers. Once declared safe for consumption, the drugs will be re-marketed for re-sale. CRI also aims to improve its PRL practices by expanding its geographical reach by establishing more distribution centres and outlets in other geographical regions. This geographical expansion will help reduce over-dependence on the central DC in Lagos state. According to the respondent, there is no other way of performing these activities at CRJ as the company implements an effective FEFO inventory management, return management, order fulfilment practices.

Table 6.6 is a summary of the CC3 (PW) within case-category analysis presented above, highlighting the similarities and difference among the PW investigated. The next section presents the within case-category analysis of PR investigated.

Table 6.6: Case-Category Three Summary

Case-Categories/ Themes	CRG	CRH	CRI	CRJ
Organisational Type	Indigenous	Indigenous	Indigenous	Indigenous
Stakeholder Type	Wholesaler	Wholesaler	Wholesaler	Wholesaler
Export Return	These companies do not export EDD drugs to suppliers outside Nigeria due to the legal consequences.	These companies do not export EDD drugs to suppliers outside Nigeria due to the legal consequences.	These companies do not export EDD drugs to suppliers outside Nigeria due to the legal consequences.	These companies do not export EDD drugs to suppliers outside Nigeria due to the legal consequences.
Importance of PRL Practices	Considers PRL very important due to the aim to maintain expired drug free stock. To manage slow-moving and fast-moving stock and to determine an appropriate order quantity. To clear off space on the shelf. To maximise sales and reduce customer returns.	Considers PRL very important as it enables proactive removal of SD stock, identification of the split between fast-moving and slow-moving stock, mitigates the risk of loss and wastage by identifying SD drugs on-time and the pushing them into the forward chain to maximise sales. It improves corporate reputation and compliancy to RGs	PRL is very important as it helps improve transparency, and product quality via customers' feedback. Helps improve corporate reputation as well as competitive advantage over other competitors.	Considers PRL very important as patients need to be supplied with quality drugs expected. It helps to maximise sales, and mitigate the risk of drugs getting expired on stock without sale.
Knowledge of RG	Acknowledged the lack of knowledge of RGs governing EDD drugs	Acknowledged the lack of knowledge of RGs governing EDD drugs	Acknowledged the lack of knowledge of RGs governing EDD drugs	Acknowledged the lack of knowledge of RGs governing EDD drugs
Factors Hindering Compliancy	No Data	The lack of adequate knowledge of the RG governing EDD drugs	Cost impact on the bottom line discourages compliancy to RGs	The cost of destruction is the factor hindering compliancy
PRL Facilitator			Returns drugs back to suppliers based on RCA.	
PRL Impact on Business Operation	The loss of sales and delayed revenue when drugs are returned by customers. Delay in response time, and delayed reimbursement of customers for the returned drugs.	Proactive removal of SD stock, identification of the split between fast-moving and slow-moving stock, mitigates the risk of loss and wastage by identifying SD drugs on-time and the pushing them into the forward chain to maximise sales. It improves corporate reputation and compliancy to RGs	Loss of sale and revenue due to the logistics cost, time consuming, and cumbersome process. Characterised by long resolution lead-time, and difficulty to balance inventory. Facilitate re-sale process	No Data
The What Perspective of PRL	untampered, wrongly ordered or damaged drugs, expired drugs, SOR drugs	Untampered drugs	Usable in-warrantee, damaged, or expired drugs	Expired, damaged, compromised drug, defective and untampered drugs
The Why Perspective of PRL (Receiver)	To maintain good customer relationship and satisfaction, protect the company reputation, to maximise sales and reduce customer returns. To adhere to RCA	Drug reported defective, over-supply and wrongly delivered.	To maintain customer satisfaction, and to protect the company's reputation. To prevent drug abuse and improper disposal. Based on RCA suppliers accept EDD back in order to maintain a good relationship and customer service experience.	Accepts drugs back from customers due to the drug being expired, damaged, wrongly ordered drug and in order to maintain customer satisfaction and corporate reputation
The Why Not Perspective of PRL (Receiver)	No Data	If customers do not have provide proof of purchase. CRH do not return drugs back to its suppliers as all options are always explored to avoid the need for return	No Data	No Data
The Why Perspective of PRL (Sender)	Quality issue encountered, expiration, Damaged, short-dated, and cost. CRG return drugs back to suppliers because they are, SD, damaged, and slow-moving drugs on SOR contract	Drugs are retured to suppliers if reported damaged, defective, over-supply and wrong delivery	Customer no longer want the product, wrongly ordered or purchased. Expired drugs are normally not returned back by customer	Customers return drugs back to CRJ due to expiration, damaged, wrongly ordered. CRJ return slow moving or expired drugs back to suppliers based on RCA and for proper disposal.

Table continuation in the next page

The Why Not Perspective of PRL (Sender)	No Data	CRH usually do not have reasons to return drugs to suppliers as short-dated (6 months to expiry) are pro-actively sold to clinics and hospitals where the drugs will be consumed before expiring. Based on RCA, CRH returns EDD drugs back to suppliers	No Data	CRJ do not return drugs to suppliers due to the absence of RCA for returns.
The How Perspective of PRL	There are procedures in place for the collection, sorting, storing and processing of returned drugs at CRG	There are procedures in place for the collection, sorting, storing and processing of returned drugs at CRG	There are procedures in place for the collection, sorting, storing and processing of returned drugs at CRG	There are procedures in place for the collection, sorting, storing and processing of returned drugs at CRG
The Who Perspective of PRL	customers are end-consumers and suppliers are wholesalers, importers, and manufacturers. The supply chain stakeholder that return drugs back to CRG are the end-customers. The stakeholders responsible for PRL activities are internal auditors, warehouse staff, procurement staff, store staff, and transport service providers. The actors at CRG responsible for the day-to-day PRL operations are store managers (pharmacist), internal auditors, warehouse staff, procurement staff, and store staffs.	CRH's customers are retailers, hospitals and clinics while the suppliers are manufacturers. The only reverse flow of drugs is that between CRH's retail outlets and the warehouse. The stakeholders that influences PRL operations are the management team, customers, and regulatory authorityThe actors at CRH responsible for the day-to-day PRL operations are store staffs, store pharmacists, warehouse manager, quality team, and logistics manager.	CRI's customers are end-consumers and suppliers are importers, indigenous manufacturers and wholesalers. The stakeholders responsible for PRL operations are the customers, retail outlets, DC, procurement department, transport department, supplier, and the RA. The actors at CRI responsible for the day-to-day PRL operations are the store managers, the pharmacist, Staffs, procurement team, Quality team, warehouse team, Logistics team.	CRJ's customers are end-consumers while the suppliers are manufacturer, and some wholesalers. The stakeholders responsible for PRL operations are the store pharmacist, sales staff and the RA. The stakeholder(s) that influences the PRL opertions are the RA, the management team, pharmacists, and customers
The Where Perspective of PRL	Stakeholders involved in the PRL operation of CRG are located in-house, the same State, and country. CRG has several retail pharmacies across the country with central warehouse within in each State.	The stakeholders involved in the PRL operation of CRH are located in-house	The stakeholders involved in the PRL operation of CRI are spread across all corner of Nigeria as the company is a chain retail pharmacy outlet	The stakeholders involved in the PRL operation at CRJ are located in-house and externally within the same region
The When Perspective of PRL	CRG accepts drugs back from customers within 24 hours as long as they are untampered drugs, and are wrongly ordered drugs. The returned drugs are kept for an average of one month before processing. The frequency of returns to suppliers varies product and the respective SOR agreement. Drugs are also returned back from the store to the warehouse on a weekly basis once noticed during checks (monthly basis) and auditing	On a daily basis, the shelf and stock is checked for short-dated stock at CRH. Drugs that need to be return to the suppliers are returned immediately after the return decision is made.	The returned process is initiated immediately once a customer returns a product to CRI. Once a return authorisation is given by the procurement team, the drugs will be send to the DC. Depending on the RCA with the suppliers, the returned drugs will be forwarded to the suppliers	Once the drug expires at CRJ, the drugs will be removed from the shelf, audited, documented, and store in a different/save place on the premises. The RA's officials responsible for drug collection will be contacted for destruction arrangements
Improvement of PRL Practices	Adopt the use of ERP system, a central software for managing inventory. Managerial commitment to provide prompt follow-ups on returns related issues to ensure. Improve the logistics operation in terms of secured proper transportation and storage facility	No better ways of performing these activities is currently envisage.	Expand geographical reach by establishing more distribution centres and outlets in other geographical regions	No better ways of performing these activities is currently envisage.

6.5 Case-Category Four – Pharmaceutical Retailers

6.5.1 Case-Category Four Settings

Table 6.7 is developed in this section to highlight the settings of each case research companies categorised as PR; Case-Category Four (CC4). The table depicts the year of establishment of the pharmacies, organisational type, supply-chain stakeholder type, product type, product source, and customer type. These elements were specifically highlighted as they influence the PRL operations of each case companies.

Table 6.7: Case-Category Four Settings

Case-Category Four (CC4)	Differentiating Features					
Case Companies	Established	Organisational Type	Stakeholder Type	Product Type	Product Source	Customer Type
CRK	2008	Indigenous	Retailer	OTC (over-the-counter), prescription medicines, nutritional supplements, natural remedies, home medical equipment, mobility aids and pharmacy services	Manufacturers, Registered Importers and Wholesalers	End-consumers
CRK2	2008	Indigenous	Retailer	OTC (over-the-counter), prescription medicines, nutritional supplements, natural remedies, home medical equipment, mobility aids and pharmacy services	Indigenous Manufacturers, International Manufacturers, and Registered Importers	End-consumers, Doctors with hospitals, Nursing homes and government hospitals
CRL	1995	Indigenous	Retailer	OTC (over-the-counter) and prescription medicines	Wholesalers	End-consumers
CRM	NP	Indigenous	Retailer	OTC (over-the-counter), prescription medicines, nutritional supplements, natural remedies, home medical equipment, mobility aids and pharmacy services	Indigenous Manufacturers, Wholesalers, and Registered Importers	End-consumers
CRN	NP	Indigenous	Retailer	OTC (over-the-counter), prescription medicines, nutritional supplements, natural remedies, home medical equipment, mobility aids and pharmacy services	Manufacturers and Wholesalers	End-consumers

These companies are fully indigenous pharmaceutical retailers or community pharmacies specialised in dispensing prescription-based drugs, OTC, herbal medication, and diagnoses services to end-consumer.

6.5.2 Importance of PRL

According to the respondent, the management at CRK are indifferent to the importance and implementation of PRL practices. Hence, there are no written procedures in place at CRK for the collection, sorting, storing and processing of returned drugs. The lack of managerial commitment to PRL is further facilitated by the absence of regulatory enforcement. According to the respondent from CRK2, PRL practice is very important to the company as it helps to maintain customer relationship, enhance customer satisfaction, maintain trust, and maintain a good corporate reputation, and to prevent loss (Refund from Suppliers).

PRL activities are important as they enable the CRL to proactively remove SEDD drugs from stock and shelf. PRL practices help mitigates and prevents the risk of selling or dispensing expired drugs to customers. PRL practices also enable the CRL to effectively manage its stock rotation based on fast-moving and slow-moving stock. Essentially, PRL practices help CRL to improve its corporate reputation and compliance to RGs. According to the respondent, the effect of improper disposal of drugs on the environment is not part of the factors considered when selecting a drug disposition strategy.

PRL activities are important to CRM as they help CRM to build customer trust and confidence. According to the respondent, PRL also enables CRM to manage inventory by eliminating expired drugs from inventory. Essentially, drugs with a 6 to 8-month shelf-life are removed from inventory. PRL practices are important to CRN as the company management considers it unethical and unprofessional to have expired drugs in their procession. Hence, there is a managerial commitment to keep their inventory free from expired drugs. According to the respondent, PRL practices are also important as they help prevent sanctions for non-compliancy to regulatory requirements.

6.5.3 Knowledge of RG

The respondent from CRK acknowledged the presence of a law prohibiting the company from selling or dispensing expired drugs but lacked the knowledge or awareness of the RGs in managing expired or damaged drugs. This is mainly due to nature of the business relationship with the supplier as CRK mainly deals with the supplier's sales representative on issues related to product returns and sales e.g. return of expired, unsaleable, or slow-moving drugs on SOR. The respondent from CRL also acknowledged that there should be a law or guideline on how to handle returned, damaged, and expired drugs.

CRM acknowledged the presence of guidelines governing the handling of returned, damaged, and expired drugs. The guidelines state that expired drugs should be stored separate from other saleable stock. Expired drug should be stored in a different storage point/location designated for expired drugs. Expired drugs should be documented and pass through a proper return channel for proper disposal. The CRN respondent acknowledged the need for RG on how to handle and process EDD drugs. This is the reason the RA collaborate with the PCN in encouraging pharmaceutical companies to submit EDD drugs for proper disposal.

6.5.4 Factors Hindering Compliance

CRK do not have any time frame for keeping returned or EDD drugs before processing. According to the respondent, this can be attributed to the absence of regulatory enforcement to process expired drugs within a specific time frame. The cost of destruction is another factor that contributes to the lack of managerial commitment towards PRL. According to the respondent, the RA charges the companies 25,000 naira for the destruction service. As a result, many retailers usually store and perform the destruction of their expired drugs in-house. CRK also does not return drugs to suppliers or forward them to service providers due to pricing issue, as well as unclear terms and conditions etc.

Factors hindering CRK2's compliance to RG and laws are the inadequacy or lack of regulatory enforcement, bribery and corruption in the system, e.g. some pharmaceutical importers do not register imported drugs with the RA and are not penalised for the offence. The registration cost at the RA is a major factor that inhibits compliance to RGs. According to CRL, the lack of adequate knowledge of the law and guidelines for managing expired and damaged drugs by pharmacies is the main factor that hinders compliance while CRM emphasised negligence and lack of commitment on the part of the retailers.

CRN attributed the distance of the company from where the RA is located as a factor that hinders the company from complying with RG. Hence, the company perform the destruction in-house. Lack of proper awareness of the RGs on how to process expired drugs is another major factor emphasised by CRN that hinders compliance.

6.5.5 PRL Facilitator

Suppliers accept drugs returned by CRK based on RCA and the need to comply with regulatory requirement. In cases where there is no RCA between CRK2 and suppliers, EDD drugs will not be accepted by suppliers. According to the respondent from CRN, the RA in collaboration with PCN are implementing initiatives and programs to encourage companies to come forward with their expired products.

6.5.6 PRL Impact on Business Operations

CRK currently do not practise PRL due to the lack of managerial commitment, absence of regulatory enforcement, and cost of destruction by the RA. Hence, CRK usually keeps expired drugs and perform the destruction activities in-house. CRK2 considered the impact of PRL activities on the business as an additional operational cost for the company. PRL enables CRL to proactively remove SEDD drugs from stock and shelf. This mitigates and prevents the risk

of selling or dispensing EDD drugs to customers. Hence, it improves corporate reputation, and regulatory compliance.

The impact of PRL on CRM is the loss of revenue on EDD drugs and the cost of disposal. PRL however helps build customer's trust and confident in the company's operation. The practice helps eliminate EDD drugs (6 to 8 month) from stock. The loss of revenue, profit and capital on EDD and the reluctance of suppliers accepting back expired drug are the impact of PRL on CRN.

6.5.7 The "What Perspective" of PRL

CRK allows drugs to be returned by customers only when the drugs are untampered with re-saleable. CRK procures finished drugs from suppliers but only returns goods to manufacturers and Importer not wholesalers. The drugs returned to suppliers are normally untampered drugs with, drugs that have expired drugs, usable drugs that are slow-moving, difficult to sell, no-sale SOR drugs, or damaged drugs.

CRK2 allowed drugs to be returned by customers if they are expired or defective at the point of sale. CRL allows drugs to be returned by customers only if the wrong product was sold or dispensed to them, which rarely happens. The drugs returned are always in good state (untampered) as return only takes place when the wrong drug is purchased. CRL procures drugs from suppliers and does not return drug to suppliers. This is because CRL performs drug disposal and destruction activities in-house.

CRM allow drugs to be returned by customers if the drugs are expired, short-dated, damaged or wrongly ordered drugs. According to the respondent, the company does not sell expired drugs and it is very rare to see customers return drugs due to expiration. CRM purchases from wholesalers, manufacturers, and registered importers and return damaged, or expired drugs, and drug with a manufacturing defect.

CRN also allows drugs to be returned by its customers based on their existing relationship. The type of products returned are short-dated drugs, wrong prescriptions or drugs that the customer already had at home. CRN also returns drugs to its suppliers via the supplier's medical or sales representative. Not all suppliers accept drugs, back except drugs on SOR arrangement. CRN bears the cost of disposing expired drugs that cannot be returned to suppliers.

6.5.8 The "Why Perspective" of PRL (Receiver)

CRK accepts drugs back from customers/partners if the customer has a good reason for returning the drug. The wrong drug may have been purchased, which can be exchanged or refunded. Suppliers accept drugs returned by CRK based on RCA and the need to comply with regulatory requirements. CRK accepts drugs from customer and returns drugs to suppliers in order to maintain customer satisfaction, optimise sales and revenue but not necessarily because of regulations.

CRK2 accepts drugs back from customers/partners so as to maintain a good customer relationship, and to prevent customers from using expired or damaged drugs. The suppliers accept drugs returned so as to maintain good supplier/customer relationships, and adhere to their contractual obligations. CRL accepts drugs back only when retuned in a good state (untampered) with for exchange or cash refund.

CRM accepts drugs back from customers/partners because customers have the right to genuine drugs. Drugs are not accepted by CRM because of regulatory or legislative reasons. According to the respondent, the role of legislation on pharmaceutical product is not significant in Nigeria due to inadequate enforcements of regulations. Hence, regulations do not influence the drug returns process. CRM considers PRL practices as a professional and ethical duty to ensure that substandard drugs are removed from circulation.

CRM considers it necessary to take responsibility to rectify any drug related issue and in provide the right drug to customers. These activities enable the company to meet customer demand, build customer relationship and satisfaction. Suppliers accept drugs returned by CRM so as to correct the mistake that has been made and also to maintain good customer relationships. CRN accepts drugs back from customers to maintain customer relationships and enhance customer satisfaction. Suppliers accept drugs returned by the company based on RCAs, which are mainly for prescription only drugs. There is no return agreement for OTC drugs.

6.5.8.1 The "Why Not Perspective" of PRL (Receiver)

CRK will not accept product back from customers if the drugs have been tampered with. Drugs purchased from wholesalers are not retuned except under SOR agreement. CRL does not return drugs to the suppliers because expired or damaged drugs are destroyed in-house. The only situation where drugs are returned to suppliers is when the wrong drug is delivered or in case of over-supply. Suppliers will not accept drugs back from CRN if there is no RCA to facilitate the exchange.

6.5.9 The "Why Perspective" of PRL (Sender)

Customers return drugs to CRK because the drugs were wrongly ordered, or in case of a quality issue with the packaging, or a manufacturing defect. Retail pharmacies and hospital-based pharmacies also send a list of slow-moving stock from one location to other partner pharmacies in a different location where the drugs are fast-moving i.e. inventory in multiple locations and these are exchanged from time to time to meet customer demand. CRK also returns expired, close to expiration and SOR drugs to suppliers.

Customers/partners normally return drugs back to CRK2 because the drug has expired, or they a refund, or for exchange for the right drug. CRK2 in turn returns drugs to its suppliers

due to expiration, for cash refund, for exchange, to prevent loss, prevent error during dispensing, to ensure the availability of quality and saleable inventory, and to maintain customer satisfaction.

According to the respondent, CRL does not sell or dispense expired drugs to customers. The only time drugs are returned to CRL is when the wrong drugs are sold to customers, which rarely happens. The time CRL returns drug to its suppliers is when the wrong drugs are delivered or in case of over-supply. CRM returns drugs to its suppliers if they are damaged, expired, and defective so as to keep its inventory free from short-dated drugs, expired drugs, and defective drugs. CRM in turn returns drugs to its suppliers for refund and exchange for a new or the right drug.

Customers return drugs to CRM if they are short-dated, damaged or defective when purchased. Customers also return drugs because they have changed their mind about the purchase or they already have similar product at home. Customers return drugs back CRN if they are short-dated for refund or exchange for the right drug.

6.5.9.1 The "Why Not Perspective" of PRL (Sender)

Drugs purchased by CRK from wholesalers are not retuned back to the supplier if there is no SOR agreement in place. Drugs are also not returned by end-users when they have been opened or partly used. CRL purchases drugs from suppliers but does not return drugs back to suppliers. This is because the company performs its disposal and destruction of expired or damaged drugs in-house. CRN does not return drugs to suppliers unless when there is a SOR arrangement in place.

6.5.10 The "How Perspective" of PRL

For a drug to be returned, it must be in the same condition as at the point of sale. The customer informs of the need for return CRK, CRK will instruct the customer to return the drug or send

a representative to collect and exchange the drug. According to the respondent, the company is indifferent about the importance and implementation of PRL practices. Hence, CRK has no written procedures in place for the collection, sorting, storing and processing of returned drugs. The management do not see the need for a procedure as there is no regulatory enforcement.

CRK performs a monthly inventory and shelf check for both expired and short-dated drugs. Drugs that are one or two months to expiry are removed from the standard shelf and placed on a separate shelf where they will be displayed for sale at a discounted price. This is usually done to facilitate and optimise sales before expiration. If drugs are expired, they will be removed from the shelf, placed on a table for auditing, and then stored in a collection bin where they will be consolidated with other expired drugs. Once the collection bin is full, the drugs will be disposed of.

CRK destroys expired drugs purchased from the wholesaler and sales representative of suppliers in-house. In the destruction process, the packages are opened, the tablets broken, poured into water and flushed through the sewage system. Alternatively, CRK disposes of expired drugs by open air burning in a secluded area. According CRK, despite the unethical practice, the destruction of expired drugs keeps expired drugs from circulation and from public consumption.

There are no procedures in place at CRK2 for the collection, sorting, storing and processing of returned drugs. Instead, CRK2 uses sales invoices to determine returnable products. The invoice stipulates what needs to be done if a drug is expired or defective. Hence, some drugs are disposed in-house while some are returned to suppliers. Once expired drugs are discovered on the shelf and in inventory, they are removed and the supplier's sales representative will be informed to arrange collection and exchange for new drugs.

The duration that time expired drugs remain at the company depends when the sales representative of the supplier arranges to come to collect the expired drugs. In cases where there is no RCA for return, damaged or expired drugs will not be returned to the supplier. When customers return drugs that were expired or defective at the point of sales, CRK2 will

approve the return and the customer will be asked to return the drug or the company will send a representative to collect the drug for exchange.

There are procedures in place at CRL for the collection, sorting, storing and processing of returned drugs. On a daily basis, CRL's store staff perform stock checks and remove any expired or short-dated (close to expiration by days) drugs from the shelf. Drugs that are less than one month or days to expiration will also be removed immediately and reported to the store pharmacist. The store staff will place the drugs on the table for the store pharmacist to audit. After audit, the store pharmacist instructs the store staff to remove the tablets from the cartons and packages. The tablets are crushed and flushed down the drain or toilet with a lot of water. The packaging will be crushed into pieces and disposed in the waste bin. CRL processes expired/damaged drugs immediately once discovered, in order to prevent the possibility of selling expired drugs to customers.

There are procedures in place at CRM for the collection, sorting, storing and processing of returned drugs by the company. Customer returns are handled immediately by the company's staff. Investigation of the possible cause of customer return is done immediately so that the drug can be isolated, investigated, disposed or returned to the supplier, for refund or exchanged for the customer. If a quality issue originates from the supplier, CRM ensures that the supplier is informed, and the drugs are returned for exchange or refund.

CRM performs monthly inventory checks for expired drugs. Short-dated drugs (7 to 8 months to expiration) are separated from drugs with longer shelf-life and placed on a different shelf that is eye-catching to facilitate sale and also for dispensing at every possible opportunity. The frequency of drug returns to suppliers depends on when the short-dated or expired drug is discovered in the store. For all other drugs without a return agreement, a parastatal waste disposal of the RA comes to CRM on a monthly basis to collect expired drug for disposal.

There are no procedures in place at CRN for the collection, sorting, storing and processing of returned drugs. On a monthly basis, CRN conducts shelf and inventory checks for expired or expiring drugs. Occasionally, staff also stumble across short-dated drugs or expired drugs.

These drugs will be removed from the shelf or inventory immediately and dumped into a collection or disposal bin, after which destruction arrangements will be made. On a monthly basis, the expired drugs will be taken to a dump site and destroyed by open air burning. The RA is not usually notified about this operation. EDD drugs under SOR are collected and exchanged by suppliers at no extra cost. CRN adopts this strategy as it is less cumbersome and cost efficient.

6.5.11 The "Who Perspective" of PRL

CRK's customers are end-consumers and suppliers are manufacturers, Importers and wholesalers. Supply chain stakeholder that returns drugs to CRK are only end-consumers. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are in-house staffs. For SOR drugs, the supplier's sales representatives are usually contacted to make collection arrangement from the pharmacy. No stakeholder influences the way the company manages returned drugs. The actors/employees within the company responsible for the day-to-day administration, collection, sorting, storage, re-sale, reporting and disposal of the returned drugs are the store staff and the pharmacist.

CRK2's customers are patients, doctors with hospitals, nursing homes and government hospitals. The company's suppliers are manufacturers (local and international), and importers. The stakeholder that mainly return drugs CRK2 are patients. The stakeholder/companies responsible for collecting, sorting, storing, reporting and disposing the returned drugs are patients, hospitals, suppliers, and WDA. Suppliers have the major influence on the way the company manages returned drugs. Suppliers normally inquire about the performance of their product and new product launches. Suppliers also lecture the company representative on how to prescribe their products to patients, both existing and new product. The actors/employees within the company responsible for the day-to-day administration, collection, sorting, storage, re-sale, reporting and disposal of the returned drugs are the store pharmacist, and Staff.

CRL's customers are primarily end-consumers and the suppliers are mainly wholesalers. The supply chain stakeholder that return drugs to CRL are the customers only when they purchase the wrong drug. The stakeholder/companies responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the company itself and customers. The nature of the company's relationship with these stakeholders is inter-departmental and a customer to supplier relationship. The stakeholder(s) that influence the way CRL manages returned drugs are the company management team, suppliers and customers. The actors/employees within the company responsible for the day-to-day administration, collection, sorting, storage, re-sale, reporting and disposal of the returned drugs are the store keepers and store pharmacists.

CRM's customers are end-consumers and the suppliers are manufacturers, wholesalers, and registered importers. The stakeholders that return drugs to CRM are end-customers. The stakeholder/companies responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the drug collection unit, the retail pharmacy, customers, suppliers, and the RA. The stakeholders that have influence on the way CRM manages returned drugs are internal stakeholders (management) who develop policies to manage drug returns and how healthcare provision is being managed.

Customers also play a major role as the company retail outlets are located in the most affluent part of Nigeria. According to the respondent, customers in this area are well informed so they influence the way the CRM manages drug distribution and returns. The actors/employees at CRM responsible for the day-to-day administration, collection, sorting, storage, re-sale, reporting and disposal of returned drugs are the store pharmacist, pharmacist technician, apprentice, and the procurement team.

CRN's customers are end-consumers and suppliers are manufacturers and wholesalers. The supply chain stakeholders that return drugs to CRN are end-consumers. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the

company staff. The stakeholders that influence the way drug returns are managed are the company management and the end-consumers.

6.5.12 The "Where Perspective" of PRL

The stakeholders involved in the PRL operation of CRK are located within the same state but far from the company. Collection of unsaleable drugs under SOR agreements is done by the supplier's sales representative. Location of stakeholders does not have impact on the collection, storage, and processing strategy of the company as drug collection is done by the suppliers' sales representation. Since, the stakeholders involved in PRL of CRK2 and CRL are located in the same state, location of the stakeholders has no influence/impact on their RPL strategy.

Stakeholders involved in the PRL operations of CRM are located in strategic locations in Lagos. Hence, location of stakeholders has no impact on the RL activities of the company. The stakeholders involved in the PRL operation of CRN are the company staff. Location of stakeholders influences the PRL operation of CRN as the company conducts the destruction exercise in-house due to the distance of the company from the RA.

6.5.13 The "When Perspective" of PRL

In CRK, customer return must occur within 24 hours of purchase. CRK do not have any time frame for keeping returned or expired drugs before processing due to the absence of regulatory enforcement of a specific time frame. CRK performs a monthly manual check or 2 weeks check to retrieve expiring (2, 3 months to expiry) and expired drugs from the shelf. This is done to expedite the sales of the drugs before expiration.

Once drugs expire, CRK2 normally calls the supplier's sales rep. The duration of time expired drugs remain at the company depends on when the sales representative of the supplier arranges to collect the expired drugs. CRL processes the expired/damaged drugs immediately once discovered on inventory to prevent the sales of expired drugs to customers.

Customer returns are handled immediately by CRM. Investigation on the possible cause of customer return is done immediately so that the drug can be isolated, investigated, dispose of or returned to the supplier, and a refund or exchange made to the customer. The RA comes to CRM every month or two to collect expired products. This enables the RA to have a record of expired product so that they can look out for any such batch that might be in circulation.

6.5.14 Improvement of PRL Practices

According to the respondent from CRK, using appropriate means of disposing or destroying expired drugs would be a way to improve its PRL practices. The implementation any improvement initiative will depend on the collective commitments of all stakeholders involved, especially the regulatory body, manufacturers, importer and retailers. According to the respondent, greed for gain at all cost is a major impediment to PRL at some manufacturers and importers as many commonly explore opportunities to increase sales by selling expired drugs. According to the respondent, the use of an ERP system and software to monitor and control inventory would also be a viable way of improving drug return and management.

CRK2 can improve its PRL practices by improving its drug auditing processes to ensure that all products dispensed by the company are of high quality standard. CRK2 also needs to improve its procurement process, and implement a system of obtaining customers' feedback on product quality. The respondent suggested that if suppliers can be emailed earlier or pre-alerted in advance about drugs close to expiration, this will enable them to explore other sales channels for the drugs before they are completely expired.

On the part of the customers, depending on the day, week or month the drugs will be completely consumed and expired, CRK2 could collect customers' details at the point of sale so that customers can be remainder about the expiry date of the drugs. This would enable customers to return the drug on time for exchange or for proper disposal. Effective use of

technology and communications systems is another way of improving the PRL activities and collaboration with customers and suppliers.

The respondent from CRL also acknowledged the use of ERP systems to manage inventory as one viable way of improving PRL practices. CRM suggested that it would also be beneficial both for the industry and public health if all pharmacists and pharmaceutical companies followed the same PRL of managing drugs. The regulatory authorities should take a leading role in implementing and enforcing this measure.

Another important way of improving PRL practices is to pro-actively retrieve any compromised products from circulation and inject them into the appropriate reverse channel. CRM can also improve its PRL practices by ensuring that all staff are as meticulous as possible in their professional duty. This would mitigate the risk of staff making mistakes when dispensing drugs, thereby protecting the pharmaceutical ethics of the company. The company should also employee professionals capable of anchoring the mission statement of the organisation.

Considering the current social-economic and political situation in the country, CRN must continue its engagement in enlightenment campaigns of how customers should handle expired or damaged drugs as well as enlightenment campaign on prevalent diseases, screening and testing services for patients, and free of charge counselling services.

Table 6.8 is a summary of the CC4 (PR) within case-category analysis presented above, highlighting the similarities and differences among the PRs investigated. The next section presents the within case-category analysis of HBPs investigated.

Table 6.8: Case-Category Four Summary

Case-Categories/ Themes	CRK	CRK2	CRL	CRM	CRN
Organisational Type	Indigenous	Indigenous	Indigenous	Indigenous	Indigenous
Stakeholder Type	Retailers	Retailers	Retailers	Retailers	Retailers
Export Return	None	None	None	None	None
Importance of PRL Practices	The management is indifferent to the importance and implementation of PRL practices. The lack of managerial commitment to PRL is further facilitated by the absence of regulatory enforcement	Helps to maintain customers relationship, enhance customer satisfaction, maintain trust, and maintain a good corporate reputation, and to prevent loss (Refund from Suppliers).	Enable the CRL to proactively remove SEDD drugs from stock and shelf, prevents the risk of selling or dispensing expired drugs to customers, enables effective stock rotation management base on the fast-moving and slow-moving stock, helps improve corporate reputation, compliancy to RGs	Helps to build customer trust and confident, enables CRM to manage inventory by eliminating expired drugs from inventory	Company management considers it unethical and unprofessional to have expired drug in their procession, helps adherance to RG and requirements
Knowledge of RG	Acknowledged the presence of law prohibiting the sale and dispensing of expired drugs but lack the knowledge of the RGs for managing EDD drugs	No Data	Acknowledged there should be law or RG for handling EDD drugs.	Acknowledge the presence of RG for handling EDD drugs.	Acknowledged the need for RG for processing EDD drugs
Factors Hindering Compliancy	Lack of managerial commitment, absence of regulatory enforcement, cost of destruction, pricing issue, and unclear RCA	Inadequacy or lack regulatory enforcement, bribery and corruption, registration cost at the RA	lack of adequate knowledge of the law and RG	Negligence and lack of commitment	Distance from where the RA is located, Lack of proper awareness of the RGs for processing EDD drug
PRL Facilitator	RCA and the need to comply with regulatory requirement	RCA	No Data	No Data	RA and PCN collaboration in implementing initiatives and programs to encourage companies to come forward with their EDD drugs
PRL Impact on Business Operation	Lost of Sales, cost of distruction impact on profit, additional work-load	Additional operational cost	Proactive removal of SEDD drugs from stock and shelf. Mitigation and prevention of associated risk of selling or dispensing EDD drugs. Enhances corporate reputation, and regulatory compliancy	loss of revenue, additional operational cost, disposal cost. Builds customer's trust and confident, helps eliminate EDD drugs (6 to 8 month) from stock.	Loss of revenue, profit, and the reluctance of most suppliers accepting back expired drug.
The What Perspective of PRL	Untampered drugs expired drugs, usable drugs that are slow-moving, SOR drugs, damaged drugs.	EDD drugs	untampered usable drugs (wrong order)	SEDD drugs, untampered usable drugs (wrong order)	SD drugs, Untampered usable drugs (wrong prescription, drugs customer already have at home), SOR drugs
The Why Perspective of PRL (Receiver)	Wrongly ordered, RCA, to maintain customer satisfaction, optimise sales and revenue	To maintain good customer relationship, to prevent customer from using EDD drugs, to maintain good supplier/customer relationship, and adhere to their contractual obligations.	Only when retuned in good state (untampered) for exchange or cash refund.	Moral obligation, professional and ethical duty to ensure that substandard drugs are removed from circulation, to meet customer demand, build customer relationship and satisfaction	to maintain customer relationship and enhance customer satisfaction, to adhere to RCA.
The Why Not Perspective of PRL (Receiver)	Tampered, No RCA	No Data	No Data	No Data	No RCA
The Why Perspective of PRL (Sender)	Wrongly ordered, quality issue with the packaging, Defect, CRK return expired, close to expiration and SOR drugs to suppliers	Expired, for refund, for exchange, prevention of loss, prevention of error during dispensing, to ensure the availability of quality and saleable inventory	Wrong delivery, over-supply, damaged, expired, and defect, to keep inventory free from SEDD drugs	Short-dated, damaged or defective when purchased, customer change of mind, or they already have similar product at home.	Short-dated drug for refund or exchange for new drug, wrong drug exchanged for the right drug

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The Why Not Perspective of PRL (Sender)	No RCA, Drugs opened or tampered		Distruction and disposal of EDD drugs are done in-house	No RCA	No RCA
The How Perspective of PRL	There are no procedures in place. Customer inform CRK. CRK will instruct customer to return the drug or send a representative to collect and exchange the drug. CRK performs a monthly inventory and shelf check for SEDD drugs. SEDD drugs are removed from the standard shelf and placed on a separate shelf where they will be displayed for sale at discounted price. If the drugs expired, they will be removed from shelf, placed on a table for auditing, and then stored in a collection bin where it will be consolidated with other expired drugs. Once the collection bin is full, the drugs packages will be opened, break the tablets, pure into water and flush through the sewage system or by open air burning	There are no procedures in place. Once expired drugs is discover on shelf and inventory, they are remove, the supplier sales rep will be informed to arrange collection and exchange for new drugs. In cases where there is no RCA for return, EDD drugs will not be returned to the supplier. When customers return drugs that was expired drugs or defective at the point of sales, CRK2 will approve the return, customer will be asked to return the drug or the company will send a representative to collect the drug for exchange.	There are procedures in place. On a daily basis, CRL's store staff performs stock check and removes any SEDD drugs from the shelf. Drugs that are less than one month or days to expiration will also be removed immediately and reported to the store pharmacist. The store staff will place the drugs on the table for the store pharmacist to audit. After audit, the store pharmacist instruct the store staff to remove each drugs (tablets) from the cartons and packages, the tablets will be crushed and flushed down the drain or sewers (toilet) with a lot of water. The packaging will be crushed into pieces and disposed in waste bin.	There are there procedures in place. Customer returns are handled immediately by the company's staff. Investigation on the possible cause of customer return is done immediately so that the drug can be isolated, dispose or returned to the supplier, for refund or exchanged. On a monthly basis, CRM performs monthly inventory check for SEDD drugs to be separated from drugs with longer shelf-life and place on a different shelf that is eye-catching to facilitate sale and also for dispensing at every possible opportunity. For all other drugs without RCA, WDA comes on a monthly basis for collection and disposal	There are no procedures in place. On a monthly basis, CRN conduct shelf and inventory checks for SEDD drugs. These drugs will be removed from the shelf or inventory immediately and dumped in to the collection or disposal bin after which destruction arrangement will be made. On a monthly basis, the expired drugs will be taken to a dump site and destroyed by open air burning. The RA is not usually notified about this operation. EDD drugs under SOR collected and exchanged by suppliers at no extra cost.
The Who Perspective of PRL	Customers are end-consumers and suppliers are manufacturers, Importers and wholesalers. The stakeholders responsible for the PRL activities are in-house staffs. The PRL actors within the company are are the store staffs and the pharmacist.	Customers are patients, doctors with hospitals, Nursing homes and government hospitals. The companies suppliers are manufacturers (local and international), and importers. The stakeholder responsible for the PRL operations are patients, hospitals, suppliers, and WDA. The PRL actors within the company are the store pharmacist, and Staffs.	Customers are primarily end-consumers and the suppliers are mainly wholesalers. The stakeholder responsible for the PRL activities the company itself and customers. The stakeholder(s) that influences the PRL operations are the management team, suppliers and customers. The actors are the store keepers, store pharmacists.	Customers are end-consumers. The suppliers are manufacturers, wholesalers, and registered importers. The stakeholder responsible for the PRL activities are the drug collection unit, the retail pharmacy, customers, suppliers, and the RA. The stakeholders that influence the PRL operations are internal stakeholders (management), customers. The actors responsible for the day-to-day PRL operations are the store pharmacist, pharmacist technician, apprentice, and the procurement team.	Customers are end-consumers. Suppliers are manufacturers and wholesalers. The stakeholder responsible for PRL operations are the company staffs. The stakeholders that influences the PRL activities are the company management and the end-consumers.
The Where Perspective of PRL	The stakeholders involved in the PRL operation of CRK are located within the same state but far from the company.	The stakeholders involved in PRL operations are located in the same state	The stakeholders involved in PRL operations are located in the same state	Stakeholders involved in the PRL operations of CRM are located in strategic locations in Lagos	The stakeholders involved in the PRL operation are located within the company
The When Perspective of PRL	Customer return occurs within 24 hours of purchase. CRK have no specific time frame for storing expired drugs before processing. CRK performs a monthly manual check or 2 weeks check to retrieve expiring (2, 3 months to expiry) and expired drugs from shelf.	Once drug expire, CRK2 normally call the supplier's sales rep. The duration of time expired drugs remain at the company depends on the time the sales rep of the supplier respond to come to call.	CRL process the EDD drug immediately once discovered on inventory to prevent the sales of expired drugs to customers.	Customer returns are handled immediately. Investigation on the possible cause of customer return is done immediately for resolution, refun, exchanged, dispose or returned to the supplier. The RA comes every month or two to collect expired products.	No Data

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Improvement of PRL Practices	Using an appropriate means of disposing or destroying expired drugs will be a way to improving its PRL practices. The use of ERP system and software to monitor and control inventory is also a viable way of improving drug return process and management	By improving drug auditing processes to ensure that all product dispense by company are of high quality standard. Improvement of the procurement process. Implementing a system of obtaining customers feedback on product quality and drug information. Collection of customers' details at the point of sales so that they can be reminded about the expiry date of their drugs. This will enable companies to explore other sales channel for the drugs before they completely expired. Effective use of technology and communications systems to improve collaboration among channel partners	Invest in the use of ERP systems to manage inventory and order managment.	It will be beneficial both for the industry and the public health that all pharmaceutical companies follow the same PRL managment standard. The RA should take a leading role in implementing and enforcing this measure. Ensuring that all staffs are meticulous as much possible in their professional duty. Companies should employee professionals capable of anchoring the mission statement of the organisation	If all relevant stakeholders including the regulatory authorities perform their role efficiently e.g. conducting regular checks for compromised drugs, free of charge collection of expired drugs from pharmacies and destruction, PRL practices will be optimised. Continious public and customer enlightenment campaigns of how customers should handle EDD drugs

6.6 Case-Category Five – Hospital-Based Pharmacies

6.6.1 Case-Category Five Setting

Table 6.9 is developed in this section to highlight the settings of each case research company categorised as Hospital-Based Pharmacy; Case-Category Five (CC5). The table depicts the year of establishment of the pharmacies, organisational type, supply-chain stakeholder type, product type, product source, and customer type. These elements were specifically highlighted as they influence the PRL operations of each case company.

Table 6.9: Case-Category Five Setting

Case-Category Five (CC5)	Differentiating Features					
Case Companies	Established	Organisational Type	Stakeholder Type	Product Type	Product Source	Customer Type
CRO	1980	Indigenous	Hospital Pharmacy	Prescription medicines	Manufacturers and Oshodi Medical Store (OMS).	End-consumers
CRP	1985	Indigenous	Hospital Pharmacy	Prescription medicines	Manufacturers, and wholesalers	Retailers, Hospitals and Clinics
CRQ	1985	Indigenous	Hospital Pharmacy	Prescription medicines	Manufacturers, Wholesalers, Registered Importers	End-consumers

Table 6.9 shows that CRO, CRP, and CRQ are fully indigenous hospital-based pharmacies specialised in delivering pharmaceutical services as well as the management of all aspects of drug use in the hospital. According to the respondents, the primary purpose of these pharmacies is to provide the highest quality and most effective pharmaceutical care. Drugs dispensed to patients from these pharmacies are based on prescriptions issued by the hospital's physicians. Hence, no OTC drugs are dispensed.

As depicted in Table 6.9, the main customers are end-consumers (in-patients and out-patients). According to the respondents, as different end-customers have different reasons for returning drugs, the return process and related PRL activities also differ.

6.6.2 Importance of PRL

PRL practices are very important to the three hospital pharmacies investigated. The practice helps CRP to save and prevent loss of revenue. According to the respondent, if there is no medium to recall drugs or return drugs via the RL process, CRP will loss and will not have the chance to be refunded for the unsaleable drugs. Hence, PRL practices help CRP to improve the sustainability of the company's revenue generation process. PRL activities also enable CRQ to mitigate the risk of revenue loss, eradicate expired or defective drugs from the inventory, reduce wastage, and maintain the company's corporate integrity. According to the respondent, patients will be happier and more secure knowing that they are not going to be using expired, damaged, or counterfeit drugs. The PRL also enables CRQ to maintain good relationships and trust with patients and with its suppliers.

6.6.3 Knowledge of RG

The respondent from CRO was not aware of the laws or guidelines governing the handling of returned, damaged, and expired drugs. According to the respondent from CRP, there are guidelines governing the handling of returned, damaged, and expired drugs. There is a policy from the Ministry of Health aimed at preventing expired drug inventory. Pharmacists are prohibited from procuring drugs that have less than 80% shelf-life. The respondent from CRQ was not aware of any law or guideline governing the handling of returned, damaged, and expired drugs. Nevertheless, the respondent acknowledged full knowledge and understanding of what is required to handle short-dated or expired drugs based on academic and professional training.

6.6.4 Factors Hindering Compliance

According to the respondent from CRP, factors hindering compliance could be ignorance and negligence towards the RGs. Furthermore, sales representatives, through illegal practices sometimes have ways of bribing the pharmacies to receive short-dated drugs in their inventory so as to push their sales record.

6.6.5 PRL Facilitator

The suppliers accept the drugs back because there is a memorandum of understanding and agreement between CRP, and suppliers prior to the state of purchase; recall process is one of the terms. Suppliers accept drugs returned by CRQ due to the RCA.

6.6.6 PRL Impact on Business Operations

The cost of implementing the PRL system negatively affects sales revenue and profit of CRO. Despite this, PRL facilitates the management of usable, saleable and unusable drugs inventory. PRL operations impact stock balances, calculated moneys or projected sales of CRP. PRL impact business operations as it also help reduce wastage, loss of revenue and maintain integrity. PRL also helps to maintain good relationships and trust with patients and suppliers.

During the periodical stock check, CRQ encounters challenges such as inadequate employee to perform stock checks and related PRL activities. The respondent from CRQ considered PRL to be a cumbersome process as dispensing of the drugs to patients must not be disrupted while during the stock check operations. The high work-load involved in the process of conducting PRL gives room for error as the processes is a manual operation. Despite these shortcomings, PRL helps CRQ to prevent loss of revenue and to eliminate expired or defective drugs from inventory. It also helps to avoid waste and unnecessary waste. Another challenge encountered by CRQ is the reluctance of suppliers to accept expired drugs back.

6.6.7 The "What Perspective" of PRL

CRO allows drugs to be returned by customers and the kind of drugs returned are defective, expired or damaged drugs. CRO also return drugs to its suppliers, the majority of these being drugs returned by patients and those close to expiration while in stock. CRP allows drugs to be returned by customers provided there is proof of purchase from the company as well as a genuine reason for the return. The drugs will be accepted back for exchange for an alternative drug or refund. The type of drugs returned are drugs patients already have and are no longer needed, expired, or short-dated (customers might not have confidence in short-dated drugs). The drugs normally received back from customers are short-dated, or expired, and drugs in good state. The company purchases drugs from suppliers and also return drugs to its suppliers. Drugs returned to suppliers are expired, short-dated, and damaged drugs.

CRQ allows drugs to be returned by patients. Patients that are on the ward (in-patients), are allowed to return left over drugs to the pharmacy through the nurses in charge of that ward. Out-patients do not normally return drugs but should in case they do for any good reason, the pharmacy is in a position to accept the drugs to mitigate the risk of the drug being reused by the patient, and being given to friends or relatives. The state of drugs returned by patients are normally reusable and short-dated drugs or expired drugs. CRQ purchases drugs from suppliers and also returns drugs to its suppliers based on RCA. CRQ's contract letter states that drugs with a less than 2-year shelf-life should not be accepted from suppliers. Hence, only short-dated, damaged, defective, or expired drugs are returned to the suppliers.

5.6.8 The "Why Perspective" of PRL (Receiver)

CRO accepts drugs from customers so as to give a good customer service experience and also to ensure that the right drug is given to the right patients or used by the right patient. Suppliers accept drugs returned by CRO so as to foster good business relationships with the company. CRP allows drugs to be returned by customers provided the customer presents proof of

purchase from the company and has a genuine reason for the return. The drugs will be accepted back for exchange for an alternative drug or refund to keep the customer happy. Drugs are also accepted back so as to protect and prevent the customer consuming expired drugs. The suppliers accept the drugs back from CRO because there is a memorandum of understanding and agreement between the company and suppliers; recall process is one of the terms. CRQ accept drugs back from patients to prevent drug abuse or usage of expired drugs and to prevent the patient from giving the drugs to someone else. Suppliers accept drugs returned by the CRQ due to the RCA.

6.6.8.1 The "Why Not Perspective" of PRL (Receiver)

CRO, CRP, and CRQ always accept drugs back from patients when required.

6.6.9 The "Why Perspective" of PRL (Sender)

CRO return drugs to its suppliers due to product quality issues, expiration and damage. Customers return drugs to CRP when the drug is no longer needed, or some patient might already have the drugs at home. Drugs are also returned to CRP due to expiry being, being short-dated, or patient's lack of confidence in the short-dated drug. CRP also return drugs to its suppliers due to expiry, short-dated, and damage. Drugs are also returned to suppliers so as to prevent loss of revenue, for exchange so as to drive sales and to keep the inventory free of expired or damaged drugs.

CRQ dispenses prescription-based drugs to patients and the company allows drugs to be returned by patients if the need arises. If the drugs are no longer needed by the patient, patients that are on the ward (in-patients), are allowed to return left over drugs to the pharmacy through the nurses. Out-patients do not normally return drugs but should if they do for any good reason, the pharmacy will accept the drugs to mitigate the risk of the drugs

being reused by the patient, or given to friends or relatives. The respondent, however, mentioned that out patients rarely return drugs.

CRQ purchases, drugs from suppliers and also return drugs to its suppliers based on the RCA. The company contract letter states that drugs that have less than a 2-year shelf-life should not be accepted from suppliers. Hence, only short-dated, damaged, defective, or expired drugs are returned to the suppliers by CRQ. CRQ returns expired drugs to its suppliers due to the RCA with the suppliers, to eliminate compromised or expired drugs from the inventory and to prevent loss of revenue.

6.6.9.1 The "Why Not Perspective" of PRL (Sender)

According to the respondents, if customers do not return drugs, that implies that the drug is perfectly suitable for the customer.

6.6.10 The "How Perspective" of PRL

There are no procedures in place at CRO for the collection, sorting, storing and processing of returned drugs. According to the respondent, the management do not see any reason for such a procedure, since the drugs are expired and unusable. CRO processes returned drug immediately and the drugs are collected on a weekly basis. CRO processes expired/damaged drugs by removing them from the shelf, documenting the drugs and preparing the drugs for return to the supplier. The company follows this process because suppliers collect EDD drugs on a weekly basis. CRO returns drugs to suppliers or forwards drugs to service providers on a weekly basis as the manufacturers' sales representatives arranges the collection.

There are no written procedures in place at CRP for the collection, sorting, storing and processing of returned drugs or drugs to be returned by the company because it is a simple process that requires minimal operation and return is not a regular activity. There is a transaction already in place between the company and the suppliers via the suppliers' sales

representatives. It is therefore very easy for CRP to return drugs to the suppliers when required for any reason. The pharmaceutical representative will be contacted (providing details of the drugs and quantity) who will then arrange collection and exchange the drugs.

On a daily basis, once an expired drug is discovered or once a drug is deemed for return, the drugs will be separated from other saleable drugs, quantified, and documented. The supplier will then be contacted (within an hour or a day at most) and will arrange the collection and exchange of the drugs The appropriate documentation is done in a ledger, indicating the expired or about to expire quantity, as well as quantity received from the supplier in exchange for the expired quantity. The ledger will be filled to document the drug's name and quantity that has been recalled and the quantity exchanged/replenished.

In situations where an EDD drug has no return agreement, the inventory count of the expired drug will be taken, the inventory valued and harmonised and the RA notified in writing for destruction. The RA will provide the procedure to carry out the destruction including the location where the destruction operation should be conducted. The Open air burning is performed in the presence of the RA's official. This is done in order to comply with RG.

There are procedures in place at CRQ for the collection, sorting, storing and processing of returned drugs. The satellite pharmacies make requisition for drug from the pharmacy main store. On a quarterly basis, every unit is mandated to conduct stock-check for expired and short-dated stock. This is done in the presence of and with the supervision of external auditors. The satellite units generate a list of drugs that have expired and submits it's to the pharmacy main store, providing full details of the drugs: name, strength, quantity, value, manufacture date, expiring date, batch number etc. The main store collates all the returned drugs centrally. The satellite pharmacies also generate a list of stocks that are likely to expire within the next quarter (short-dated drugs).

This operation enables the employees in charge of the main store to redirect the short-dated drugs to satellite pharmacies that will consume the drug before expiration. This method is used to maximise usage and prevent the drugs from expiring before use. For drugs that have

RCA of return, the main store will contact the suppliers to arrange collection and exchange of the drugs, providing the suppliers with all the required details. Drugs that expired while in stock are collected, separated and stored somewhere separate, and in theory destroyed by incineration every two years in the presence of the RA's official. According to the respondent, in practice destruction activities have not taken place every two years due to various changes of management, managerial commitment and priorities.

There is no structured time to determine how long CRQ keep the returned drugs before processing. It depends on the RCA and time-frame agreed with individual suppliers. Some suppliers advise usage of their drugs until expiration. Some advice usage until one or three months to expiration, and some will give a specific time frame. This depends on the nature of the drugs and the business strategy.

6.6.11 The "Who Perspective" of PRL

CRO's customers are patients and the suppliers are manufacturers and OMS. The supply chain stakeholders that return drugs to CRO are patients. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the manufacturers, and the OMS. The stakeholder(s) that influence the way drug returns are managed are CRO's management, OMS, and manufacturers. The actors/employees within CRO responsible for the day-to-day administration, collection, sorting, storage, re-sale, reporting and disposal of the returned drugs are the store officers and pharmacists.

CRP's customers are patients and suppliers are manufacturers, and wholesalers. The supply chain stakeholders that return drugs to CRP are patients. The stakeholders/companies responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the pharmacy, suppliers, and the RA. The stakeholder(s) that influence the way drug return is managed are the patients, management, RA, and suppliers. The actors/employees within the company responsible for the day-to-day administration, collection, sorting, storage, re-sale,

reporting and disposal of the returned drugs are the store keeper, store pharmacy, logistics team and RA's official.

CRQ's customers are end-consumers while the company's suppliers are manufacturers, wholesalers and importers. The supply chain stakeholders that returns drugs to CRQ are patients. The stakeholder responsible for collecting, sorting, storing, reporting and disposing of the returned drugs are the pharmacy main store, satellite pharmacies, the suppliers and the RA. The stakeholders that influence the way CRQ manages returned drugs are the patients because they do not like to see that their drugs are about to expire.

Internal management policy also influences the return handling strategy because management like to see as few expired drugs as possible. The suppliers have influence on the PRL operation via the RCA to return drugs that meet certain criteria. The regulatory body also has influence but their level of regulatory/legislative influence is low due to the low level of enforcement. The actors/employees within the company responsible for the day-to-day administration, collection, sorting, storage, re-sale, reporting and disposal of returned, short-dated and expired drugs are the pharmacists, the pharmacy staff, procurement team, store and inventory manager, logistics manager etc.

6.6.12 The "Where Perspective" of PRL

The stakeholders involved in the PRL operation of CRO are located in-house, at the manufacturers and the OMS. All stakeholders are located within Lagos State, making logistical operation easier. Hence, location has no influence/impact on the collection, storage, and processing strategy employed by the company. The manufacturer's representative comes to CRO to collect expired and damaged drugs while CRO is responsible for sending rejected drugs to the OMS.

The stakeholders involved in the PRL operation of CRP are located in-house and within Lagos state. This makes RL and disposition activities convenient. The stakeholders involved in the

PRL operation of CRQ are located in the same state and vicinity. Location of stakeholders has no impact on the collection, storage, and processing strategy of returned drugs as the suppliers arrange collection of the expired or damaged drugs from CRQ. The RL activities and disposal operation are done in-house.

6.6.13 The "When Perspective" of PRL

CRO processes customer returns immediately and the drugs are collected by the suppliers on a weekly basis. CRO processes expired/damage drugs in inventory by removing them from shelf and stock, documents the drugs and prepares the drugs for collection. The drugs are collected by the suppliers or forwarded to service providers on a weekly basis.

On a daily basis at CRP, once expired drug is discovered or once a drug is deemed returnable, the drugs will be separated from other saleable drugs, quantified, and documented. The supplier will then be contacted (within an hour or a day at most) and will then arrange the collection and exchange for the drugs.

There is no structured time to determine how long CRQ keeps drugs expired drugs or damaged drugs returned by customers. It depends on the RCA and time-frame agreed with suppliers. Some suppliers advise usage of their drugs until expiration. Some advice usage until one or three months to expiration, and some will give a specific time frame, depending on the nature of the drugs and the business strategy.

6.6.14 Improvement of PRL Practices

In order to improve PRL practices, CRO and CRQ respondents suggested the implementation of ERP systems to facilitate dispensing operations, stock management, and stock usage maximisation. CRO also suggested the SOPs to facilitate PRL activities.

According to the respondent from CRP, the company can improve its PRL practices by discontinuing the purchase of short-dated drugs with less than 6-months shelf-life. Also slow-

moving drugs should not be purchased at less than 12-month shelf-life. The impact of PRL activities on stock balances can be minimised by improving the forecasting and quantification processes. The respondent also suggested encouraging pharmacies to use electronically process.

Table 6.10 is a summary of the CC5 (HBP) within case-category analysis presented above, highlighting the similarities and difference among the HBP investigated. The next section presents the within case-category analysis of the RA investigated.

Table 6.10: Case-Category Five Summary

Case-Categories/ Themes	CRO	CRP	CRQ
Organisational Type	Indigenous	Indigenous	Indigenous
Stakeholder Type	Hospital Pharmacy	Hospital Pharmacy	Hospital Pharmacy
Export Return	None	None	None
Importance of PRL Practices	PRL practices is very important	PRL practices is very important. It helps saves or prevent loss of revenue and sustain revenue generation process.	PRL practices is very important. Helps to prevent loss of revenue and to clean inventory from EDD drugs. It also helps to avoid waste and unnecessary waste. It helps reduce wastage, and maintain integrity. It help to maintain good relationship and trust with patients and suppliers.
Knowledge of RG	Respondent not aware of the RG governing the handling of EDD drugs.	Acknowledge the presence of RG for handling of EDD drugs. Based on guideline, pharmacists are not allowed to purchase drugs that is less than 80% of the shelf-life.	Respondent not aware of RG governing the handling of EDD drugs. However, acknowledged full knowledge of what is required to handle SEDD drugs based on academic and professional training.
Factors Hindering Compliancy	No Data	Ignorance and negligence to the lay down rule. The sales rep through illegal practices might have a way of bribing the pharmacies to receive short-dated drugs so as to push their sales record.	No Data
PRL Facilitator	No Data	Memorandum of understanding and agreement between the company and suppliers prior to the state of purchase	RCA
PRL Impact on Business Operation	Loss of revenue, additional cost and reduction in profit. Facilitate the process of managing usable drugs inventory, saleable and unusable drugs, as well as forecasting customer demand. Improves suppliers performance level	Stock balances, calculated moneys or projected sales.	Helps reduce wastage, loss of revenue and maintain integrity. Improve customer satisfaction, trust, good relationship with patients and with the suppliers. manual and high work-load performing stock checks and related RL activities. RL is a cumbersome process as dispensing of the drugs to patients needs to continue undisrupted while the RL activities is on-going. The high work-load give a large room for error as it is entirely a manual operation.
The What Perspective of PRL	Defective drugs, expired drugs, and damaged drug	Short-dated, expired, and usable untampered drugs	Left over drugs (Tampaered and untampered), reusable drugs, short-dated, expired, damaged, defective drugs

Table continuation in the next page

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The Why Perspective of PRL (Receiver)	To enhance customer service experience and also to ensure that the right drug is given to the right patients or used by the right patient. Suppliers accept drugs returned so as to foster good business relationship	For exchange for alternative or better drug, for refund so as to enhance customer satisfaction, to protect and prevent the customer consuming expired drugs. Accepted due to RCA	To prevent drug abuse, usage of expired drug and to prevent the patient from giving the drugs to someone else. Suppliers accept drugs back due to RCA.
The Why Not Perspective of PRL (Receiver)	Always accept drugs back from patients when required.	Always accept drugs back from patients when required.	Always accept drugs back from patients when required.
The Why Perspective of PRL (Sender)	CRO return drugs back to its suppliers due to product quality issues, expiration and damage.	Drug no longer needed, patients already have the drugs at home, drug expired, short-dated, or lack of confidence in the short-dated drug. CRP also return drugs back to its suppliers due to expiry, short-dated, and damaged, to prevent loss of revenue, for exchange so as to drive sales and to keep the inventory free of EDD drugs.	To eliminate EDD drugs from the inventory and to prevent loss of revenue.
The Why Not Perspective of PRL (Sender)	Drug is perfectly suitable for the customer	No Data	No Data
The How Perspective of PRL	There are no procedures in place for the collection, sorting, storing and processing of returned drugs. CRO process returned drug immediately and the drugs are collected on a weekly basis. The company process EDD drug by removing it from shelf, document the drugs and prepare the drugs for return to the supplier. Suppliers conduct on a weekly basis	There are no written procedures in place for the collection, sorting, storing and processing of returned drugs or drugs. Based on the transaction already in place between the company and suppliers, sales rep will be contacted who will then arrange collection and exchange the drugs. On a daily basis, once EDD drug is discovered or once a drug is deemed for return, the drugs will be separated from other saleable drugs, quantified, and documented. The supplier will then be contacted who arrange the collection and exchange for the drugs. EDD drugs with no RCA are quantified, valued, and notify the RA in writing for destruction. The RA will provide the procedure to carry out the destruction. The open air burning will be in the presence of the RA's official.	There procedures in place for the collection, sorting, storing and processing of returned drugs by the company. The satellite pharmacies makes requisition for drug from the pharmacy main store. On quarterly basis, every units conducts stock-check for SEDD stock. The satellite units generate a list of drugs that have expired and submit them to the pharmacy main store providing all details of the drugs. The main store collate all the returned drugs centrally. The satellite pharmacies also generate a list of stock that are likely to expire within the next quarter. Drugs that have RCA are returned the suppliers who arrange collection and exchange of the drugs. Drugs that expired on stock are separated and stored somewhere separate, and destroyed by incineration every two years in the presence of the RA.
The Who Perspective of PRL	Customers are patients. The suppliers are manufacturers and Oshodi Medical Store (OMS). Stakeholders responsible for PRL operations are the manufacturers, and the OMS. The stakeholder(s) that influence PRL operations are the management, OMS, and manufacturers. The actors within the company responsible for the day-to-day PRL operations are the store officer and pharmacist.	Customers are end-consumers and suppliers are manufacturers, and wholesalers. The stakeholders responsible for the PRL operations are the pharmacy, suppliers, and the RA. The stakeholder(s) that influences the PRL operations are the end-consumers, suppliers, and the RA. The actors within CRP responsible for the day-to-day PRL opeerations are the store keeper, store pharmacy, logistics team, RA's official.	Customers are patients (end-consumers) while the company's suppliers are manufacturers, wholesalers, importers. The stakeholder responsible for the PRL operations are the pharmacy main store, satellite pharmacies, the suppliers and the RA. PRL influencers are the customers, internal management, suppliers, the RA. The actors within CRQ responsible for the day-to-day PRL operations are the pharmacists, the pharmacy staffs, procurement team, store and inventory manager, logistics manager etc.

The Where Perspective of PRL	Stakeholders involved in the PRL operation of the company are located in-house, the manufacturers and the OMS. All stakeholders are located within Lagos State.	The stakeholders involved in the PRL operation of CRP are located in-house and within the same state.	The stakeholders involved in the PRL operation are located in the same state and vicinity. The PRL activities and disposal operation are done in-house.
The When Perspective of PRL	Currently do not have any time frame for keeping returned or expired drugs before processing. Performs a monthly manual check or 2 weeks check to retrieve expiring (2, 3 months to expiry) and expired drugs from shelf.	On a daily basis, EDD are separated from other saleable drugs. The supplier will then be contacted (within an hour or a day max) who arrange the collection and exchange for the drugs.	There is no structured time to determine how long the company keep the returned drugs before processing. It depends on the RCA and time-frame agreed with individual suppliers.
Improvement of PRL Practices	Educate practitioners on the RG for handling EDD drugs. Explore possibilities of implementing ERP systems to facilitate its dispensing operations.	Discontinuing the purchase of short-dated drug. Fast-moving drug must not be purchase at less than 6 month from their date of expiration while slow moving drugs should not be less than 12 month before expiration. Stock balancing issues can be minimised if a good forecasting and quantification process is in place.	Investing in the implementation of ERP system to facilitate the stock management process, maximising stock usage capability.

6.7 Case-Category Six – Regulatory Authority

6.7.1 Case-Category Six Settings

Table 6.11Table 6.11 is developed in this section to highlight the setting of the case research organisation categorised as the RA; Case-Category six (CC6). The table depicts the year of establishment of the RA, organisational type, supply-chain stakeholder type, product type, product source, and customer type. These elements were specifically highlighted as they influence the PRL operations of the agency.

Table 6.11: Case-Category Six Settings

Case-Category Six (CC6)	Differentiating Features					
Case Companies	Established	Organisational Type	Stakeholder Type	Product Type	Product Source	Customer Type
CRR	1994	Indigenous	Regulatory Authority	All drug products, substances, chemicals, bottled water and packaged food	All companies, and individual involve in the business of regulated products in Nigeria	All companies and individual involve in the business of regulated products e.g Manufacturers, Importers, Wholesalers (Distributors), Retailers etc

The table shows that CRR is a regulatory parastatal, overseen by the FMoH. CRR is responsible for regulating all drug products and substances, chemicals, bottled water and packaged food in Nigeria. The agency inspects the manufacturing premises to ensure that the facilities are satisfactory for production of the specific products. The agency is also responsible together with the PCN for the harmonization of Good Manufacturing Practice (GMP) inspections of manufacturing facilities as well as of human resource development planning. CRR ensures the early destruction and disposal of seized, confiscated and or substandard drugs.

The table also shows that CRR was established in 1994. According to the 2011 UNIDO report on the Nigerian pharmaceutical sector, the late establishment of CRR implies that between 1974, when the first food and drug decree was enacted, and 1994, when the RA was established, no fake drug manufacturer or importer was ever prosecuted for endangering the lives of people. This also indicates the absence of PRL practices as well as proper a pharmaceutical waste disposal system in place during the aforementioned era.

6.7.2 Importance of PRL

According to the respondent from CRR, PRL is a very important practice as it facilitates the disposal and destruction process. The management of these processes depends heavily on the effectiveness and the implementation of PRL practices by all supply chain stakeholders.

6.7.3 Knowledge of RG

All stakeholders involved in the business of regulated products are mandated to remove expired drugs from their saleable inventory and shelves and store them at a safe designated area in their facility. The RA has procedures in place for the collection, sorting, storing and processing of the submitted drugs. For every process carried out, there are different SOPs implemented. Every manufacturer is required to have an SOP for expired/damaged drug destruction. The RA normally stipulates the procedure wholesalers, retailers, importers, hospital, NGOs need to follow for drug submission.

According to the respondent from CRR, the pharmacy profession and its practice in Nigeria, is guided by a National Drug Policy (NDP). The NDP is a policy manual that is subject to review every 3 years. The main goal of the policy is to make available at all times to the Nigerian public adequate supplies of drugs that are effective, affordable, safe and of good quality, for rational use of these drugs and also to increase and or stimulate production of essential medicines.

One of CRR's objectives is to strengthen the administrative, legislative and regulatory control and storage of these drugs. A target of the NDP, is to furthermore ensure proper disposal of expired, deteriorated and substandard drugs in both public and private sectors by the year 2008, by 60%. According to the NDP storage implementation guidelines, the central medical stores or stores in public/private sectors health facilities drugs should be properly managed to ensure they do not expire or deteriorate on the shelf. However, if they do expire and or deteriorate, they should be officially destroyed within six months.

6.7.4 Factors Hindering Compliance

According to the respondent from CRR, logistics issues on the part of the clients is a major factor hindering companies from submitting expired and damaged drugs to the organisation. Many pharmacists are not aware of the RG on how to handle expired and damaged drugs. Inefficient enforcement of the guideline on the part of CRR is another factor hindering clients from implementing PRL or submitting expired drugs or proper disposition. CRR also encounters challenges in conducting the destruction exercise.

Some client especially small-scale businesses complained about the unaffordability of fee charge for destruction. CRR does not consider the destruction fee as expensive, and sees clients that blame the fee for their non-compliance as those that have not genuinely inquired about the official guidelines for handling expired products.

PRL Facilitator

No Data

6.7.5 PRL Impact on Business Operations

The impact of PRL practices is the enforcement and implementation of the RG designed to guide pharmaceutical companies (public and private) in the removal of expired, deteriorated and substandard drugs from circulation, and ensure proper disposal within six months. The key challenge faced by the organisation is the destruction of the product itself.

6.7.6 The "What Perspective" of PRL

CRR does not manufacture or supply drugs to any company. Hence, companies do not return product to the organisation because the drugs were not purchased from it. CRR is a regulatory authority; hence, drugs submitted by clients for several purposes e.g. laboratory analysis,

confiscation, destruction, registration. Drugs submitted for destruction and confiscation are mostly expired and substandard products.

6.7.7 The "Why Perspective" of PRL (Receiver)

Clients submit drugs to CRR for regulatory reasons such as laboratory analysis, registration purposes, confiscation of expired and defective products, and product recall purposes. The drugs are received for the same reason as for submission; for regulatory purposes, laboratory analysis, registration purposes, confiscation, recall, expired product, or defective products.

6.7.7.1 The "Why Not Perspective" of PRL (Receiver)

None

6.7.8 The "Why Perspective" of PRL (Sender)

Clients submit drugs to CRR for laboratory analysis, registration purposes, confiscation purposes, and recall purposes.

6.7.8.1 The "Why Not Perspective" of PRL (Sender)

Some clients especially small-scale businesses, complained about the unaffordability of fee charge for destruction service. This is a factor considered by some pharmaceutical companies as a reason for not submitting their expired drugs to the regulatory body. CRR does not consider the destruction fee expensive, and sees clients that cite the fee as the reason for their non-compliance as those that have not genuinely inquired about the official guidelines for handling expired products.

6.7.9 The "How Perspective" of PRL

All stakeholders involved in the business of regulated products are mandated to remove expired drugs from their saleable inventory, and store them at a safe designated area in their facility. CRR have procedures in place for the collection, sorting, storing and processing of the submitted drugs. All processes carried out have their individual SOPs implemented. All PMs are also required to have an SOP for handling expired and damaged drugs.

CRR normally stipulate the procedure wholesalers, retailers, importers, hospital, NGOs need to follow for drug submission. When companies are ready to submit expired product for destruction, they will first notify the organisation expressing their interest by submitting an official letter of application, addressed to the Director General. CRR will remit the application letter to the relevant office, which will then implement the appropriate procedure for receiving the drug. The application letter must meet some other criteria such as name of product, quantity, value, expiry date, financial implication, cost as well as all necessary information about the product. This information will be verified to confirm what will be physically delivered to the organisation. The service cost for fewer than 50 cartons is 20K, while for between 50 and 100 cartons, it is 40K.

CRR will confirm the date the expired drug should be forwarded to their facility. Upon delivery at the organisation's facility, the expired drugs will be quarantined into a designated 6-foot container together with expired drugs obtained from other companies. This strategy is implemented in order to consolidate all drugs submitted by different client, to maximise the utilisation of the warehouse for process efficiency, and to allow time to prepare or secure a government approved destruction site. Once the container is full (the presence of full containers of expired drugs at the facility is hazardous), within a year, the drugs will be taken to a government authorised destruction site. The destruction option to be used is determined by the type of product to be destroyed e.g. open air destruction (open air burning), incineration

or burying of the drugs. If open air burning is considered hazardous due to the drug's chemical composition, the incineration or autoclave method will be employed.

In situations where companies have the capacity to perform the destruction and have requested the required permission, the organisation gives companies the option to perform the destruction by themselves provided it is done in accordance with the guideline stipulated by the regulatory body. This often happens when CRR has limited capacity to store the expired drugs. Another reason some manufacturers do not usually send expired drug to the regulatory body is due to the absence of expired drug inventory in their facility. All drugs manufactured are always injected into the distribution channel and owned by other channels such as wholesalers, retailers, clinics, NGO etc. Hence expired and damaged drugs submitted to CRR come from the aforementioned channel partners (supply chain stakeholders).

Expired and damaged drugs are also submitted for destruction via the ACPN. This is when the organisation organises destruction for its members. During the ACPN annual week, the technical team seizes the opportunity to gather expired products from all members and invites the organisation official to witness the destruction. This indirectly reduces the volume of expired and damaged drug submitted directly to CRR by pharmaceutical companies. The ACPN collect expired drugs from all its members and stores them in quarantined containers. Once these are full, the destruction procedure will commence; a specific date will be selected to conduct the destruction activities. This activity is anchored by the ACPN and supervised by CRR. The destruction method is open air burning at a selected site.

6.7.10 The "Who Perspective" of PRL

CRR's clients are all companies such as manufacturers, importers, distributors, retailers and even individuals involved in the business of regulated products. These are the stakeholders or clients that submit drugs to CRR. CRR has the statutory power to destroy products, and does not outsource the activities to any other organisation. Clients also perform some destruction on their own but in the presence of a designated representative from CRR.

The stakeholders that influence the way the CRR manages drug submission and destruction is the internal management and the clients (stakeholders involved in the business of regulated products). The actors/employees within the organisation responsible for the day-to-day administration, collection, sorting, storage, re-sale, reporting and disposal of the submitted drugs are the warehouse staff, logistics staff, pharmacists, quality staff etc.

6.7.11 The "Where Perspective" of PRL

The stakeholders involved in the PRL operation at CRR are located in-house. Hence, the location of stakeholders has no influence/impact on the collection, storage, and processing strategy of the submitted drugs.

6.7.12 The "When Perspective" of PRL

No Data

6.7.13 Improvement of PRL Practices

According to the respondent from CRR, it is better to submit expired drugs to the RA rather than causing environmental havoc. The impact of expired, counterfeit, and damaged drugs getting into wrong hands cannot be quantified. Many pharmacists do not have information about the guidelines on what to do with expired and damaged drugs; many are ignorant of the law. Inefficient enforcement of the law on the part of the organisation is another factor hindering companies from implementing PRL and submitting expired drugs for proper disposal. Table 6.12 is a summary of the CC6 within case-category analysis presented above.

Table 6.12: Case-Category Six Summary

Case-Categories/ Themes	**CRR**
Organisational Type	Indigenous
Stakeholder Type	Regulatory Authority
Export Return	None
Importance of PRL Practices	PRL is a very important practice as it facilitates the disposal and destruction process. The management of these processes depends heavily on the effectiveness and the implementation of PRL practices by all supply chain stakeholders.
Knowledge of RG	Adequate Knowledge. All stakeholders involve in the business of regulated products are all mandated to remove expired drugs from their saleable inventory and shelf and store them at a save designated area in their facility. The RA have procedure in place for the collection, sorting, storing and processing of the submitted drugs.
Factors Hindering Compliancy	Logistics issues on the part of the clients is a major factor hindering companies from submitting EDD drugs to the RA. Many pharmacists are not aware of the RG on how to handle EDD drugs. Inefficient enforcement of the guideline. Some client especially small-scale businesses complained about the unaffordability of fee charged for destruction service.
PRL Facilitator	None
PRL Impact on Business Operation	The impact of PRL practices is the enforcement and implementation of the RG designed to guide pharmaceutical companies (public and private) in the removal of expired, deteriorated and substandard drugs from circulation, and ensure proper disposal within 6 months.
The What Perspective of PRL	Untampered usable drugs, expired, defective drugs, submitted by clients for several purposes e.g. laboratory analysis, confiscation, destruction, registration.
The Why Perspective of PRL (Receiver)	To offer services such as laboratory analysis, registration purposes, confiscation of expired and defected products, and product recall purposes.
The Why Not Perspective of PRL (Receiver)	None
The Why Perspective of PRL (Sender)	For laboratory analysis, registration purposes, confiscation of expired and defected products, and product recall purposes.
The Why Not Perspective of PRL (Sender)	Unaffordability of fee charged for destruction service, Negligence, and lack of commitment
The How Perspective of PRL	RA have procedure in place for the collection, sorting, storing and processing of the submitted drugs. RA normally provide clients the procedure for product submission. Clients will first notify the RA confirming their interest by submitting an official letter of application to the Director General. The RA will then implement appropriate procedure for receiving the drug. The application letter must contain the products details. This information will be verified to confirm the physical delivery at the facility. Upon confirmation of submission date, and delivery, the EDD drugs will be quarantined into a designated 6 foot container together with EDD drugs. Once full, within a year, the drugs will be taken to a government authorised destruction site for destruction by open air burning, incineration and burying of the drugs. In situation where companies have the capacity to perform the destruction and have requested for the required permission, the organisation gives companies the option to perform the destruction by themselves provided it is done in alignment with the guideline stipulated by the RA. EDD drugs are also submitted during the ACPN annual week, the technical team seizes the opportunity to gather expired product from all their members and invite the organisation official to witness the destruction. Once container is full, a specific date will be selected in the year to conduct the destruction activities (open-air burning). This activity is anchored by the ACPN and supervised by the RA
The Who Perspective of PRL	CRR's clients are all companies such as manufacturers, importers, distributors, retailers and even individuals involve in the business of regulated products. The stakeholder that influences PRL operations are the internal management and the clients. The actors within the organisation responsible for the day-to-day PRL operations are the warehouse staffs, logistics staffs, pharmacist, quality staff etc
The Where Perspective of PRL	The stakeholders involved in the PRL operation at CRR are located in-house. Destruction exercises take place within the State
The When Perspective of PRL	No Data
Improvement of PRL Practices	Public eduction and enlightenment on RG for handling EDD drugs, improved regulatory enforcement

6.8 Chapter Conclusion: Emergent Themes

This chapter has presented the six different within case-category analyses conducted in this study. Based on the summary of each case category, case research companies under the same category generally have similar factors influencing their RL practices, although some cases exhibited slight differences as discussed and highlighted in each section's summary. Nevertheless, this does not have significant impact on the overall characterisation of each case category (PSC Stakeholder).

This concluding section presents emergent themes the phase two data analysis. Themes are abstract (and often fuzzy) constructs that link not only expressions found in texts but also expressions found in images, sounds, and objects (Ryan & Bernard, 2003). Themes come both from the data (an inductive approach) and from the investigator's prior theoretical understanding of the phenomenon under study (an a priori approach) (Ryan & Bernard, 2003). The themes and the corresponding sub-themes presented in Table 6.13 emerged from both the six within case-category analyses, and from the researcher's prior theoretical understanding of the RL management. The themes and sub-themes provide a focused and specific expression of PRL operations captured in the constructs described in Chapter Four.

These themes are derived using word repetitions, and indigenous typologies or categories. Repetition is one of the easiest ways to identify themes (Ryan and Bernard, 2003). The researcher thoroughly read through the entire corpus of each within case-category analysis data, and searched for verbatim statements about the phenomenon. It was found that the respondents not only repeatedly referred to some particular key words (themes) but also mad statements, and expressed ideas associated with these key words. Hence, associated key statements, key words, and ideas were coded into different themes.

The within case and within case-category analysis (Phases One and Two data analysis) of this study provided an empirically informed and theoretically grounded insight of NPI. The within case-category analysis expanded substantially with various types of PRL activities, actors and

processes; PRL facilitators, PRL importance and impact, general level of knowledge of RGs, and areas of improvement as reported by the respondents.

Although extant literature revealed general drivers of RL in practice, it did not indicate or address the specific drivers of PRL in the Nigerian pharmaceutical context. Extant literature also did not identify or differentiate the PRL process flow associated with the various PSC stakeholders operating in the NPI. Furthermore, extant literature did not explore the "when perspective" of PRL. These explorations will further feed into the cross case-category analysis in the next chapter.

Table 6.13: Themes and sub-themes

Themes	Sub-Themes	Themes
Untampered drugs		EDD drugs-free Inventory
Short-dated drugs		Ethical and professional Standard
Expired drugs		Contractual and Regulatory Compliancy
Damaged drugs		EDD drug-free Market
Defective drugs		Brand and Corporate Image
Environmental Protection		Wastage Prevention
Enhances customers satisfaction, and trust		Competitive Advantage
No RCA		Product Quality Improvement
Legal Prohibition		Customer Relationship and Trust
Complexity		Loss of Revenue Prevention
Cost of logistics, and disposal service		Complexity of the logistics processes
Opened or partly used		Bureaucratic bottle-neck
Customer Satisfied		Time Constraint and Capacity issue
Forget to return left-over		Cost of proper disposal
Economic	Fulfil contractual obligation, maximise sales and democratise consumption, Protect the brand-image, Maintain good customer relationship and satisfaction, Maintain accountability and control of transactions, Reduce customer returns, Reduce unnecessary wastage, Prevent EDD drugs from circulation	Greediness, Bribery, and Corruption
Legislative	Contractual obligation fulfilment, Compliance to Regulatory Requirement	Ineffective governmental policies and Enforcement
Corporate Citizenship	Drug Abuse Prevention, Proper disposal, Good corporate reputation, Environment protection, Professional Ethics, Prevention of EDD drugs circulation	Difficulty in securing an incinerator, and government approved dump-site
No RCA		Financial Impact
No Proof of Purchase		Insufficient knowledge of RGs
Distribution Returns		Negligence and Management Commitment
Product Recall		Pre-purchase RCA
B2B Commercial Returns	Wrongly delivered drugs, damaged deliveries, drugs with a too short remaining shelf life, expired drugs, slow-moving, defective, over-supply, product quality issues, to prevent loss of revenue, to drive sales, to eliminate SEDD drugs from inventory, and risk of dispensing EDD drugs, to prevent loss of investment, for destruction and proper disposal	SOR agreement
Stock Adjustments Returns	To facilitate sales before expiry, to allocate stock appropriately to meet demand, to ensure invoicing, sales record, and sock reconciliation	Company Product take-back policy
Customer Returns		Disposal Programmes

Table continuation in the next page

B2C commercial return	Exchange or refund due to quality issue encountered (packaging), customer change of mind about the purchase, customer already have the drug at home, Short-dated (RCA), wrongly ordered, over-supply, slow-moving drugs on SOR, manufacturing defect	Memorandum of Understanding
Warranty return	Quality issue, Manufacturing defect, and Adverse effect	Increases the complexity, and labour hours
End-of-use	Patients' left-over drugs for re-use	Increases operational cost
End-of-life	Expired drugs for proper disposal	Reduce revenue, and Profit
Returning		Short-term loss of sales and delayed revenue
Collection		Improves compliancy to RGs
Inspection and Selection		Adherence to professional ethics
Transporting and Transhipment		Improves corporate reputation
Warehousing		Improve accountability, transparency, and control
Sorting		Captures valuable information on product performance
Recovery		Internal Location
Direct Recovery	Re-sale, Re-use, Re-distributed	External Location
Process Recovery	Destruction and Disposal	
PSC Actors	Manufacturers, Distributors, Importers, Wholesalers, Retailers, Hospital Pharmacy, End-consumers	
Third-Party Service Providers	Courier Companies, Transport Service, WDA	
Government Institution	NAFDAC, ACPN	
Internal PSC Stakeholder	Management Team, Supply Chain Team, Logistics Team, Quality Team, Regulatory Team, Store Staff	

CHAPTER SEVEN: PHASE THREE - CROSS CASE-CATEGORY ANALYSIS

7.1 Introduction

The within case-category analysis (Phase Two Data analysis) feeds into this chapter (Phase Three Data analysis) designed to compare similarities and differences among the six PSC stakeholders (Case-categories) as well as identifying patterns in the data. Hence, this chapter is divided into eleven sections based on the identified constructs; analysing the attributes of each case-category and emergent themes, identifying similarities and differences across case-categories.

7.2 Case-Category Settings

Table 7.1 presents an overview of the settings of all categories of PSC stakeholders investigated including the year of establishment of each PCs grouped under each category, organisational type of each category, supply-chain stakeholder type of each category, type of products, and sources. These strategic features are selected as they shape the PRL practices and strategies employed by the PCs. The table shows that PSC operations have been in existence in Nigeria since 1944, indicating a long history of PSC operations in Nigerian and arguably with some level of PRL operations.

Table 7.1: Case-Category Settings

Case-Categories	Established	Organisational Type	Stakeholder Type	Product Type	Product Source	Customer Type
CC1	1944, 1972, 1976, and 1995	Multinational, and Indigenous	Finished Product Manufacturer (Import some)	Nutritional Health Drinks, Oral Healthcare Products, Vaccines, OTC, and Prescription Drugs	In-house, Subsidiaries, and some foreign Suppliers	Distributors, Wholesalers, Hospital Pharmacies, Government Hospitals, Retailers, Clinics, and NGO
CC2	1995, 1999	Indigenous	Importer, and Distributor	Pharmaceutical products, and therapeutics products	Foreign Suppliers (Manufacturers), and Contract Manufacturers	Wholesalers, Retailers, Hospitals, and Clinics
CC3	1993, 1995, 1999, 2002	Indigenous	Wholesaler	OTC (over-the-counter), Prescription Medicines, Healthcare Products such as medicines, nutritional supplements, natural remedies, home medical equipment, mobility aids and pharmacy services	Importers, Indigenous Manufacturers, Wholesalers	End-Consumers, Retailers, Hospitals and Clinics
CC4	2008, 1995	Indigenous	Retailer	OTC (over-the-counter), prescription medicines, nutritional supplements, natural remedies, home medical equipment, mobility aids and pharmacy services	Indigenous Manufacturers, International Manufacturers, Wholesaler, and Registered Importers	End-consumers, Doctors with hospitals, Nursing Homes and Government Hospitals
CC5	1980, 1985	Indigenous	Hospital Pharmacy	Prescription medicines	Manufacturers and Oshodi Medical Store (OMS), wholesalers, Registered Importers	End-consumers, Retailers, Hospitals and Clinics
CC6	1994	Indigenous	Regulatory Authority	All drug products, substances, chemicals, bottled water and packaged food	All companies, and individual involve in the business of regulated products in Nigeria	All companies and individual involve in the business of regulated products e.g Manufacturers, Importers, Wholesalers (Distributors), Retailers etc

The last feature is the types of customers served by each case-category as the research findings indicate that different customers have different reasons for returning drugs, different rates of consumption and customer/supplier RCA. Hence, these features were specifically highlighted as they determine PRL strategies employed at each case company. The subsequent parts of this chapter will demonstrates the similarities and differences of PRL operations between category by theme.

The table shows that most of the case companies are indigenous PCs while the majority of PM are multinational companies. Recent literature and reports, however, show a steady increase of indigenous pharmaceutical manufacturing companies in Nigeria. The table also shows the varieties of products supplied by each category including nutritional supplements, natural remedies, oral healthcare products, vaccines, OTC, prescription drugs and therapeutics products, home medical equipment, mobility aids and pharmacy services. The focus of this study is, however, on the exploration of PRL operations of prescription drugs in the Nigeria pharmaceutical industry private sector. Essentially, this table depicts some of the strategic similarities and differences among the PCs investigated in this study.

7.3 Export Return

CC1 (PM) is a combination of multinational and indigenous PMs. The majority of the finished drugs marketed are produced in-house, some are imported from subsidiaries outside Nigeria, while some are sourced from external suppliers such as contract manufacturers and other manufacturers outside Nigeria. There is no return flow of finished drugs back to subsidiaries or any suppliers outside Nigeria. Although CC1 (PM) imports AI used for drug production, under no circumstances have are raw materials or finished drugs returned to suppliers outside Nigeria.

Similarly, there is no return flow of imported drugs from CC2 (PI) back to suppliers outside Nigeria. Hence, drugs are intensively inspected by CC2 (PI) prior to the importation into Nigeria as ER is legally prohibited. There is also no export flow of drugs from CC3 (PW), CC4 (PR), and CC5 (HBP) as these PCs procure finished drugs mainly from indigenous pharmaceutical suppliers such as indigenous PMs, PIs, and wholesalers. Any drugs that need to be returned are returned to the source locally. CC6 also does not export any kind of drugs, or return drugs to their source, for a different reason. CC6 is a RA responsible for regulation of all drug products and substances, chemicals, bottled water and packaged food in Nigeria. Expired or sub-standard drugs are therefore submitted to the RA for proper disposal.

The non- existence of ER from any of the PCs investigated, as depicted in Table 7.2, is mainly due to legal prohibition of such activity. PCs are prohibited by law from exporting any EDD drugs out of Nigeria. Besides the legal prohibition, the complexity, and the associated logistics cost are other secondary factors that make export of EDD drugs an unattractive option. Hence, CC1 (PM) and CC2 (PI) take full ownership of their imported drugs, as they are responsible for the proper disposal and destruction of any of their EDD drugs locally. To reduce the cost impact of disposing of a high volume of EDD drugs, CC1 (PM), CC2 (PI) and CC3 (PW) sell their short-dated drugs at a discounted price to hospitals, donate them to staff and use them

as samples before the drugs expire. Drugs with damaged packaging are also sold at a discounted price to staff who sometimes also re-sell the drugs to friends and relatives.

Table 7.2: Similarities and Difference of ER emerging from the cross case-category analysis on PRL practices

Theme/Case-Category	CC1	CC2	CC3	CC4	CC5	CC6
Organisational Type	Multinational, and Indigenous	Indigenous	Indigenous	Indigenous	Indigenous	Indigenous
Export Return	No ER flow of EDD drugs back to subsidiaries or any suppliers outside Nigeria	No ER flow of EDD drugs back to any suppliers outside Nigeria	No ER flow of EDD drugs as drugs are sourced mainly from indigenous pharmaceutical suppliers	No ER flow of EDD drugs as drugs are sourced mainly from indigenous pharmaceutical suppliers	No ER flow of EDD drugs as drugs are sourced mainly from indigenous pharmaceutical suppliers	No ER flow of EDD drugs to any source
Reason	ER flow is prohibited by Law	ER flow is prohibited by Law	Drugs are sourced mainly from indigenous pharmaceutical suppliers	Drugs are sourced mainly from indigenous pharmaceutical suppliers	Drugs are sourced mainly from indigenous pharmaceutical suppliers	EDD drugs are submitted by clients for destruction and disposal

7.4 Importance of PRL

Empirical findings from the case-categories revealed that PCs consider PRL a very important practice as they all aim to maintain an EDD drug free inventory. As depicted in Table, the majority of PCs (management) consider it unethical and unprofessional to have EDD drugs on stock. This suggests managerial commitment towards an EDD drug free inventory. According to the CC4 (PR) respondent, PRL practice is important as it helps eliminate expired drugs from stock, and prevents sanctions for non-compliance to regulatory requirements. As a result, procedures are in place for the collection, sorting, storing and processing of returned SEDD drugs.

PRL practices enable CC1 (PM) and CC2 (PI) to prevent the forward flow as well as the circulation of EDD drugs in the market. This thereby helps to protect brand integrity, and corporate reputation. PRL practices also enable CC3 (PW) and CC4 (PR) to effectively manage stock rotation based on the fast-moving and slow-moving stock, as well as to determine an appropriate order quantity. According to the CC3 (PW) respondent, PRL enables the company to free-up shelf space for saleable products. Hence, PRL activities facilitate a pro-active removal of short-dated drugs from inventory via the FEFO inventory-order fulfilment

management method. Essentially, drugs with 6 to 8 months to expiration are removed from inventory.

Findings revealed that PRL enables the identification of sales pattern or turn-over rate between fast-moving, average moving and slow-moving stock by CC1 (PM) and CC3 (PW). Hence, PRL activities help mitigates wastage through a pro-active identification of short-dated drugs, as well as the exploration of various sales option such as the introduction of short-dated drugs into the forward chain, e.g. hospital, clinics etc. where the drugs will be consumed before expiration.

CC3 (PW), and CC4 (PR) benefit from implementing PRL as the system helps improve corporate reputation, competitive advantage, and compliancy to regulatory requirements. Furthermore, the CC1 (PM) and CC3 (PW) respondents confirmed that PRL practices help improve product quality. Information such as the level of acceptability and consumers' perception of drugs is shared by C3 with suppliers. This information-sharing activity provides suppliers with valuable information and opportunity to improve the quality of their product and to meet patients' needs. PRL practices encourage and provides a basis/reason for CC1 (PM) to invest in programmes that facilitate the companies' adherence to their contractual obligations and regulatory requirements.

The majority of CC4 (PR) respondent, except CRK consider PRL practices a very important operation. CRK has an indifferent view of the importance of PRL practices. Hence, the company has no written procedures in place for the collection, sorting, storing and processing of returned drugs. The lack of managerial commitment to PRL is further facilitated by the inadequacy of regulatory enforcement. The rest of CC4 (PR) respondents confirmed the importance of PRL to their business.

As shown in Table 7.3, PRL helps to maintain good customer relationship, customer satisfaction, and trust; maintain good corporate reputation, and prevent loss of capital (refund or exchange from Suppliers). PRL activities enable CC4 (PR) to proactively remove SEDD drugs from stock and shelf which ultimately mitigates the risk of selling or dispensing expired

drugs to customers. According to the CC4 (PR) respondent, the effect of improper disposal of drugs on the environment is not a factors considered when selecting drug disposal strategies.

All respondents confirmed that PRL activities helps customer trust and confidence in their services and products. According to the CC5 (HBP) respondents, patients will be happier and secure knowing that they are not going to be using expired, damaged, or counterfeit drugs.

CC4 (PR) and CC5 (HBP) also confirmed that PRL helps to save and prevent loss of revenue. According to the CC5 (HBP) respondents, if there were no medium to recall drugs or return drugs, CC5 (HBP) would loss out and would not have the chance to be refunded for the unsaleable drugs. Hence, PRL practices help to improve the sustainability of the company's revenue generation process, mitigate the risk of revenue loss, eradicate expired or defective drugs from the inventory, reduce wastage, and maintain the company's corporate integrity.

According to the CC6 (RA) respondent, PRL practices facilitate the disposal and destruction process. The efficiency of destruction and disposal processes depends heavily on the effective implementation of PRL systems by all PSC stakeholders.

Table 7.3: Themes on the importance of PRL

Themes One	**CC1**	**CC2**	**CC3**	**CC4**	**CC5**	**CC6**
EDD drugs-free Inventory	x	x	x	x	x	
Ethical and professional Standard	x	x	x	x	x	x
Contractual Obligation	x					x
Regulatory Compliancy			x	x		x
EDD drug-free Market	x	x	x	x	x	
Brand and Corporate Image	x	x	x	x	x	
Wastage Prevention		x	x	x	x	
Competitive Advantage			x	x		
Product Quality Improvement			x			
Customer Relationship and Trust			x	x	x	
Loss of Revenue Prevention			x	x	x	

7.5 Knowledge of RG

CC1 (PM)'s respondents acknowledged the existence of RG and statutory provisions that guide companies on how to handle EDD drugs. Not all respondents, however, had detailed

knowledge of this RG but acknowledged that the details are known by the Quality department. CC1 (PM) respondents confirmed that PCs are required to notify the RA in writing whenever drugs destruction and disposal is required. The RA will then issue a Pay Advise for the disposal and destruction service. Findings reveal that CC1 (PM) complies with the RG. There are, however, factors that hinders compliance.

CC2 (PI)'s respondents acknowledged the existence of RGs for handling returned and EDD drugs. According to a CC2 (PI) respondent, a company can be fined if expired drugs are found in its product inventory. The RG stated that all EDD drugs must be collected, separated from saleable drugs and saved in a safe environment. The nearest RA must be informed for proper disposal to be conducted.

Some respondents from CC3 (PW) acknowledged the existence of RGs for handling EDD drugs but not all had detailed knowledge the RGs. Employees are, however, aware of the company's policies and guidelines for handling EDD drugs. Damaged drugs must be removed from shelf once discovered; short-dated drugs must be removed from shelf at least one month to expiration. CRI and CRJ's respondents confirmed the existence and their awareness of RG for handling EDD drugs.

All CC4 (PR)'s respondents acknowledged the presence of law prohibiting PCs from selling or dispensing expired drugs but not all had the detailed knowledge of the RG. For example, this is due to the nature of the CRK's business relationship with the suppliers. CRK mainly deals with the supplier's sales representative on issues related to product returns and sales e.g. return of expired, unsaleable, or slow moving drugs (SOR). According to CC4 (PR) respondents, the guideline states that expired drugs should be stored separate from other saleable stock, documented and pass through a proper return channel for proper disposal. This account for the reason NAFDAC in collaboration with PCN encourages PCs to submit EDD drugs for proper disposal.

Not all respondents from CC5 (HBP) were aware of the existence of RGs for handling EDD drugs. Those that acknowledged the presence of RGs confirmed that the guideline is a policy

from the FMoH aimed at preventing the sale of expired drug inventory. Pharmacist are prohibited from procuring drugs that have less than 80% shelf-life. Those that did not acknowledge the existence of RG however confirmed their knowledge and understanding of what is required to handle SEDD drugs, based on academic and professional training.

CC6 (RA) respondent acknowledged full knowledge of RGs governing EDD drugs. According to the respondent, all stakeholders involved in the business of regulated products (PM, PI, PW, PR, HBP, NGO) are mandated to remove expired drugs from their saleable inventory and shelf, and store them at a safe designated area in their facility. CC6 (RA) has procedures in place for the collection, sorting, storing and processing of drugs submitted by clients. Every PM is required to have an SOP for EDD drug disposal and destruction while the RA normally stipulates the procedure wholesalers, retailers, importers, hospital, NGOs need to follow for drug submission.

Based on the empirical findings described above, Table 7.4 highlights the major similarities and differences identified among the six case-categories of PSC stakeholders based on respondents' level of awareness and knowledge of RG governing the handling of SEDD drugs.

Table 7.4: Similarities and Difference of the level of knowledge of RG for handling EDD drugs emerging from the cross case-category analysis on PRL practices

Theme/Case-Category	CC1	CC2	CC3	CC4	CC5	CC6
Knowledge Of RG	Respondents acknowledged the existence RG for handling EDD drugs	Respondents acknowledged the existence and knowledge of RG for handling EDD drugs	Some respondents acknowledged the existence of RGs for handling EDD drugs	All respondents acknowledged the existence of RGs for handling EDD drugs	Not all respondent are aware of the existence of RGs for handling EDD drugs.	Respndent have full knowledge of RGs governing EDD drugs
	Detailed knowledge of the RG is unknown but known by the Quality departments		Not all respondent have detailed knowledge of RGs but are aware of the company's policies and guidelines for handling EDD drugs	Not all have detailed knowledge the RGs	Respondents have knowledge and understanding of guidelines for handling SEDD drugs based on academic and professional trainings.	

7.6 Factors Hindering Compliance

CC1 (PM)'s respondent confirmed that the complexity of the logistics involved, the bureaucratic bottle-neck at the RAs in processing submission application, time limitation and capacity of the RA in conducting proper destruction and disposal of expired drugs are factors hindering compliance to RG. The cost of proper disposal as well as greediness are also other factors that hinder compliance to RGs and the implementation of PRL.

CC2 (PI) considered ineffective governmental policies and enforcement as major factors that hinder companies from adhering to RGs and PRL. The complexity of the PRL processes, difficulty in securing an incinerator, or a government approved dump-site are other factors that hinders compliance and PRL practices. According to a CC2 (PI) respondent, most small to medium size companies do not adhere to the RGs as the RA focuses mainly on large PCs.

A CC3 (PW) respondent considered the loss of capital and lack of adequate knowledge of the RGs as factor responsible for non-compliance. Considering the volume and the value of the drugs requiring disposal, the financial impact discourages CC3 (PW) companies from complying with RGs. The cost of destruction is another factor hindering compliance. These factors adversely affect the effectiveness of PRL practices at CC3 (PW).

The inadequacy of regulatory enforcement, bribery and corruption, as well as the cost of destruction, are factors that contribute to the lack of interest in PRL and compliance. According to a CC4 (PR) respondent, the RA charges 25,000 Naira for the destruction service. As a result, most CC4 (PR) companies conduct the destruction and disposal exercise in-house. Negligence and the lack of adequate awareness of RG for handling SEDD drugs are other factors that hinder compliance to RG and PRL practices. One respondent cited distance of the company from the RA as the reason drug destruction exercises are done in-house.

CC5 (HBP) respondents cited ignorance and negligence as factors hindering compliance to RGs. Respondents also pointed out that suppliers' sales representatives through illegal

practices sometimes have ways of bribing the pharmacies to accept short-dated drugs in their inventory so as to push their sales record. This practice increases the chances of dispensing SEDD drugs.

CC6 (RA)'s respondents considered logistics issues encountered by clients as a major factor hindering the submission of EDD drugs for proper disposal and destruction. Respondents also pointed out that many pharmacists are not aware of the RG on what to do with expired drugs. Ineffective enforcement of the guideline by the RA is another factor hindering compliancy and PRL practices. Some clients especially small-scale businesses complained about the service fee for the disposal service. A CC6 (RA) respondent considered that PCs with such views have not genuinely inquired about the official guidelines for managing expired product.

Following the empirical findings presented above, Table 7.5 summarises the similarities and differences among the six case-categories of PSC stakeholders that emerged from the identified factors hindering compliance and PRL practices. Table 7.6Table 7.6 depicts the factors identified by respondents associated to each PSC stakeholder (case-category).

Table 7.5: Similarities and Difference of factors hindering RG emerging from the cross case-category analysis on PRL practices

Theme/Case-Category	CC_1	CC_2	CC_3	CC_4	CC_5	CC6
Factors Hindering Compliancy	Complexity of the logistical operations, Bureaucratic bottle-neck at the RA in processing submission application, Limited time, and capacity of the RA to conduct proper disposal and destruction, Cost of disposal, Greediness	Ineffective governmental policies, Inadequate regulatory enforcement, Complexity of the PRL activities, Difficulty in securing an incinerator, and also to secure government approved dump-site	The lack of adequate knowledge of the RGs, Financial impact of PRL discourages compliancy, The cost of destruction	The inadequacy of regulatory enforcement, Bribery and corruption, Cost of destruction and distance from the RA, Lack of interest in PRL, Negligence and lack of adequate awareness of the RG.	Ignorance and negligence, Bribery and illegal practices which increases the chances of dispensing SEDD drugs.	Logistics issues encountered by clients, Lack of awareness of the RG for handling EDD drugs, Inadequate regulatory enforcement, PCs' complaints about service fee.

Table 7.6: Themes from factors hindering compliance and PRL

Themes Two	CC1	CC2	CC3	CC4	CC5	CC6
Complexity of the logistics processes	x	x				
Bureaucratic bottle-neck	x					
Time Constraint and Capacity issue	x					x
Cost of proper disposal	x		x	x		
Greediness, Bribery, and Corruption	x			x	x	
Ineffective governmental policies		x				
Ineffective governmental Enforcement		x		x		x
Difficulty in securing an destruction equipment, and facility		x				
Financial Impact			x			
Insufficient knowledge of RGs			x	x	x	x
Negligence and Management Commitment				x	x	

7.7 PRL Facilitator

All categories confirmed that their PRL operations are facilitated by pre-purchase RCAs with their channel partners including end-customers. Hence, drugs are returned by customers to suppliers when required based on the RCA. Customers' return will be rejected if there is no contractual arrangement for the activity. CC1 (PM) and CC2 (PI), however, do not have a RCA with suppliers due to the legal prohibition of ER. CC2 (PI) further confirmed that there are SOR agreements in place with customers. This RCA helps facilitate refund and exchange processes between the channel partners.

Return of drugs takes place between CC3 (PW) and its channel partners based on, the RCA and he company's product take-back policy. The exchange of return drugs between CC4 (PR) and its channel partners is also facilitated by RCA, SOR, take-back policy as well as the return for disposal programme organised by ACPN. The research findings also reveal that CC5 (HBP)'s PRL practices are facilitated by the existence of RCAs with suppliers, memorandums of understanding with channel partners, and the company's product take-back policy. CC6 (RA)'s RL operation is dependent on the effectiveness of the clients' PRL operations, which can also be influenced by the enforcement of RG.

Following the empirical findings described above, Table 7.8 summarises the similarities and differences between the PRL facilitators identified for each of the six case-categories (PSC stakeholders). Table 7.9 depicts the measures that facilitate PRL operations as mentioned by respondents from each PSC stakeholder (case-category).

Table 7.8: Similarities and differences of the type of PRL facilitators emerging from the cross case-category analysis on PRL practices

Theme/Case-Category	CC1	CC2	CC3	CC4	CC5	CC6
PRL Facilitator	Pre-purchase RCA with channel partners and customers.	Pre-purchase RCA with channel partners and customers, SOR agreement with customers	Pre-purchase RCA with channel partners, SOR agreement with suppliers, Company's product take-back policy	Pre-purchase RCA with channel partners, SOR agreement with supplier, Company's product take-back policy Return for Disposal programs	Pre-purchase RCA with suppliers, Memorandum of understanding with channel partners, Company's product take-back policy	Regulatory Guideline, Return for Disposal programs

Table 7.9: Themes from PRL Facilitators

Themes Three	**CC1**	**CC2**	**CC3**	**CC4**	**CC5**	**CC6**
Pre-purchase RCA	x	x	x	x	x	
SOR agreement		x		x		
Company Product take-back policy			x	x	x	
Disposal Programmes				x		
Memorandum of Understanding					x	
Clients' RL operations						x

7.8 PRL Impact on Business Operations

PRL practices have impact on the CC1 (PM) business operation as it increases the complexity, and labour hours required for managing the drug inventory. It increases operational cost, and reduces revenue and profit. CC1 (PM) respondents also mentioned that PRL practices enhance the companies' ability to comply with regulatory requirements and adhere to professional ethics, which ultimately improves corporate reputation. Furthermore, PRL operation helps improve visibility of the type of drugs returned, provides valuable information on product

performance, public perception, as well as the level of acceptability of the drugs. These attributes help improve product quality.

According to CC2 (PI) respondents, PRL operations increase operational cost, e.g. the cost of storage, warehousing, and transportation of unusable drugs from various locations. PRL operations reduce revenue, and profits. Once drugs expire in inventory, they are usually written-off as a loss of revenue and profit. The collection of EDD drugs from the point of collection, processing, storage, transport to the point of destruction, and the destruction exercise is cumulatively a cumbersome logistics processes. Hence, PRL operations increase the labour hours, and labour cost required in successfully completing the operation.

According to CC2 (PI) respondents, it can sometimes be difficult to secure an incinerator to destroy expired drugs, and also to secure a government approved dump-site for the destruction exercise especially if a particular dump-site is full. Finding and securing an alternative dump-site can be tedious, which directly leads to longer lead-time before unusable drugs can be properly destroyed. Despite these short-term impacts, PRL practices facilitate accountability, transparency, and inventory control of SEDD drugs at CC2 (PI). Furthermore, the practice enhances CC2 (PI)'s compliance to RG, protects the environment from the adverse effects of improper disposal of drugs, and enhances corporate reputation.

The impact of PRL on CC3 (PW)'s business operation is the short-term loss of sales and delayed revenue. To mitigate the impact of the loss of sale of returned drugs, CC3 (PW) implements measures to push short-dated and expired drugs for sale. Some expired drugs (3 months after expiration) are sometimes re-audited, re-inspected, and quality re-checked by the manufacturers. If the manufacturers certify the drugs are good for consumption, the manufacturer will market release the drug, CC3 (PW) will then re-introduce the drugs into the forward chain. CRI is, however, mandated by law to inform all end-customers at the point of purchase that the drugs are good for use even though it is 3 months after expiry.

The research findings also revealed that PRL activities have a very positive impact on CC3 (PW) as the practices facilitates the pro-active removal of short-dated drugs from inventory. Hence,

the split between fast-moving and slow-moving stock is easily identified. The identification of this splits prevents wastage by enabling the pro-active transfer of short-dated drugs into the forward chain to boost sales to channel partners such as hospitals, clinics etc. PRL operations help improve corporate reputation and compliance to regulatory requirements and helps facilitate refund and exchange processes.

CC4 (PR) consider PRL activities as an additional operational cost for the company. PRL practices however, also enables CC4 (PR) to proactively remove, SEDD drugs (6 to 8 months) from stock and shelf. According to a CC4 (PR) respondent, this activity mitigates the risk of selling or dispensing expired drugs to customers. Hence, it helps improve corporate reputation, and regulatory compliance. PRL also helped CRM to build customer trust and confidence in the company business operation.

According to CC5 (HBP), the cost of implementing the PRL system has negative impact short-term sales revenue, projected sales and profit. Despite negative impact on sales revenue, PRL facilitates the effective management of usable and unusable drugs inventory. Hence, it also helps reduce unnecessary wastage and loss of revenue. PRL also helps to maintain good relationships and trust between channel partners and customers.

CC5 (HBP) respondents also pointed out that PRL operation puts pressure on available labour. During the periodic stock check, CC5 (HBP) encounters an issue of insufficient employees available to perform stock checks and related PRL activities. The high work-load involved in the process of conducting PRL gives rooms for error as the processes is a manual operation. Despite these shortcomings, the process eliminates EDD drugs from saleable inventory.

According to CC6 (RA), the impact of PRL practices on business operation is that they enhance PSC stakeholders' capability to comply with RGs for the removal of expired, deteriorated and sub-standard drugs from circulation, and proper disposal.

Table 7.10 summarises the similarities and differences of the impact of PRL practices on business operations of the six case-categories of PSC stakeholders captured from the above

mentioned empirical findings. Table 7.11 depicts the themes that describe the impact of PRL on business operation as identified by respondents from each PSC stakeholder (case-category).

Table 7.10: Similarities and Difference of PRL impact on business operations emerging from the cross case-category analysis on PRL practices

Theme/Case-Category	CC1	CC2	CC3	CC4	CC5	CC6
PRL Impact On Business Operation	Increased the complexity, Additional labour hours, Increase operational cost, Reduce revenue, and profit, Enhances ability to comply to regulatory requirements, Adhere to professional ethics which ultimately improves corporate reputation, Improve visibility of the type of drugs returned, Provides valuable information on product performance, public perception, and the level of acceptability.	Increased complexity and operational cost (warehousing, transportation etc), Reduces revenue, and profits, Increased labour hours (labour cost), Longer lead-time before EDD drugs can be properly destroyed, Facilitates accountability, transparency, and inventory control of unusable drugs, Enhances compliancy to regulatory requirements, Protect the environment from the adverse effect of improper disposal of drugs, Enhances corporate reputation.	Loss of sales and delayed revenue, Facilitates democratisation of consumption, Sales maximisation through the re-introduction of SD drugs into the forward chain, facilitates the proactive removal of short-dated drugs from inventory, Identification of this splits prevent wastage through a proactive identification of short-dated drugs, Improve corporate reputation, Compliancy to regulatory requirements, Facilitate refund, exchange processes.	Additional operational cost, Proactively removal of SEDD drugs from stock and shelf, Mitigates and prevents the risk of selling or dispensing EDD drugs to customers, Improves corporate reputation, Enhances regulatory compliancy, Builds customer trust and confident in company business operation.	Increased operational cost, Reduces projected sales and profit, Facilitates effective management of usable and unusable drugs, helps eliminate EDD drugs from saleable inventory, Reduces wastage, Helps to maintain good relationship and trust between channel partners and customers, Increased pressure on labour and work-load involve in the process of conducting PRL.	Enhances pharmaceutical supply-chain stakeholders' capability to comply with RGs for the removal of expired, deteriorated and sub-standard drugs from circulation, for proper disposal.

Table 7.11: Emergent themes from the impact of PRL on Business Operations

Themes Four	CC1	CC2	CC3	CC4	CC5	CC6
Increases the complexity, and labour hours	x	x	x		x	
Increases operational cost	x	x	x	x	x	
Delay Revenue, Reduce revenue, and Profit	x	x	x	x	x	
Improves compliancy to RGs	x	x	x	x		x
Adherence to professional ethics	x					
Improves corporate reputation	x	x	x	x	x	
Improve accountability, transparency, and inventory control		x	x	x	x	x
Captures valuable information on product performance	x					
Environmental Protection		x				x
Enhances customers satisfaction, and trust				x	x	

7.9 The Seven Perspectives of PRL

7.9.1 The "What Perspective" of PRL

Based on the RCA, CC1 (PM) allows unopened (untampered with) drugs, short-dated drugs (6 months to expiration), expired drugs, drugs with damaged packaging material drugs, and defective drugs to be returned by customers. CC2 (PI) accepts back short-dated drugs, defective drugs, expired drugs, and SOR drugs from customers.

CC3 (PW) allows drugs to be returned by customers as long as they are untampered with, wrongly ordered, or damaged drugs. As CC3 (PW) purchases finished drugs from suppliers, drugs are also returned to suppliers when necessary. Drugs normally returned to suppliers are expired drugs, those with damaged packaging, defective drugs, and slow-moving drugs under SOR agreement. CC3 (PW) normally explore all options to avoid expiration on stock and destruction by selling short-dated drugs at a discounted price to hospital and clinics where the drugs will be consumed within a short period of time.

CC4 (PR) accepts only untampered with, re-saleable drugs and SEDD drugs from customers. CRK procures finished drugs from suppliers but only returns products to manufacturers and Importer, not wholesalers. The drugs normally returned to suppliers are untampered, expired drugs, usable drugs that are slow-moving, under a SOR agreement, damaged drugs, and defective drugs. Some damaged and expired drugs are not returned to suppliers but are destroyed in-house.

CC5 (HBP) allows left-over usable drugs and SEDD drugs to be returned by customers provided there is a proof of purchase. CC5 (HBP) also returns expired, short-dated, damaged, and defective drugs back to suppliers based on RCA. CC6 (RA) does return products to the source as they are submitted for destruction and disposal purposes. Table 7.12 highlights the similarities and differences of the condition (state) of drugs entering and the leaving the PRL network of PCs that make up the six categories of PSC stakeholders.

Table 7.12: Similarities and differences of the what perspectives of RL emerging from the cross case-category analysis of PRL practices

Theme/Case-Category	CC_1	CC_2	CC_3	CC_4	CC_5	CC6
The What Perspectives of PRL	Untampered (unopened) drugs, short-dated drugs, expired drugs, damaged packaging material drugs, and defective drugs	Short-dated drugs, defective drugs, expired drug, and SOR drugs from customers.	untampered drugs, expired drugs, damaged drugs (packaging), defective drugs, and SOR drugs	Untampered (unopened), short-dated, expired, damaged, or defective drugs (at the point of sale) from customers	left-over drugs (usable), defective drugs, short-dated drugs, expired drugs, and damaged drugs	Expired, and sub-standard drugs

Table 7.13 depicts the themes emerging from the "what perspective" of PRL as identified by respondents from each PSC stakeholder (case-category).

Table 7.13: Emergent Theme from the "What" perspective of PRL

Themes Five	CC1	CC2	CC3	CC4	CC5	CC6
Untampered drugs	x	x	x	x	x	x
Short-dated drugs	x	x		x	x	
Expired drugs	x	x	x	x	x	x
Damaged drugs	x		x	x	x	
Defective drugs	x	x	x	x	x	x

7.9.2 The "Why Perspective" of PRL (Receiver)

CC1 (PM) accepts drugs back from customers for economic reasons, contractual obligation, or legislative reasons; for brand protection purposes, to maintain good customer relationships and corporate reputation, and to protect the environment. CC2 (PI) accepts drugs back from customers primarily to fulfil its contractual obligations, to a maintain good customer relationship, customer satisfaction and experience, to maintain good public reputation, and protect brand image. Drugs are also received back from customers in order to ensure accurate invoicing of the sales representative.

CC3 (PW) accepts drugs from customers in order to maintain good customer relationship, satisfaction and experience. Drugs are also accepted back in order to fulfil contractual obligation, protect company reputation, maximise sales and reduce customer return and to prevent drug abuse and improper disposal. CC4 (PR) accepts drugs back from customers for exchange or refund purposes, to adhere to contractual obligation, to maintain customer satisfaction and to optimise sales and revenue. CC4 (PR) also accepts drugs back to prevent customers from consuming EDD drugs.

According to CC4 (PR)'s respondent, the role of legislation on pharmaceutical products is not significant in Nigeria due to inadequate enforcement. Hence, regulation does not influence the

drug returns process. CC4 (PR), however, considers PRL practices as part of their professional duty of ensuring that substandard drugs are sold to the public. In like manner, suppliers accept drugs returned by CC4 (PR) in order to correct any wrong done or mistake made, maintain good supplier/customer relationships and adhere to contractual obligations.

CC5 (HBP) accepts drugs back from customers for an exchange for alternative drug or refund, to prevent customers from drug abuse, and to maintain good customer service. In like manner, suppliers accept drugs returned by CC5 (HBP) in order to foster good business relationships and adhere to the RCA. CC6 (RA) accepts drugs for regulatory reasons such as laboratory analysis, registration purposes, and confiscation of expired, damaged, and defective products. Table 7.14 highlights the similarities and differences of the reasons why PCs accept drugs back into the PRL network based on the empirical findings captured from the six case-categories of PSC stakeholders described above. Table 7.15 depicts the themes and sub-themes emerging from the why perspective of PRL as identified by respondents from each PSC stakeholder (case-category).

Table 7.14: Similarities and difference based on the why perspectives of RL (Receiver) emerging from the cross case-category analysis of PRL practices

Theme/Case-Category	CC_1	CC_2	CC_3	CC_4	CC_5	CC_6
The Why Perspectives of PRL (Receiver)	Drugs are accepted back from customers for economic reasons, To fulfil contractual obligation RCA, To adhere to regulatory requirement (legislative reasons), For brand protection purposes, To maintain good customer relationship, To protect corporate reputation, To protect the environment,	Drugs are accepted back from customers for economic reasons, To fulfil contractual obligations, To maintain good customer relationship, To maintain good customer satisfaction and experience, To maintain good public reputation, To protect brand image. To prevent the sales reps from being invoiced for drugs that have been returned or rejected by customers.	Drugs are accepted back from customers for economic reasons, To maximise sales, To reduce customer return, To fulfil contractual obligation RCA, To maintain good customer relationship, To maintain good customer satisfaction and experience. To protect corporate reputation, To prevent drug abuse, To prevent improper disposal.	Drugs are accepted back from customers for economic reasons, For exchanged or refund, To fulfil contractual obligation RCA, To maximise sales and revenue, To maintain customer satisfaction, To maintain good supplier/customer relationship, To prevent drug abuse, To exercice committment to professional duty by ensuring that substandard drugs are removed from circulation.	Drugs are accepted back from customers for economic reasons, To ensure that the right drug is dispensed to the right patients, To maintain good customer service experience, For exchange for alternative drug or refund, To prevent customers from drug abuse, To foster good business relationship, To fulfil contractual obligation RCA.	For regulatory reasons such as: Laboratory analysis, Registration purposes, Confiscation of EDD drugs.

Table 7.15: Emergent Themes from the "Why perspective" of PRL (Receiver)

Themes Six	CC1	CC2	CC3	CC4	CC5	CC6
Economic	x	x	x	x		
To fulfil contractual obligation,	x	x	x	x		
To maximise sales, revenue and democratise consumption			x	x		
To protect the brand-image	x	x				
To maintain good customer relationship and satisfaction	x	x	x	x	x	
To maintain accountability and control of transactions		x			x	
To reduce customer returns			x			
To reduce unnecessary wastage						
Legislative	x					x
Compliance to Regulatory Requirement						x
Corporate Citizenship	x	x	x			x
Drug Abuse Prevention			x	x	x	
Proper disposal			x			x
Good corporate reputation	x	x	x			
Environment protection	x					x
Professional Ethics			x	x	x	
Prevention of EDD drugs circulation				x		x

7.9.2.1 The "Why Not Perspective" of PRL (Receiver)

CC1 (PM) does not accepted drugs back from customers if there is no RCA to facilitate such an operation. CC2 (PI) does not accept them back if customers' reason for the return is not cogent enough especially when there is no RCA in place. CC3 (PW) does not return drugs back to suppliers because all options are always explored to avoid this. Short-dated drugs (6 months to expiry) are pro-actively sold to clinics and hospitals where the drugs will be consumed before expiring. Drugs will not be accepted back without proof of purchase by the customer. CC4 (PR) will not accept product back from customers if the drugs have been tampered with. Suppliers do not accept drugs back from companies except if they are SOR drugs or if there is a RCA that facilitates such an operation.

Table 7.16 highlights the similarities and differences of the reasons PCs do not accept drugs back into the PRL network based on the empirical findings captured from the six case-categories of PSC stakeholders described above.

Table 7.16: Similarities and differences based on the why not perspectives (Receiver) emerging from the cross case-category analysis of PRL practices

Theme/Case-Category	CC1	CC2	CC3	CC4	CC5	CC6
The Why Not Perspectives of PRL (Receiver)	If there is no RCA with customers	If customers' reason is not cogent enough, If there is no RCA with customers,	Short-dated (6 months to expiry) are pro-actively sold to clinics and hospitals where the drugs will be consumed before expiring, If there is no proof of purchase	If tampered, No SOR or RCA in place	Aways accept drugs back from patients when required.	Aways accept drugs back from clients for different purposes: Laboratory analysis, Registration purposes, Confiscation of EDD drugs.

7.9.3 The "Why Perspective" of PRL (Sender)

Customers return drugs to CC1 (PM) due to expiration, damage, lack of sales, drugs becoming short-dated, adverse events and the availability of a RCA that facilitates the return operation. Customers return drugs back to the CC2 (PI) due product defect, damage, expiration, being short-dated on shelf, over-supply, and wrong delivery. Customers return drugs back to CC3 (PW) for proper disposal, exchange or refund due to quality issues, expiration, damage, being short-dated, no longer needed, or slow-moving drugs on SOR contract. In like manner, CC3 (PW) returns drugs to suppliers if discovered damaged or defective and in case of over-supply and wrong delivery.

Customers return drugs to CC4 (PR) for exchange, or refund due to the customer's change of mind about the purchase, expiry, drug being wrongly ordered, over-supply, quality issue with the packaging, and manufacturing defect. CC4 (PR) on the other hand, returns drugs to suppliers due to SEDD and SOR drugs for cash refund or exchange. CC4 (PR) also returns drugs to suppliers in order to prevent loss of investment, to prevent the risk of dispensing any drug that is substandard, and to keep inventory free from short-dated, expired or defective drugs.

CC5 (HBP) returns drugs to suppliers due to product quality issues, or SEDD. Drugs are also returned to suppliers in order to prevent loss of revenue, to drive sales, and to eliminate compromised and short-dated drugs from inventory. Customers, on the other hand, return drugs to CC5 (HBP) due to SEDD, and lack of confidence in the short-dated drug. Customer

also return drugs if they change their mind about their purchase. Hospital patients' left-over drug are also returned to the hospital pharmacy through the nurses.

Companies submit drugs to CC6 (RA) for laboratory analysis, registration, but expired drugs are submitted for destruction and disposal purposes. Table 7.17 highlights the similarities and differences of the reasons customers (B2B, end-consumers) return drugs to PCs based on the empirical findings captured from the six case-categories of PSC stakeholders described above. Table 7.18 depicts the themes and sub-themes emerging from the why perspective of PRL (Sender) as identified by respondents associated to each PSC stakeholder (case-category).

Table 7.17: Similarities and difference based on the why perspectives (Sender) emerging from the cross case-category analysis of PRL practices

Theme/Case-Category	CC1	CC2	CC3	CC4	CC5	CC6
The Why Perspectives of PRL (Sender)	Customers return drugs back due to expiry, Damaged, Lack of sale, Drugs becoming short-dated, Adverse events, Availability of RCA.	Customers return drugs back due to product defect, Damage, Expiry, Short-dated on shelf due to lack of sale, Over-supply, Wrong delivery	For proper disposal, Exchange or refund due to quality issue encountered, Expiry, Damage, Short-dated, No longer needed, Slow-moving drugs on SOR. Over-supply, Wrong delivery.	For exchange, or refund, Customer's change of mind about the purchase, Expiry, Wrongly ordered, Over-supply, Quality issue with the packaging, Defect, SOR drugs for cash refund or exchange (To Suppliers), To prevent loss of investment, To prevent the risk of dispensing substandard drugs, To keep inventory free from SEDD drugs.	Product quality issues, Short-dated, Expiry, Damage, To prevent loss of revenue, To drive sales, To eliminate compromised, and short-dated drugs from inventory (To Suppliers). Customers return drugs back due to expiry, Short-dated, Lack of confidence in the short-dated drug, Patients change of mind about purchase, Patients' left-over drugs at the hospital via the nurses.	Companies submit drugs for laboratory analysis purposes, registration purposes, Expired drugs are submitted for destruction and disposal purposes.

Table 7.18: Themes from the "Why perspective" of PRL (Sender)

Themes Seven	Sub-Theme	CC1	CC2	CC3	CC4	CC5	CC6
Distribution Returns		x	x	x	x	x	
Product Recall							
B2B Commercial Returns	Wrongly delivered drugs, damaged deliveries, drugs with a too short remaining shelf life, expired drugs, slow-moving, defective, over-supply, product quality issues, to prevent loss of revenue, to drive sales, to eliminate SEDD drugs from inventory, and risk of dispensing EDD drugs, to prevent loss of investment, for destruction and proper disposal	x	x	x	x	x	
Stock Adjustments Returns	To facilitate sales before expiry, to allocate stock appropriately to meet demand, to ensure invoicing, sales record, and sock reconciliation			x	x	x	
Customer Returns				x	x	x	x
B2C commercial return	Exchange or refund due to quality issue encountered (packaging), customer change of mind about the purchase, customer already have the drug at home, Short-dated (RCA), wrongly ordered, over-supply, slow-moving drugs on SOR, manufacturing defect			x	x	x	
Warranty return	Quality issue, Manufacturing defect, and Adverse effect		x	x	x		
End-of-use	Patients' left-over drugs for re-use					x	
End-of-life	Expired drugs for proper disposal			x	x	x	x

7.9.3.1 The "Why Not Perspective" of PRL (Sender)

Expired and damaged drugs are not returned to CC1 (PM) due to the operating model and RCA with the customers (Distributors). Once the drugs are purchased, customers take ownership of the stock and are responsible for proper disposal once expired. If there is no contractual provision for return, customers will not have the right to return SEDD drugs to CC1 (PM). CC1 (PM) does not return drugs to its suppliers due to the legal prohibition, and the high cost of export. To prevent short-dated drugs from getting expired before use, CC1 (PM) normally sells these short-dated drugs at a discounted price to hospitals, donates them to staff and uses them as samples. According to CC1 (PM)'s respondent, some PCs engage in practices such as revalidation of product expiry date. The RA normally fines companies that engages in such practices.

Customers do not return drugs to CC2 (PI) if there is no RCA in place to facilitate the return process. CC2 (PI) also does not return drugs to suppliers due to the law prohibiting export of expired drugs, distance and the complexity and cost of logistics. Hence, CC2 (PI) takes full

ownership of drugs once purchased and is responsible for the proper disposal of EDD drugs. CC3 (PW) does not usually have reasons to return drugs to suppliers as short-dated drugs (6 months to expiry) are pro-actively sold to clinics and hospitals where the drugs will be consumed before expiring. Drugs are also not returned to suppliers because customers do not return drugs to CC3 because they do not sell expired or substandard drugs to customers.

CC4 (PR) does not return drugs to suppliers if there are no RCA in place. Drugs are not returned by end-users if they have been opened or partly used. According to CC5 (HBP)'s respondents, if customers do not return drugs, that implies that the drug is perfectly suitable for the customer or they forgot to return any left-over. Some PCs, especially small-scale businesses, complained about the service fee charged by the RA for destruction and disposal. This is the reason why some PR do not submit their expired drugs to CC6 (RA). Table 7.19 highlights the similarities and differences of the reasons customers (B2B, end-consumers) do not return drugs to the source based on the empirical findings captured from the six case-categories of PSC stakeholders described above.

Table 7.19: Similarities and difference based on the “why not perspectives” (Sender) emerging from the cross case-category analysis of PRL practices

Theme/Case-Category	CC1	CC2	CC3	CC4	CC5	CC6
The Why Not Perspectives of PRL (Sender)	EDD drugs are not returned to CC1 due to operating model and RCA, Once the drugs are purchased, customers take ownership of the stock and are responsible for proper disposal once expired. Once there is no RCA, customer will not have the right to return SEDD drugs to CC1. CC1 do not return drugs back to its suppliers to the legal prohibition on ER	If there is no RCA in place to facilitate the return process, CC2 do not return drugs to suppliers due to the law prohibiting ER, Distance, complexity and cost of logistics, CC2 takes full ownership of drugs once purchased and responsible for the proper disposal of EDD drugs	CC3 do not usually have reasons to return drugs to suppliers as short-dated are pro-actively sold to clinics and hospitals where the drugs will be consumed before expiring, Drugs are not returned by customers to CC3 because they do not sell expired or substandard drugs to customers.	Drugs are also not returned by end-user if they have been opened or partly used, Drugs are not returned by end-users if there are satisfied	if customers did not return drug, that implies that the drug patients are satisfied, Patients forget to return left-overs	Some clients especially small-scale businesses complained about the service fee for drug disposal and destruction.

7.9.4 The "How Perspective" of PRL

There are procedures in place at all CC1 (PM) companies for the collection, sorting, storing and processing of returned and SEDD drugs at all the manufacturers. SEDD drugs are usually received back at CC1 (PM) via the companies' logistics net-work, and all returned EDD drugs are stored in quarantine upon receipt. Figure 7.1 depicts the process flow of PRL operation of CC1 (PM) i.e. the How perspective of PRL. It is the duty of the inventory controller to monitor and communicate shelf-life of stock to the marketing and operations department who will make the decision on the next course of action.

On-stock EDD drugs are usually separated from stock, and quarantined together with those returned by customers. EDD drugs are destroyed in-house in the presence of RA's officials while some other CC1 (PM) companies normally submit EDD drugs to the RA for destruction and disposal. In this case, RA will be notified with information, such as the name of the drug, quantity requiring destruction, total value of the drugs, batch number, manufacturing date, expiration date etc. The RA will give a payment advice for the service. Once payment is made, an appointment with the RA will be made. Depending on the terms of the appointment, the drugs will be transported to the RA facility or transported to the RA's approved location for destruction. A representative of CC1 (PM) will be present during the destruction exercise and a certificate of destruction will be issued.

Both short-dated drugs (3 to 6 months to expiration) on stock and those returned by customers are allocated to the sales representatives who then re-sell to retailers at a discounted price, and also ensure that short-dated drugs are completely sold out at the retail pharmacies. Some of these short-dated (6 months to expiration) drugs are also donated to charity organisations, hospital pharmacies and staff with clear notification of the expiry date. Once the drugs become less than 1 month to expiration without sale at the retailers, they will be withdrawn and returned to CC1 (PM). The drugs will then be consolidated with other returns, and EDD drugs.

The RA will be notified; depending on the agreement with the RA, destruction and disposal will be conducted either in-house or the RA.

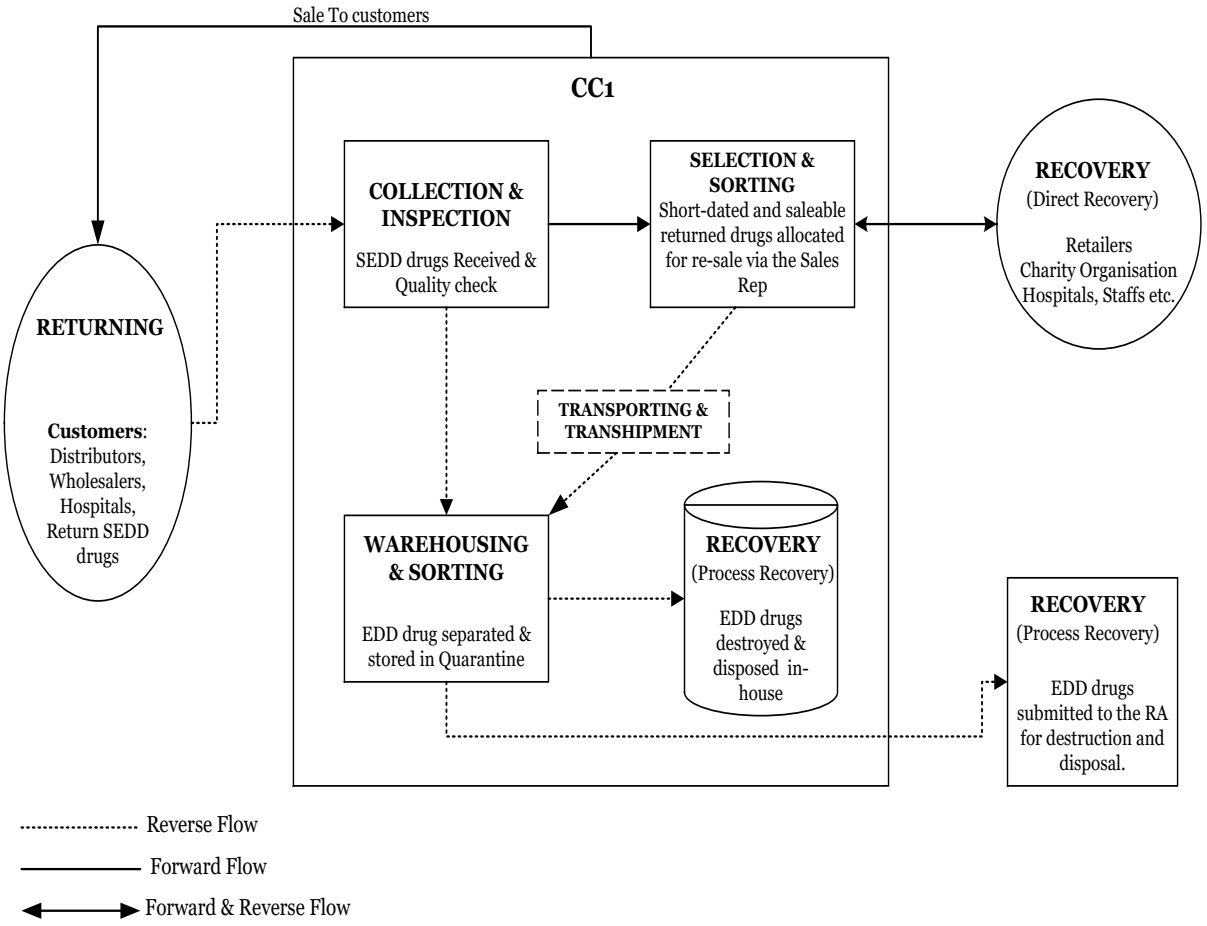

Figure 7.1: Case-Category One PRL Process Flow

There are written procedures in place for the collection, sorting, storing and processing of returned drugs at CC2 (PI) and some CC2 (PI) companies have unwritten procedure. According to CC2 (PI) respondents, some management do not consider it necessary to have written procedure as the sales representatives are expected to know what to do. If drugs are not returned to CC2 (PI), such drugs will be considered sold, and the sales representatives will be invoiced for payment to CC2 (PI). Hence, sales representatives initiate the return of any reported EDD drugs back to the central warehouse immediately. This protects the sales representative from being invoiced for returned EDD drugs. Figure 7.2 depicts the process

flow of PRL operation of CC2 (PI) i.e. the How perspective of PRL. Once a customer reports EDD drugs to the sales representative, collection arrangement will be made, the drug registered into the system, declared unusable, and quarantined. The procurement /warehouse will then be notified, the sale representative will invoice the drugs, and then courier the drugs back to CC2 (PI)'s central warehouse in Lagos.

Upon receipt, the sales representative will reconcile the account. The EDD drugs will be audited, and consolidated with other EDD drugs in a quarantined storage container for an average of 6 months. EDD drugs are usually forwarded to the RA's facility for destruction or transported in bulk to RA's approved dump-site for destruction.

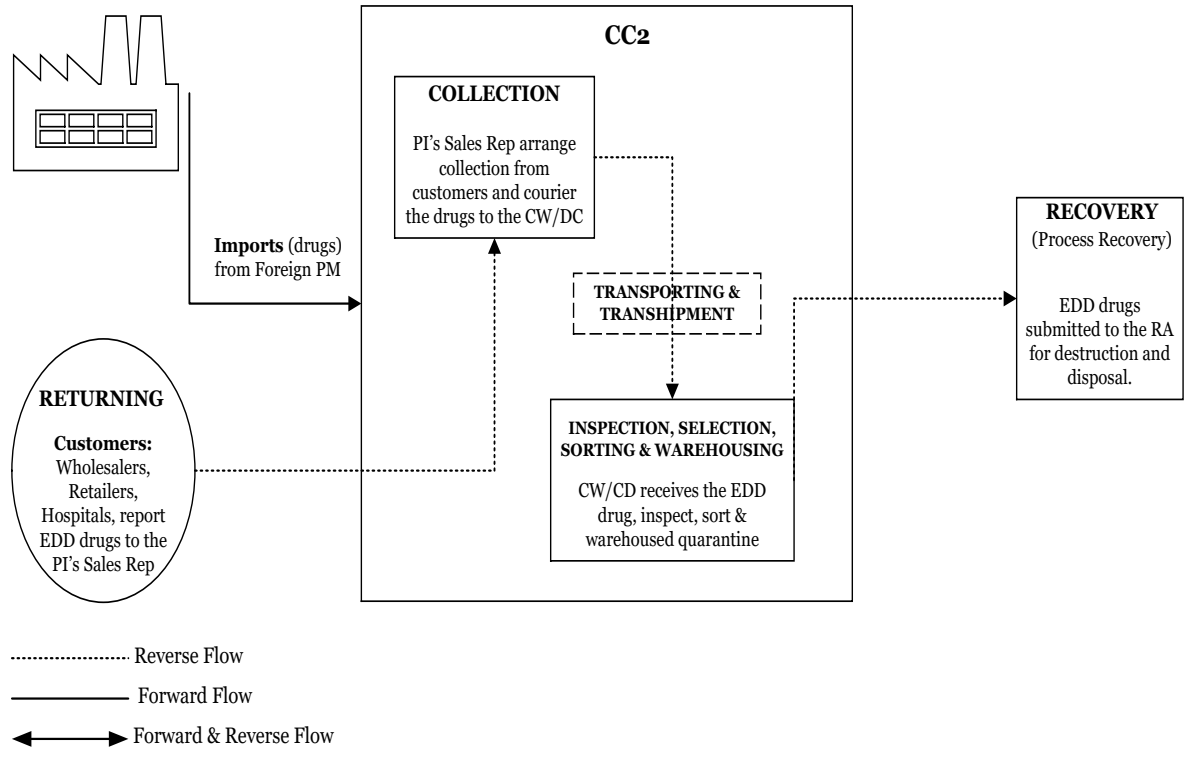

Figure 7.2: Case-Category Two PRL Process Flow

There are procedures in place at CC3 (PW) for the collection, sorting, storing and processing of returned drugs. The registered pharmacist coordinates the PRL activities in the stores. All

sales personnel are allocated a shelf to manage. Figure 7.3 depicts the process flow of PRL operation of CC3 (PW) i.e. the How perspective of PRL. Once a product is returned to CC3 (PW), drug exchange or refund will take place depending on the reason for return. If the drugs were wrongly ordered, the drug will be exchanged.

On a monthly basis, the store pharmacy checks the store shelf and inventory for SEDD drugs, and sends the SEDD drugs to the warehouse on a weekly basis. Using the same truck, new deliveries from the warehouse will be made. Auditors in the warehouse will quality check the returned drugs. After certification or market release for re-sale, drugs that are months to expiration are sent back to the store to be sold at a discounted price; some are donated to Charity organisations, primary healthcare centres, or federal medical clinics (based on regulatory approval) while some are returned to the supplier based on SOR agreement. If the drugs are not sold even after been discounted, they will be removed from shelf and sent back to the warehouse for re-auditing and consolidation with other expiring drugs, recorded and written-off for destruction (burning) or returned to the suppliers depending on the sales agreement.

At some CC3 (PW) companies, any drug that is less than 6 months to expiration is considered short-dated and will be removed from the shelf and recorded as short-dated. The drugs will be set aside for sale at a discounted price to hospitals and clinics where the drugs will be consumed before the actual expiration date. Some CC3 (PW) companies will remove the short-dated drugs from the standard shelf, check them and then placed them on a different shelf designated for short-dated drugs to be dispensed on a FEFO basis up to 1-month shelf-life. This is aimed at maximising sales and mitigating loss of revenue.

On a monthly basis, EDD non-SOR drugs or drugs that have no return agreement will be pulled out and separated from the saleable inventory. The EDD drugs will be collated according to their manufacture date, expiry date, name, and brand. They will then be transported to the Lagos state waste disposal authority (WDA) where they will be destroyed. WDA stores the drugs in quarantine for an average of 1-month processing. This allows

consolidation and proper auditing of the drugs before destruction and disposal. At some CC3 (PW) companies, RA officials responsible for drug collection will be contacted for collection and destruction arrangement

At some CC3 (PW) companies, rather than transporting the EDD to regulatory agencies, the DC procurement team will be notified and issue a return authorisation for the drugs to be sent to the DC. All necessary documents will be prepared for accountability and transparency purposes. The procurement team will then make the decision on whether to destroy and dispose the drug in-house, return the drug to suppliers or submit the drugs to the regulatory bodies.

SEDD drugs with a return agreement and SOR drugs will be returned to the suppliers. The supplier will be contacted and product description and related information given to the supplier who will then arrange collection and exchange. Hence, drugs are not allowed to expire on stock.

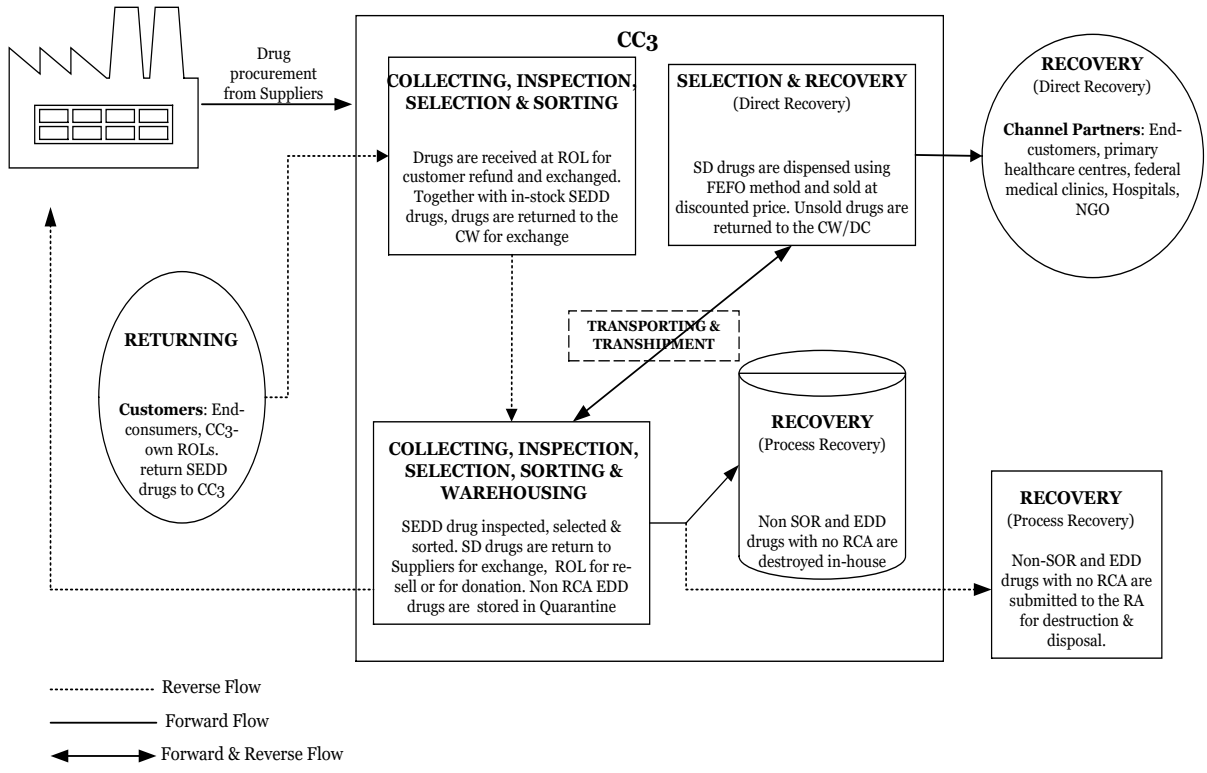

Figure 7.3: Case-Category Three PRL Process Flow

Figure 7.4Figure 7.4 depicts the process flow of PRL operation of CC4 (PR) i.e. the How perspective of PRL. Once customers' request for return authorisation is received, CC4 (PR) (store pharmacist) immediately instructs customers to return the drug or sends a representative to collect the drugs for disposal, refund, exchange or return to the supplier. Not all CC4 (PR) companies have written procedures for the collection, sorting, storing and processing of SEDD drugs as some do not see the need for such procedure, due the absence of adequate regulatory enforcement. The respondents, however, pointed out that the invoices given by suppliers stipulate what needs to be done in case of SEDD drugs.

Depending on the company strategy, CC4 (PR) companies (store staff) perform a daily, weekly or monthly inventory and shelf check for SEDD drugs. Short-dated drugs (1 to 8 shelf-life) are removed from the standard shelf and reported to the store pharmacist immediately. Once the store pharmacist confirms the saleability of the drugs, short-dated drugs will be displayed on a separate shelf for sale at a discounted price or for dispensing at any possible opportunity before expiry. Upon expiration, the store staff will remove the drugs from the shelf and place them on a separate table to be audited by the store pharmacist, and then they will be dumped into a disposal bin after audit. Once the collection bin is full or on a monthly basis, the expired drugs will be transported to a dump-site for destruction by open-air burning.

Alternatively, the store pharmacist instructs the store staff to remove drugs (tablets) from the cartons and packages. The tablets will be crushed, mixed with water, and flushed into the sewers. The packaging will be crushed into pieces and disposed in waste a bin. The RA are not usually notified about this operation as respondents acknowledged the unethical nature of such practice. Nevertheless, respondents acknowledged that the practice helps to prevent any possibility of selling EDD drugs to the public and keeps such drugs from circulation.

Beside the in-house destruction of EDD drugs, some including SOR drugs are returned to suppliers based on RCA. In this case, once expired drugs is discovered on shelf and in inventory or when SOR drugs need to be returned, the drugs will be removed from shelf, the supplier's sales representative will be informed to arrange collection and exchange for new drugs. The duration of time SEDD drugs remain at the company depends on the promptness of suppliers' sales representative in arranging collection.

Besides the in-house destruction of EDD drugs and returns to suppliers, in the case of EDD drugs that has no return agreement contract, the state waste disposer agent, a parastatal of the RA, normally come to CC4 (PR) on a monthly basis for the collection of expired drugs.

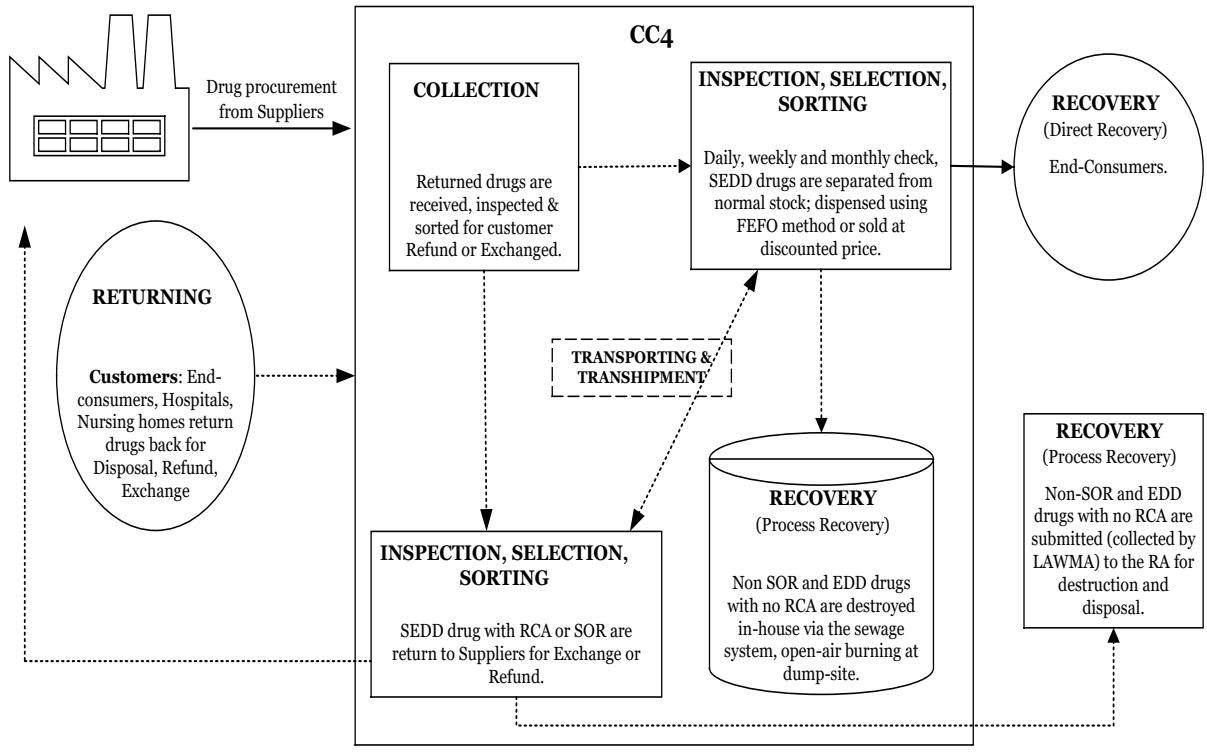

Figure 7.4: Case-Category Four PRL Process Flow

Not all CC5 (HBP) companies have procedures in place for the collection, sorting, storing and processing of returned drugs. According to the respondents, the management do not see any reason for procedures since the drugs are expired and unusable. The task is also considered to be a very basic operation.

Figure 7.5 depicts the process flow of PRL operation of CC5 (HBP) i.e. the How perspective of PRL. Stock checks are done on a weekly basis and some on a daily basis, EDD drugs will be separated from other saleable drugs, quantified, and documented. Those with RCA are returned to suppliers. The suppliers' representative will be contacted (providing details of the drugs and quantity) and will then arrange collection and exchange the drugs. At some companies, the appropriate documentation is done in a ledger, indicating the expired or about to expire quantity, as well as quantity received from the supplier in exchange for the expired quantity. The ledger will be filled to document the drug's name and quantity that has been recalled and the quantity exchanged/replenished.

In situations where EDD drugs have no return agreement contract, such drugs will be counted, and monetary value calculated, they will then be collated and the RA notified in writing for destruction. The RA will stipulate the procedure to carry out the destruction including the location where the destruction operation should be conducted. The Open air burning is carried out in the presence of RA's official. Some other CC5 (HBP) companies destroy the EDD in-house by incineration every two years in the presence of RA's official.

Some CC5 (HBP) companies have procedures in place for the collection, sorting, storing and processing of SEDD drugs. The companies have satellite pharmacies which requisition drugs from the pharmacy main store. On a quarterly basis, every unit is mandated to conduct a stock-check for expired and short-dated stock. This is done in the presence of and under the supervision of external auditors. The satellite units generate a list of drugs that have expired and submit them to the pharmacy main store providing all details of the drugs: name, strength, quantity, value, manufacture date, expiring date, batch number etc. The main store collates all

the SEDD drugs centrally. The satellite pharmacies also generate a list of stocks that are likely to expire within the next quarter (short-dated drugs).

The main store redirects the short-dated drugs to satellite pharmacy units that will consume the drug before expiration. This method is used to maximise usage and prevent the drugs from expiring before use. Where EDD drugs have a return agreement contract, the main store will contact the suppliers to arrange collection and exchange of the drugs, providing the suppliers with all the required details of the drugs.

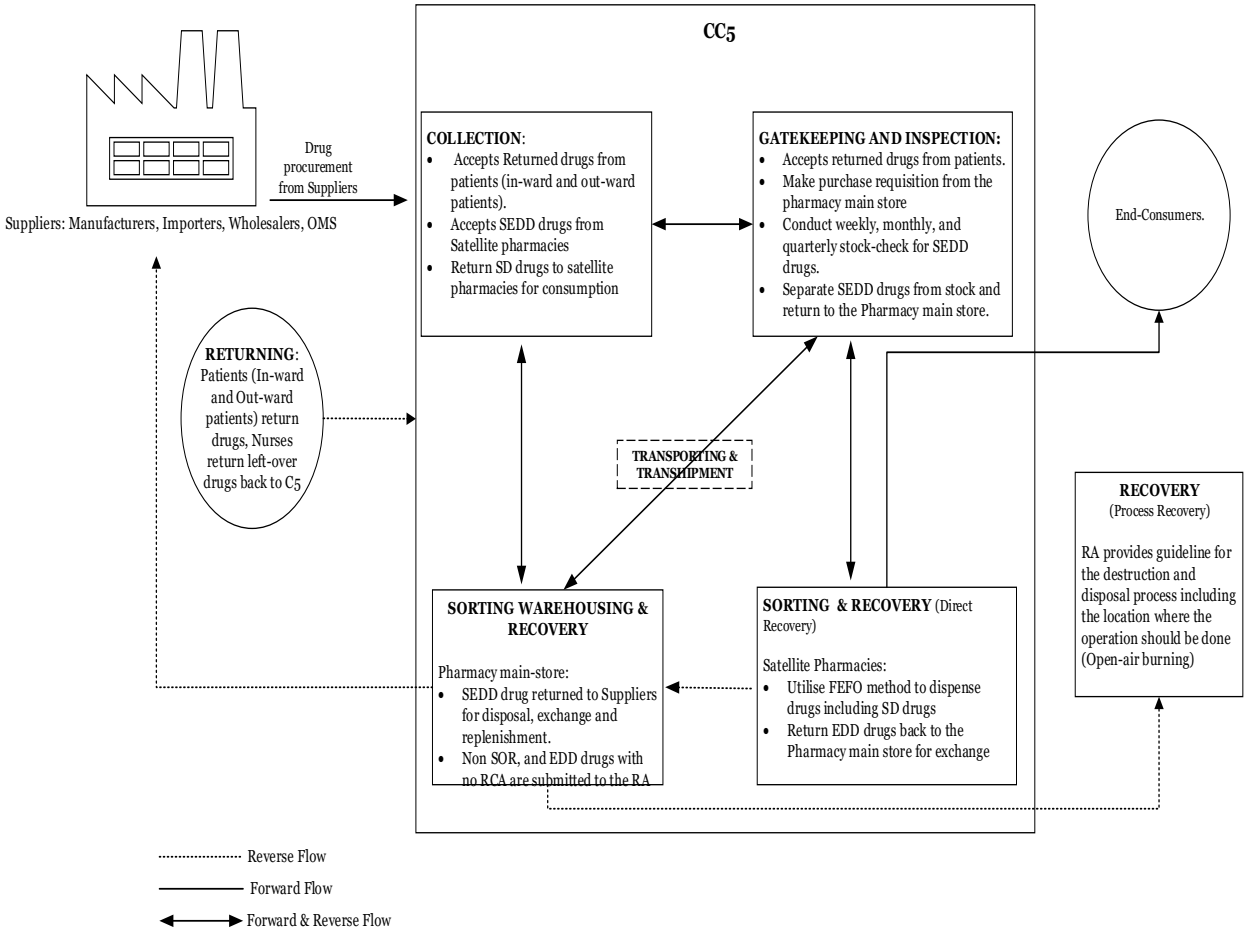

Figure 7.5: Case-Category Five PRL Process Flow

All companies involved in the business of regulated products are mandated to remove EDD drugs from their inventory for submission is the regulatory body for proper disposal. Hence,

CC6 (RA) has procedures in place for the collection and processing of submitted drugs. PIs, PWs, PRs, HBPs, NGOs etc. are usually provided the procedure to follow for drugs submission.

As depicted in Figure 7.6, PCs are required to first notify the CC6 (RA), and request submission approval through an official letter of application to the Director General. The letter will then be remitted to the relevant office, which that will implement the appropriate procedure for receiving the drug. The application letter must include information such as product type and name, quantity, value, expiry date, as well as all necessary information about the product. This information will be verified to confirm what will be physically delivered to the organisation.

CC6 (RA) will confirm the date the EDD drugs should be submitted. Upon delivery at CC6 (RA), the drugs will be quarantined and stored in a designated 6-foot container consolidated with EDD drugs submitted by other companies. Once the container is full or within a year, the drugs will be transported to a government authorised destruction site. Some of the drugs are destroyed by open air burning, others by incineration or burying. If the drugs are hazardous for open air burning to be done, incineration or autoclave method will be employed.

In situation where companies have the capacity to perform the destruction, they will request for destruction authorisation. If approved, CC6 (RA) will give these companies the options to perform the destruction in-house, provided it is done in accordance with the guidelines given by the RA.

Companies also submit EDD drugs to the ACPN for proper disposal. ACPN organises disposal/destruction for its members. During the ACPN annual meeting, the technical team seizes the opportunity to gather EDD drugs from members, and stores them in a quarantined container quarantined. Once full, destruction procedure will commence; a specific date will be selected in the year to conduct the destruction activities. This activity is anchored by the ACPN, supervised by CC6 (RA), and the companies' officials are also invited to witness the destruction exercise. The destruction method normally used is open air burning at a selected dump site.

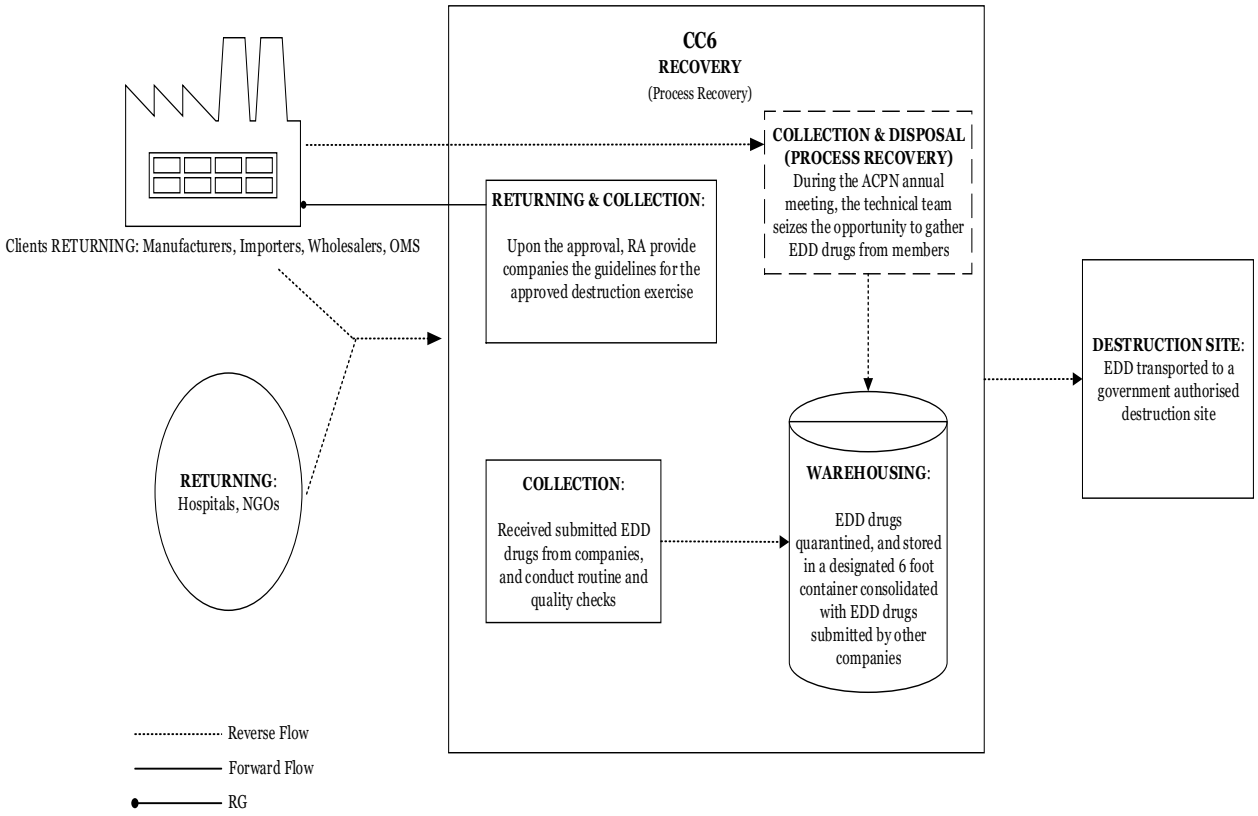

Figure 7.6: Case-Category Six PRL Process Flow

7.9.5 The "Who Perspective" of PRL

CC1 (PM)'s direct customers are mainly the distributors (Pre-wholesalers) as the sales representatives sell drugs directly to wholesalers, hospitals, other direct and indirect customers, including wholesaler, retailers, hospital pharmacies (public and private), and clinics etc. The distributors (pre-wholesalers) take ownership of drugs once purchased, and are responsible for the distribution to customers such as retailers, hospitals, wholesalers etc. These customers return drugs to CC1 (PM) when required. Distributors return drugs for

exchange and then re-distribute to retailers. Hospitals rarely return drugs as they ensure that the right quantity of drugs that meet their specific demand are purchased at every given time.

The collection, processing, reporting and disposing of EDD drugs are done in-house and destruction is in the presence of the RA and customers officials. The RA is the regulatory and enforcement authority. Internal management, customers (distributors, wholesalers, retailers, and hospital pharmacies), the RA and waste disposal service providers have influence on the way CC1 (PM) manages SEDD drugs. The stakeholders at CC1 (PM) responsible for the day to day administration of PRL and SEDD drugs are the supply chain team, inventory controller, customer service, warehouse team, quality team, finance team and sales representatives.

CC2 (PI)'s customers are mainly wholesalers, retailers, hospitals, clinics etc. while suppliers are mainly manufacturers (international and contract manufacturers). PSC stakeholders that returns drugs to CC2 (PI) are wholesalers while the stakeholders responsible for collecting, processing, reporting and disposing of drugs are the PCs, courier services or transport service providers, and the RA. The stakeholders that influence PRL operations at CC2 (PI) are the internal management, customers, and the RA. The actors/employees at CC2 (PI) responsible for the day-to-day administration of PRL processes and disposal of EDD drugs are the customers, sales representatives, quality team, warehouse team, logistics team, and the RA.

CC3 (PW)'s customers are end-consumers, retailers, hospital, clinics etc., while suppliers are wholesalers, importers, and manufacturers (international and indigenous). The supply chain stakeholder that return drugs to CC3 (PW) are mainly end-customers and company owned retail outlets. The stakeholders responsible for the PRL operations and disposing of EDD drugs are the retail stores, DC, internal auditors, warehouse staff, procurement department, store staff, suppliers, transport service providers, and the RA. At some CC3 (PW) companies, no supply chain stakeholder returns drugs to the companies except in case of wrong delivery. The only reverse flow of drugs is therefore that between CC3 (PW)'s warehouse and its retail outlets.

All the stakeholders including the management team, pharmacists, customers, and the RA have influence on the PRL operations of CC3 (PW) but the RA has the greatest influence. The actors/employees at CC3 (PW) responsible for the day-to-day PRL operations, and disposal of EDD drugs are store managers, store pharmacist, internal auditors, quality team, warehouse staff, logistics manager, procurement staff, and sales staff.

CC4 (PR)'s customers are end-consumers, doctors from hospitals, nursing homes and government hospitals. CC4 (PR)'s suppliers are manufacturers (foreign and indigenous), registered importers and wholesalers. Supply chain stakeholders that return drugs to CC4 (PR) are mainly end-consumers only when they purchase the wrong drug. The stakeholders responsible for the PRL operations and disposing the EDD drugs are the PC, customers, hospitals, suppliers, the RA, and WDA. Stakeholder(s) that influence PRL operations of CC4 (PR) include the internal stakeholders (management team), suppliers and customers. Internal stakeholder (management team) develops policies for the management of SEDD drugs and how healthcare provision is to be managed.

Customers play a major role as the company retail outlets are located in the most affluent part of Nigeria. Consumers in the area are well informed so they influence the way the company manages drug distribution and returns. Suppliers have the major influence on the PRL operations of CC4 (PR) as suppliers normally inquire about the performance of their product and new product launch. For some CC4 (PR) companies, no stakeholder influences the PRL operations of CC4 (PR). The actors/employees within CC4 (PR) responsible for the day-to-day PRL operations and disposal of the EDD drugs are the store pharmacist, pharmacist technician, apprentice, and the procurement team.

CC5 (HBP)'s customers are patients and the suppliers are manufacturers, wholesalers, importers, and OMS. The PSC stakeholder that returns drugs to CC4 (PR) are patients. The stakeholders responsible for the PRL operations and disposal of EDD drugs are the PMs, hospital pharmacy main store, satellite pharmacies, OMS, and the RA. The stakeholder(s) that influence PRL operations are the management team, customers, suppliers, and the RA.

Patients have influence on the PRL operations as they distrust short-dated drugs. Internal management's policy also influences the return handling strategy employed. The suppliers have influence on the PRL operation via the RCA. The RA also has influence but its level of influence is low due to the inadequate regulatory enforcement. The actors within CC5 (HBP) responsible for the day-to-day administration of PRL operations and disposal of EDD drugs are the hospital pharmacists, the pharmacy staff, procurement team, store and inventory manager, logistics manager etc.

CC6 (RA)'s clients are all companies involved in the business of regulated products. These are the stakeholders that submit drugs to CC6 (RA). Stakeholders that influence the PRL operation of submitted drugs are the internal management and the clients. The actors/employees within CC6 (RA) responsible for the day-to-day PRL operations and EDD drugs disposal are the regulatory officers, warehouse staff, logistics staff, pharmacists, Quality staff etc.

Table 7.20 highlights the similarities and differences of the type of stakeholders involved in the PRL operations based on the empirical findings captured from the six case-categories of PSC stakeholders described above. Table 7.21 depicts the themes emerging from the "who perspective" of PRL according to the empirical data obtained from the study.

Table 7.20: Major Similarities and difference of the who perspectives of RL emerging from the cross case-category analysis of PRL practices

Theme/Case-Category	Stakeholder	CC1	CC2	CC3	CC4	CC5	CC6
The Who Perspectives of PRL	Customer	Distributors (Pre-wholesalers), wholesalers, retailers, hospital pharmacies (public and private), and clinics etc.,	Wholesalers, retailers, hospitals, clinics etc.,	Wholesalers, End-consumers, retailers, hospital, clinics etc.,	End-consumers, Doctors from hospitals, Nursing homes, government hospitals.	Patients	All companies involve in the business of regulated products
	Service Providers	The RA, Waste disposal authority (WDA),	Courier services or transport service providers, the RA,	Transport service providers, the RA,	The RA, Waste Disposal Authority (WDA),	The RA	ACPN
	Supplier	None	Manufacturers (international and contract manufacturers)	Wholesalers, Importers, and manufacturers (international and indigenous)	Manufacturers (foreign and indigenous), registered importers and wholesalers	Manufacturers, wholesalers, importers, and OMS,	None
	Internal Stakeholders and Actors	Internal management, Supply chain team, inventory controller, customer service, warehouse team, quality team, finance team and sales representatives.	Internal management, Sales representatives, quality team, warehouse team, logistics team	Company-owned retail outlets, the DC, internal auditors, warehouse staff, The management team, pharmacists, store managers, store pharmacist, store staff, quality team, logistics manager, procurement staff, and sales staffs.	The Sales Rep, The management team, the company-owned retail outlets, the store pharmacist, pharmacist technician, apprentice, and the procurement team.	The pharmacy main store, Satellite pharmacies, The management team, the store pharmacy, pharmacy staffs, procurement team, inventory manager, logistics manager etc.	The internal management, the warehouse staffs, logistics staffs, pharmacist, Quality staff etc

Table 7.21: Themes from the "Who" Perspective of PRL

Themes Eight	CC1	CC2	CC3	CC4	CC5	CC6
PSC Actors	x	x	x	x	x	x
Manufacturers	x	x	x	x	x	x
Importers		x	x	x	x	x
Wholesalers/Distributors	x	x	x	x	x	x
Retailers	x	x	x	x		x
Hospital Pharmacy	x	x	x	x		x
OMS					x	x
End-consumers		x	x	x	x	
Third-Party Service Providers	x	x	x	x		
Courier Companies		x				
Transport Service		x	x			
WDA		x		x		
Government Institution	x	x	x	x	x	x
NAFDAC, ACPN	x	x	x	x	x	x
Internal PSC Stakeholder	x	x	x	x	x	x
Management Team,	x	x	x	x	x	x
Supply Chain Team	x	x	x		x	
Logistics / Warehouse Team	x	x	x		x	x
Quality Team	x	x	x	x	x	x
Regulatory team	x	x	x			x
Store Staff			x	x	x	

7.9.6 The "Where Perspective" of PRL

The stakeholders involved in the PRL operation of CC1 (PM) are located both within, and outside the company. Some stakeholders are within the same State while some are spread across Nigeria. PCs with stakeholders in-house and within the same State, location have no negative impact on the PRL operations as some CC1 (PM) (PM) companies perform destruction exercises in-house. This strategy reduces the total cost of managing PRL operation.

The stakeholders involved in the PRL operations of CC2 (PI) are located both within the companies, the states, and different regions of Nigeria. CC2 (PI) sales points are dispersed all over Nigeria. Hence, drug collection takes place in different locations across Nigeria and drugs are returned to the distribution centre/central warehouse in Lagos State. The impact of

location on the PRL processes for CC2 (PI) is the cost of transportation, and complexity of logistics involved.

Stakeholders involved in the PRL operation of CC3 (PW) are located within the companies, and externally within the same State and region. Some CC3 (PW) companies have retail pharmacy outlets across the country and distribution warehouses in each State and region. Hence, the stakeholder's location has no negative influence on the PRL operation as each state has its own central warehouse which eliminates delays and complexity of logistics. Some CC3 (PW)s, however, only have a central warehouse located in Lagos State. This structure causes delays due to the distance of retail outlets from the central DC in Lagos State. The negative impact of this issue is mitigated by giving retail outlets in different regions of the country, different return processing lead-time target.

The stakeholders involved in the PRL operation of CC4 (PR) are located in strategic locations within the same State. Long distance of stakeholders from CC4 (PR) encourages managerial decisions to authorise destruction and disposal of EDD drugs in-house. Based on contractual agreement, some suppliers' sales representatives also arrange collection of SEDD drugs from CC4 (PR). Hence the location of stakeholders influences CC4 (PR)'s PRL operations. For companies whose stakeholders are within proximity, locations have no negative impact on their PRL strategy.

The stakeholders involved in the PRL operation of CC5 (HBP) are located within the company, and externally within the same vicinity in Lagos State. Some suppliers' representatives arrange collection of SEDD drugs from CC5 (HBP) while CC5 (HBP) is responsible for returning EDD drugs to suppliers like OMS. Hence, location of stakeholders is an important determinant of the PRL strategy adopted.

The stakeholders involved in the PRL operation at CC6 (RA) are located within the organisation and externally. External stakeholders are responsible for submitting EDD drugs to CC6 (RA). Hence, the location of stakeholders has no influence on the collection, storage, and processing strategy adopted by CC6 (RA). Table 7.22 highlights the similarities and

differences in where the actors in the PRL operations are located based on the empirical findings captured from the six case-categories of PSC stakeholders described above.

Table 7.22: Major Similarities and differences of the where perspectives of PRL emerging from the cross case-category analysis of PRL practices

Theme/Case-Category		CC1	CC2	CC3	CC4	CC5	CC6
The Where Perspectives of PRL	Location	The stakeholders involve in the PRL operation are located both in-house and outside the company, Some within the same State while some spread across all corner of the country.	The stakeholders involved in the PRL operations are located in-house, within the same state, and different regions of Nigeria. Sales points is disperse all over Nigeria. Hence, drug collection takes place different location across Nigeria and returned to the central warehouse in Lagos State. The impact of location on the PRL processes is the cost and complexity of logistics involve.	Stakeholders involved in the PRL operations are located in-house, and externally within the same State and region. Some wholesaler have retail pharmacies across the country and distribution warehouses in each State and region. Some wholesaler have central warehouse located in Lagos State. This structure causes delays due to the distances of retail outlets from central DC in Lagos State.	The stakeholders involved in the PRL operation are located in-house, and in strategic location within the same State. Long distance of stakeholder from the retailers encourages managerial decision to authorise disposal and destruction of EDD drugs in-house. Suppliers' sales representative arrange collection of SEDD drugs from retail pharmacies. Location of stakeholder influences PRL operations	The stakeholders involved in the PRL operation are located in-house, and external within Lagos State. Some suppliers' representative arrange collection of SEDD drugs while some are returned by the pharmacies. Hence, location of stakeholders is an important determinant of the PRL strategy adopted.	The stakeholders involved in the PRL operation are located in-house and externally. External stakeholders are responsible for submitting EDD drugs to the RA. Hence, the location of stakeholders have influences the collection, storage, and processing strategy adopted.
	Collection Points	Manufacturer DC, Sales Rep	DC and Sales Rep	Company owned retail-outlet	Retail Outlets	Hospital Pharmacy main stores	RA collection center
	Disposal Point	In-house, the RA	The RA	In-house, The Supplier, The RA	In-house, The Supplier, The RA	The Supplier, the RA	The RA

7.9.7 The "When Perspective" of PRL

The duration of time CC1 (PM) stores (quarantine) SEDD drugs before processing them varies depending on the reason for the return. Customer returns are processed immediately to prevent customer service issues (exchange or refund). Some CC1 (PM) companies submit EDD drugs to the regulatory body for disposal once every 3 to 4 years while some are processed once every 6 months. Short-dated drugs (3 to 6 months to expiration) are allocated to sales representatives to sell to retailers at a discounted price. Once the drugs become less than 1 month to expiration, the drugs will be withdrawn from circulation and destroyed.

The duration of time CC2 (PI) keeps EDD drugs before processing depends on the product type, expiry date, and receipt date. Short-dated drugs are usually quality checked, converted to a mandatory order, and then re-sold to customers within 3 months to expiry. This is aimed at reducing loss and maximising sales before the drugs completely expires. EDD drugs are stored under quarantine for an average of 6 months before the destruction exercise commences.

CC3 (PW) accepts wrongly-ordered drugs back from customers within 24 hours as long as they are untampered with. The return process is initiated immediately a customer returns a product to CC3 (PW). This is to avoid delay in refund, exchange or any required feedback. At CC3 (PW), SEDD drugs are usually returned from the retail outlet to the main warehouse on a weekly basis once identified during the daily, weekly or monthly audits and after managerial authorisation. EDD are quarantined for an average of one month before processing to allow time for consolidation and proper auditing. The frequency of SEDD drugs returns to suppliers varies according to product and return agreement. EDD drugs with no return agreement, depending on the company strategy will be destroyed in-house or forwarded to the RA for proper disposal.

CC4 (PR)'s customer returns occurs within 24 hours of purchase and are handled immediately for refund, exchange, and return to supplier or dispose. CC4 (PR) do not have any timeframe

for storing EDD drugs before processing. This can be attributed to the absence of regulatory enforcement. Stock checking is usually done on a bi-weekly and monthly basis to immediately retrieve SEDD drugs (2 to 3-month shelf-life) from shelf. This aimed to expedite the sales before expiry. EDD drugs are retrieved from stock as soon as they are discovered to prevent sales to customers. Once EDD drugs are returns to suppliers via the suppliers' sale representative, the duration of time EDD drugs remain at CC4 (PR) depends on the response time of the suppliers and the RA. The RA comes to CC4 (PR) every month or bi-monthly for collection of EDD drugs. This enables the RA to have control of EDD drugs and to retrieve any such batch from circulation if identified.

CC5 (HBP) processes customer returns immediately upon receipt at the pharmacy. On a daily basis, stock checking for SEDD drugs is conducted. Once SEDD drugs are identified, suppliers are contacted within an hour or a day of the maximum for collection and exchange arrangement. Short-dated drugs are dispensed at any available opportunity. Collection of EDD drugs takes place on a weekly basis. There is no standard timeframe on how long EDD drugs will be stored as the returns to suppliers depends on the RCA and time-frame agreed with suppliers. Table 7.23 summarises the similarities and differences of when key PRL activities are initiated at each case-category based on the empirical findings captured from each of the six case-categories of PSC stakeholders described above.

Table 7.23: Major Similarities and differences based on the when perspectives of PRL emerging from the cross case-category analysis of PRL practices

Theme/Case-Category	CC_1	CC_2	CC_3	CC_4	CC_5	CC_6
The When Perspectives of PRL	The duration of time SEDD drugs are stored before processing varies depending on type of reason for the return. Customer returns are processed immediately to prevent customer service issue (exchange or refund). Some manufacturers submit EDD drugs to the RA for disposal once every 3 to 4 year while some are processed once every 6 months.	The duration of time importers stores EDD drugs before processing depends on the product type, expiry date, and receipt date. Short-dated drugs are usually quality checked, converted to a mandatory order, and then re-sold to customers within 3 months to expiry. EDD drugs are stored under quarantine for an average of 6 months before destruction exercise commence.	CC_3 accepts drugs back from customers within 24 hours. The returned process is initiated immediately once product is returned. SEDD drugs are returned from the retail outlet back to the main warehouse on a weekly basis. EDD are quarantine for an average of one month before processing to allow time for consolidation and proper auditing. The frequency of SEDD drugs returns to suppliers varies per RCA	Customer return when necessary must occur within 24 hours of purchase and are handled immediately for refund, exchange, and return to supplier or dispose. Stock check is usually done on a bi-weekly and monthly basis to immediately retrieve SEDD drugs from shelf. EDD drugs are retrieved from stock immediately once discovered. The duration of time EDD drugs remain at the retail pharmacies depends on suppliers and the RA. The RA comes every month or bi-monthly for collection of EDD drugs.	Customer returns are processed immediately upon receipt. On a daily basis, stock check for SEDD drugs is conducted. Short-dated drugs are dispensed at any available opportunity. Collection of EDD drugs takes place on a weekly basis. The timeframe for returning EDD drugs to suppliers depends on the RCA	No Data

7.10 Improvement of PRL Practices

CC1 (PM) respondents considered the ERP systems and technologies to improve communication among channel partners, improve product traceability capabilities, control. CC1 (PM) encourages public awareness campaign on the adverse effect of drugs what end-users should do with SEDD drugs.

CC2 (PI) considers the improvement of its sales and order fulfilment strategy to ensure sale of drugs before expiring on stock. Procurement strategy should also be improved to reduce the quantity of slow-moving drugs imported and discontinuation of short-dated drugs procurement. The use of the ERP system to facilitate its inventory management, transactions and order fulfilment operations was also emphasised. CC2 (PI) engages in the training and re-training programmes for staff on various protocols to observe when handling drug returns. The management of PRL activities should be taken from sales representatives and be allocated to a separate department to manage. The PRL activities should therefore be handled directly by the CC2 (PI) as an effort to save cost, reduce inventory and improve the efficiency of the return process.

CC3 (PW) also considers the use of ERP system for managing inventory, order management and transactions. There should be managerial commitment to resolve customer service related issue relating to drug returns and the security of drugs in the warehouse and during transportation. Exploration of different measures to push short-dated and expired drugs out for sale. Some expired drugs (3 months after expiration) are re-audited, re-inspected, quality re-checked by the manufacturers. Once declared safe for consumption, the drugs will be re-marketed for re-sale. PRL practice can also be improved by expanding the geographical reach of the company; establishing more distribution centres and outlets in other geographical regions. This geographical expansion will help reduce over dependency on the central DC in Lagos State.

According to a CC4 (PR) respondent, using an appropriate means of disposing and destroying EDD drugs can be a viable way of improving PRL practices. It was also emphasised that the implementation of any improvement initiative will depend on the collective commitments of all stakeholders involved, especially the regulatory body, manufacturer, importer and retailers. Effective use of ERP, technology and communications systems is another way of improving the PRL activities, collaboration between customers and suppliers, as well as inventory control.

A respondent advocated improving the auditing processes to ensure that all drugs dispensed by CC4 (PR) are of high quality standard. This will reduce the volume of drugs flowing into the reverse chain. Other suggestions were improving the procurement strategy, and implementing a system to captures customer's feedback on product quality. The respondent suggested that if suppliers can be emailed earlier or pre-alerted in advance about drugs close to expiration, this would enable them to explore other sales channels for the drugs before they completely expire.

On the part of the customers, depending on the date, week or month the drugs will be completely consumed and expired, companies can proactively note customers' details at the point of sales so that customers can be reminded in advance about the expiry date of the drugs. This will enable customers to return the drug in time for exchange or for proper disposal.

A respondent also pointed out that it would also be beneficial to both the industry and the public health if all pharmacists and pharmaceutical companies were to adopt a standard PRL practices for managing drugs. The regulatory authorities should take a leading role in implementing and enforcing such standardised practices.

An important way of improving PRL practices is to pro-actively retrieve any compromised products from circulation and inject them into the appropriate reverse channel. CC4 (PR) can also improve its PRL practices by ensuring that all staff are as meticulous as possible in their professional duty. CC4 (PR) should also employ professionals capable of anchoring the mission statement of the organisation. These actions will mitigate the risk of staff making mistakes when dispensing drugs, thereby protecting the pharmaceutical ethics of the company.

Considering the current social-economic and political situation in the country, if all relevant stakeholders including the regulatory authorities perform their role efficiently e.g. conducting regular checks for compromised drugs, free of charge collection of expired drugs from pharmacies and destruction, PRL practices will be optimised. Companies should also engage more in public enlightenment campaigns on how SEDD drugs should be handled.

Investing in the implementation of an ERP system to facilitate the stock management process, maximising stock usage capability is a viable way of improving the PRL operations. Besides the use of technology and ERP systems, SOPs for managing SEDD drugs should be developed by all pharmaceutical companies, and implemented in alignment with the RG. PRL practices can also be improved by discontinuing the procurement of short-dated drugs. Fast-moving drugs should not be purchase at less than 6 months from their date of expiration while slow moving drugs should not be less than 12 months before expiration.

According to the respondent from CC6 (RA), it would be better for companies to submit EDD drugs for proper disposal instead of causing environmental and public health havoc. The colossal impact of EDD drugs getting into the wrong hands cannot be quantified.

7.11 Chapter Summary

Chapters four, five, and this chapter primarily constitute a report on the within case, within case-category, and cross case-category analysis conducted for this study. This chapter has specifically analysed and compared similarities and differences for each construct among the six PSC stakeholders (Case-categories) investigated. In the process six typologies of PRL processes were identified, along with related issues that characterised the Nigerian private sector PRL network.

A discussion of the implications of these results, how the triangulated empirical findings corroborate or contrast with extant literature and extent theories will be presented in the next

chapter. The overall conclusions and implications for further research will be drawn in Chapter Eight.

RESEARCH STAGE FIVE

CHAPTER EIGHT: DISCUSSION OF FINDINGS

8.1 Introduction

The cross case-category analysis (Phase Three Analysis) feeds into this chapter. Novel insight obtained from Chapter Seven's cross case-category analysis will be discussed in this chapter by linking the empirical findings to extant literature where possible. The findings will be thematically compared to the extant literature to examine the relationships between the empirical research and theory, hence, furthering the exploration of PRL practices, associated issues, and innovative ideas from the NPI's perspective.

It is immensely important to emphasize that this study's empirical evidence was generated from nineteen PCs operating in the private sector. Hence, the emergent concepts obtained are applicable to the PCs investigated. The fundamentals of RL, and the practices in the pharmaceuticals described in the literature review will be compared with the empirical evidence to ascertain whether the PRL practices employed by the sample companies corroborate extant literature or the case companies operate under a different RL fundamental.

Furthermore, this chapter also examines and compares relationships between analytical generalisations derived from the empirical data, and the existing literature to find out whether the major findings corroborate extant literature, extend extant theory or contradict and why. As a result, a typology of PRL practices will be mapped out to obtain an empirically informed and theoretically grounded insight.

8.2 History of PRL practices in the NPI

The empirical findings of this study revealed that PSC operations have been in existence in Nigeria since 1944. This corroborates extant literature findings discussed in section 2.9.1 as the advent of NPI began with some multinational companies having sales outlets in the country primarily to meet local pharmaceutical needs. This suggests a relatively long history of PSC operations, and arguably some level of PRL operations in the NPI. Reverse movement of drugs is arguably an inevitable aspect of business operations in a regulated industry, especially in the pharmaceutical industry, where EDD drugs cannot be reused or repaired, and must be retrieved from circulation for proper disposal.

8.3 Export Returns

The concept of ER is unique to this study although it exist in practice in several manufacturing industries, e-commerce and retail industries. The shipment (local and international) of finished products, work-in-progress products, raw materials are regulated by national, international and regional governmental regulations including industries. The empirical of this study however, revealed that there are no shipment of EDD drugs from CC1 (PM) back to subsidiaries or any suppliers outside Nigeria, neither are there any reverse shipment of imported drugs from CC2 (PI)/PIs back to suppliers outside Nigeria as depicted in Figure 8.1.

Empirical findings confirmed that the exportation of EDD drugs to any destination outside Nigeria is legally prohibited. This finding corroborates Ngwuluka, et al., (2011)'s claim that the exportation of EDD chemicals and pharmaceuticals out of Nigeria is illegal. This prohibition lead to attempts by some PCs to re-sell EDD drugs to unsuspecting customers, and in the event that they are unable to do so, the waste may be released into the environment and/or waters (Ngwuluka, et al., 2011).

Empirical findings that shows that many small scale PCs adopt the flushing of expired drugs down the drain and dumping at dump-site as method of disposal. There are however empirical evidences that PCs democratise sales and consumption of short-dated drugs before expiry. This strategy helps prevent wastage, and maintain sales via a pro-active re-distribution of drugs into the forward chain, especially where consumption is highest. This brings drugs within the reach of consumers with lower levels of disposable income, which ultimately reduces wastage.

This strategy is employed in other industries such as the fashion industry. The second-life business model not only reduces waste but also democratises consumption by bringing fashion within the reach of customers with lower levels of disposable income, thus addressing both tenets of the World Commission on Environment and Development (Loo-See et al., 2016).

Furthermore, empirical findings revealed that the absence of ER from other PSC stakeholders (PW, PR, HBP, RA etc.) can be attributed to the fact that their drugs are sourced from indigenous pharmaceutical suppliers. Hence, EDD drugs are either returned to suppliers locally, destroyed either in-house, or by the RAs.

Besides the legal prohibition of ER, the complexity and the cost of required logistical activities involved are secondary factors that inhibit potential ER operations. Irrespective of the source (foreign or indigenous) of drugs in circulation, reverse movement of SEDD drugs is restricted within the geographical boundary of Nigeria as depicted in Figure 8.1.

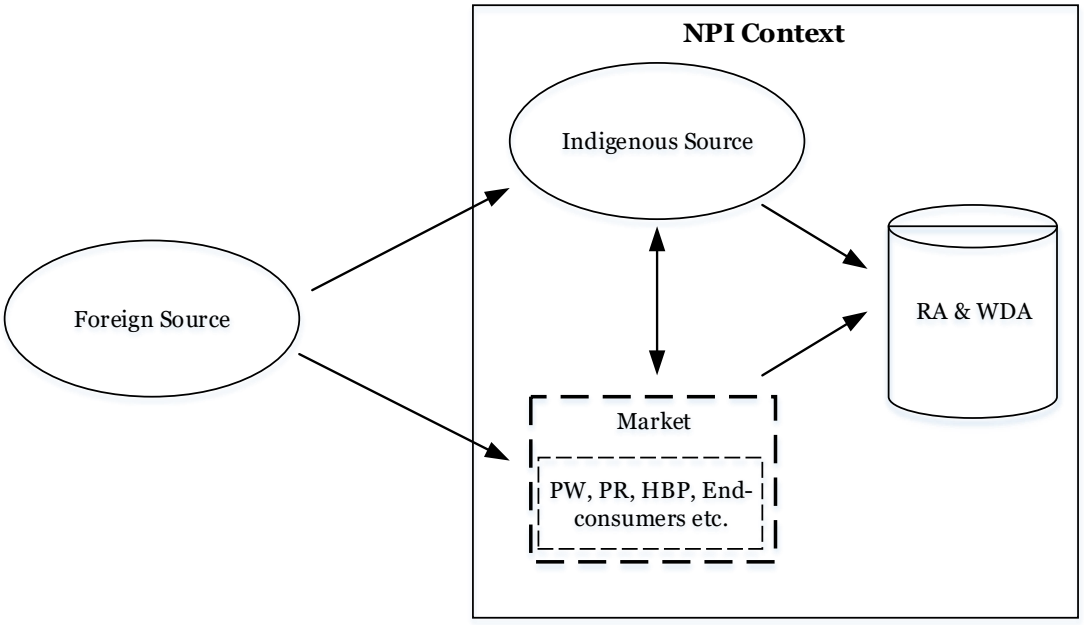

Figure 8.1: Product flow from sources into market and disposal

8.4 The Seven Perspectives of PRL

As discussed in section 2.8.5 (p. 383), De Brito and Dekker (2003) argued that the best approach to understand the fundamental content of RL and their interaction is to structurally analyse the topic from five essential perspectives: why (receiver), why (sender), how, what and who. The five perspectives were expanded by Xie and Breen (2014) by adding the "where perspective". The framework provides a structure for understanding issues related to RL, and visibility of the vast assortment of matters involved (De Brito & Dekker, 2003).

To develop a more holistic view on RL, this study further extends the RL framework by adding the "when perspective". The "when perspective" emerged from this study's research finding. As defined in section 5.3 (p. 236), the "when perspective" addresses more specific RL issues such as the frequency and times drugs enter the PRL network. In other words, the "when perspective" provides insight on when specific PRL activities (drugs returning, collection,

inspection, sorting, and recovery processes such as resale, reuse, redistribution, incineration, or proper disposal) are initiated both within the PCs, and across the PRL network.

Essentially the building blocks of the conceptual/theoretical framework employed in this study stemmed from the seven perspectives of PRL depicted in Figure 8.2 which has its origin from the RL framework proposed by De Brito, (2003) (Figure 2.10), designed for understanding the fundamental content of RL and their interactions.

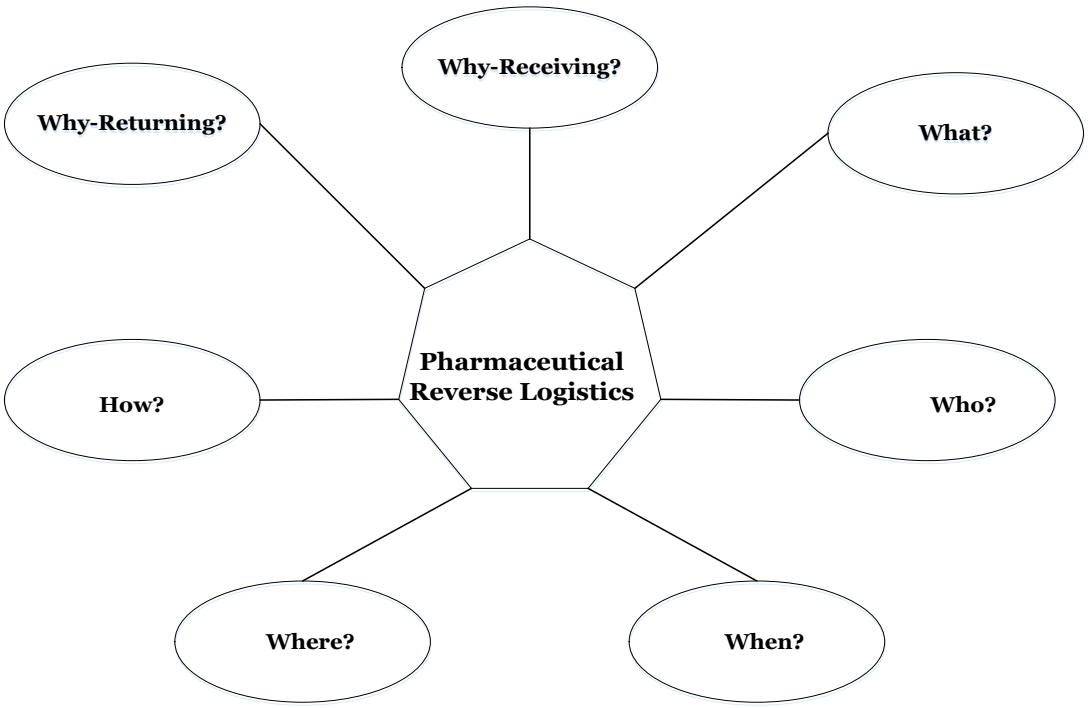

Figure 8.2: The Seven Perspectives of PRL

8.4.1 The "What Perspective" of PRL

In the literature, viewpoints on RL were obtained by considering what is actually being discarded or returned. De Brito and Dekker (2003) categorised types of product returned or discarded into three categories based on product composition, deterioration and use-pattern or re-usability.

Product composition refers to the number of components and of materials, how the materials and components are put together, the presence of hazardous materials, and material heterogeneity of the product. These are a few of the factors considered while designing products for recovery as they will affect the easiness of the re-processing processes and the economics of RL activities (Gungor & Gupta 1999; Goggin & Browne 2000). The intrinsic characteristics of a product are decisive for the recovery as they affect the economics of the whole RL process (De Brito & Dekker, 2003).

Product deterioration concerns how the product deteriorates, and the level of deterioration characteristics, which eventually cause the non-functioning of the product. In this case, the type of recovery options employed by companies is influenced by how the product deteriorates i.e. whether the product ages during usage (Intrinsic deterioration), whether all parts age equally or not (Homogeneity of deterioration), and whether the value of the product declines quickly (Economic deterioration) (De Brito & Dekker, 2003).

Product use-pattern or re-usability refers to the location, intensity and the duration of use. In this case, the intensity of usage and the location of the collection centres is determined by the source of the returns, which could be from the end-user, institution, retailers etc. (De Brito & Dekker, 2003).

In this study, a viewpoint on RL is also obtained by considering what is actually being discarded or returned into the PRL network. This is done by specifically considering the type and state of the drugs entering the PRL network, as well as the type and state of drugs leaving the PRL network. These characteristics make PRL either attractive or compulsory as the deterioration process eventually causes the non-functioning of the product, and makes it dangerous for consumption. This characterisation is similar to the product deterioration characteristics described by De Brito and Dekker (2003). The empirical findings of this study revealed that the state of the drugs in the PRL network strongly affect the recovery process adopted by PCs. Further details are discussed in the “How Perspective” section of this chapter.

Rogers and Tibben-Lembke (1998) argued that what is typically returned encompasses a vast area. From a retail perspective, returns can be classified into eight separate categories, namely, close outs, buy-outs, job-outs, surplus, defective, non-defective, salvage and returns. From a regulatory perspective, any product produced is subject to recall due to manufacturing defect, expiration, or for proper disposition and recycling, while from a competition and clean channel perspective, all old or obsolete products are subject to return into the RL flow (Khan & Subzwari, 2009).

Product Type and State

The empirical findings revealed that the type of product entering the PRL network are prescription based drugs and OTC drugs while the state of drugs entering the PRL network are untampered with drugs, short-dated drugs, expired drugs, damaged drugs (packaging material), defective drugs, left-over drugs, and counterfeit drugs as depicted in Figure 8.3.

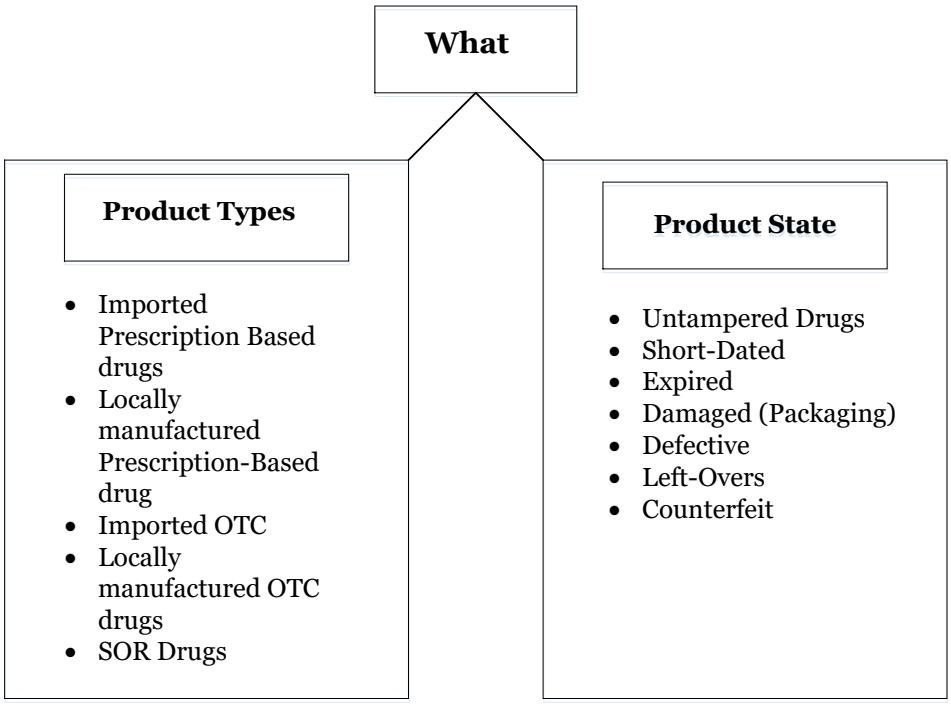

Figure 8.3: The typologies of "product state" and product types" for the "what perspective" adapted from De Brito (2003)

Untampered Drugs

The empirical findings show that some drugs entering the PRL network are untampered with. The drugs are, however, returned due to reasons such as customer change of mind, over-supply, wrong delivery, wrongly ordered, short-dated, expired, damaged, and defective. Drugs that are usable are quality checked, and re-introduced into the forward chain through re-sale to customers.

Short-dated Drugs

PMs, PIs, PRs, and HBPs confirmed that short-dated drugs are returned into their RL network. These drugs are often re-introduced into the forward chain via sale to internal and or external channel partners to be consumed before expiry, i.e. sale at discounted price to customers, donation to charitable organisations, and used as samples etc. These processes help maintain sales, democratise consumption, and reduce wastage.

Expired Drugs

All the PSC stakeholders confirmed that expired drugs enter into their PRL network. Due to the nature of drugs, the only process recovery option for expired drugs is destruction and proper disposal. In some cases, the destruction and disposal exercises are conducted internally (locally) under the supervision of the RA, in other externally by the WDA or by the RA while some drug are destroyed internally (locally) without the RA's supervision or authorisation.

Damaged Drugs

PIs, PWs, PRs, and HBPs confirmed that damaged drugs are returned into the PRL network. The damage is often associated with the packaging material (Carton). In this case, the drugs are often re-packed and re-introduced into the forward chain by re-sale. As a result, damaged drugs are not submitted to the RA as value is often recaptured through the repairing the packaging material, re-packing of the drugs, and re-sale to customers.

Defective Drugs

According to the MHRA (2005), a defective drug is one that proves to be harmful under normal conditions or is lacking in therapeutic efficacy, or where the qualitative and quantitative composition of the product is not as declared, the controls on the medicinal product and/or on the ingredients and the controls at an intermediate stage of the manufacturing process have not been carried out or if some other requirement or obligation relating to the grant of the manufacturing authorisation has not been fulfilled.

All the PSC stakeholders confirmed that defective drugs enter into their PRL network. Due to the nature of drugs, the only process recovery option for defective drugs is destruction and proper disposal. The destruction and disposal exercises may be conducted internally (locally) under the supervision of the RA, externally by the WDA or by the RA or internally (locally) without the RA's supervision or authorisation.

8.4.2 The "Why Perspective" of PRL (Receiver)

Companies generally engage in RL because the operation is profitable, because the law requires them to do so, or/and because they "feel" socially motivated to do it. These driving factors have been categorised by De Brito and Dekker (2003) under three main headings: Economics, Legislative, and Corporate citizenship. They also pointed out that these factors are not mutually exclusive drivers, and it is sometimes difficult in practice to set boundaries between them.

As De Brito and Dekker (2003)'s conclusion is largely influenced by European based scholars and practitioners, it is important to consider the view point of Sarkis et al. (2010)'s who suggested that cultural, legal, social, political and a host of other macro-environmental variables differ by location. Hence, research findings pertinent to a certain region may not be fully applicable in other regions and locales (Sarkis et al., 2010). This therefore suggests that

RL drivers in the Nigerian geographical context might differ from those suggested by De Brito and Dekker (2003). What is the situation in the NPI context?

RL in the pharmaceutical industry is extremely important from an economic, regulatory, social and environmental point of view (Kabir, 2013). The triangulated empirical findings of this study confirmed that PRL practices of the selected PCs are driven by economic reasons (sales maximisation, and consumption democratisation), need to fulfil contractual obligations, compliance to regulatory requirement, protection of brand-image, maintenance of supplier/customer relationship and customer satisfaction, accountability and control of transactions, reduction of customer returns, prevention of drug abuse, proper disposal, good corporate reputation, and ecological reasons. This is consistent to other researchers' findings discussed in section 2.4.3 (p. 59 – 61) that RL activities are influenced by intra-organisational factors and environmental forces.

Figure 8.4 summarises the typology of reasons the investigated PCs receive/accept drugs back from customers. These reasons (driving forces) are categorised under the driving triangle of RL: economics, legislative, and corporate citizenship proposed by De Brito and Dekker (2003). The empirical findings are also supported by Dowlatshahi's (2000) holistic view of RL which states that the critical strategic factors for the successful implementation of RL consist of strategic cost, overall quality, customer service, environmental concerns, and legislative concerns. These factors are critical and must be considered before operational factors (Dowlatshahi, 2000).

The three driving forces signify the influence of internal and external stakeholders on PRL practices as stated in the descriptive nature of the stakeholder theory. Carter and Ellram (1998) portrayed these stakeholders as internal and external factors that drive and constrain RL activities. Hence, confirming the instrumental nature of the stakeholder theory. Who these stakeholders are is discussed in details within the context of the "who perspective" section of this chapter.

Figure 8.44: The typology of "Reasons for receiving" in the Nigerian Pharmaceutical Context adapted from De Brito (2003)

Now, let us go into more detail of reasons PCs (Receivers) engages in PRL based on empirical findings and the corresponding strategic drivers identified from extant literature.

Economics

The economic drivers embrace among others, direct gains such as input materials, cost reduction, value-added recovery; and indirect gains such as anticipating or impeding legislation, market protection, green image, improved customer/supplier relations etc. (De Brito & Dekker, 2003). A RL programme can bring direct gains to companies from reducing the use of raw materials, from adding value with recovery (repair, reuse, resale), or from reducing disposal costs.

Contractual Obligation

As depicted in Figure 8.4, fulfilling contractual obligation is one of the economic drivers of PRL. PCs investigated confirmed that PRL are implemented mainly to fulfil their contractual

obligation with their channel partners. HBP and RA however did not mention contractual obligations as a factor but highlighted other factors. This difference of factors can be attributed to the fact that RA is a regulatory body, and part of its responsibility is to ensure proper disposal of EDD drugs while HBPs engage in PRL so as to maintain good customer relationship and satisfaction, accountability and control of transactions.

Sale and Revenue

PW and PM confirmed that maintaining and maximising sales is one of the major drivers of their engagement in PRL operation. As both PCs interface directly with B2C customers and end-consumers, product return is inevitable. Hence, they implement systems to boost inventory turnover, sales, and re-sale of returned and short-dated stock. This direct recovery process ultimately in PRL therefore helps minimise revenue loss, and maintain sales. The shareholders' profit maximization goal requires cost control and increased profit, which may be obtained through handling recalls and reuse of material (Álvarez-Gil et al., 2007).

The research findings of this study confirm these views as some PCs in Nigeria engage in PRL practices in order to reduce unnecessary wastage by democratising consumption. This implies pro-actively selling/dispensing short-dated drugs (on-shelf or returned) at a discounted price to customers with lower levels of disposable income, or bringing short-dated drugs into appropriate channels where consumption before expiration will mostly likely occur. These PRL practices result in direct gains and mitigate unnecessary wastage due to stock expiry.

Brand Image

Where there is no clear or immediate expected profit, an organisation can get (more) involved with RL because of marketing, competition and/or strategic issues, from which are expected indirect gains (De Brito & Dekker, 2003). Empirical evidence showed that PM and PI engage in PRL to achieve indirect gains via brand protection, i.e. brand image protection is one of the factor that drives the implementation of PRL. These companies produce and market drugs and

are responsible for the entire life cycle of the drugs. Hence, to protect their brand image, and corporate reputation, PRL is implemented to ensure that EDD drugs are kept out of circulation.

In the face of competition, a company may engage in RL (product recovery) to prevent other companies from getting its technology, to prevent other companies from entering the market, or as part of an image build-up operation, or to improve customer/supplier relations (De Brito & Dekker, 2003). The empirical evidence from this study supports and confirms these views.

Customer Relationship and Satisfaction

Where there is no clear or immediate expected profit, an organisation can get (more) involved with RL because of marketing, competition and/or strategic issues, from which indirect gains are expected (De Brito & Dekker, 2003). Empirical evidences from this study revealed that PCs engage in PRL to achieve indirect economic gains via the acceptance of customer returns when necessary for exchange or for refund. To ensure an efficient and effective physical movement of the returned drugs, and related transactions, PRL systems are implemented. This process ultimately help facilitates customer satisfaction, cordial customer/supplier relationship, and trust between channel partners.

Accountability and Control

PI and HBP implements PRL systems or engage in PRL operations in order to maintain accountability and control of inventory, returns, and related stock reconciliation transactions. The implementation of PRL operations provides transparency and visibility on drugs returned, expired drugs, short-dated drugs, and saleable drugs inventory. The PRL operation also facilitate and enhances the efficiency of transactions involved in refund, invoicing, and stock reconciliation processes.

Customer Returns Reduction

PW and PR confirmed the implementation of PRL management in order to reduce customer return. Internal weekly and periodic stock checks are conducted at their retail outlets, and warehouses to ensure short-dated and expired drugs are removed from shelf/inventory, and

then processed using the appropriate recovery option (Direct Recovery and Process Recovery). This PRL operation therefore helps reduce the chances of dispensing or selling short-dated and expired drugs to customers, which ultimately reduces the chances of drugs being returned from customers.

Legislation

Legislation refers here to any jurisdiction requiring company to recover its products or accept them back (De Brito & Dekker 2003). In many developed countries, customers have the right to return products purchased. Thus, companies are legally obliged to give the customers the opportunity to send back merchandize. This boosts customer satisfaction and experience, and present companies with an opportunity to attract customers, hence, bringing in-direct economic gain to the company in addition to their compliance to regulatory requirement.

According to the Basel Declaration (1999), healthcare establishments owe it as a duty to the environment and public health to abide by member States' obligation under the Basel convention. The agreement states that it is the responsibility of healthcare establishments to treat and dispose wastes generated by them in a manner that would have no adverse health or environmental effects (Ngwuluka et al., 2009).

This study's empirical findings, however, show no evidence that the PRL operations of PC in Nigeria are under such an obligation or greatly influenced by regulatory requirements. In developing countries such as Nigeria, international regulatory policy requiring PCs to be accountable and responsible for the proper management, treatment and disposal of their waste is yet to be implemented (Ngwuluka et al., 2009). CC3 (PW) and CC4 (PR) do not necessarily practise PRL because of regulation requirements, but rather mainly to fulfil their contractual obligation, to adhere to their professional ethics, to maintain customer satisfaction, for brand-image protection, to optimise sales and revenue, accountability and control of transactions, to prevent drug abuse, for proper disposal, to enhance corporate reputation, and for environmental protection.

This implies that legislation has very little influence on why PCs engage in PRL practices in Nigeria as they are motivated by other forces. This lack of significance can be attributed to the inadequate regulatory policy, knowledge of RG, and enforcement. According to Ngwuluka et al. (2011), this could as well be an indicator that the federal and state governments are yet to make waste management a priority. CC6 (RA) being a regulatory institution accepts submitted drugs for regulatory reasons such as laboratory analysis, registration, and confiscation purposes.

Corporate Citizenship

Corporate citizenship concerns a set of values or principles that impel a firm to become responsibly engaged with RL (De Brito & Dekker 2003). It is also referred to as the search for sustainable development from an environmental and social point of view (Álvarez-Gil et al., 2007). All PCs investigated implements PRL due to different reasons directly or indirectly related to corporate citizenship objectives.

Drug Abuse Prevention

Empirical finding revealed that PWs, PRs, HBP, and the RA accepts drugs back from customers/clients, and engage in PRL in order to eliminate EDD drugs from shelf/inventory, and circulation, prevent these compromised drugs from getting into the wrong hands, and ultimately mitigate the risk of drug abuse. Based on the afore-stated definition, this is an attribute of companies' corporate citizenship initiative.

Proper Disposal and Environment Protection

Some companies are only concerned with RL as it relates to product return to their suppliers, this mentality is rapidly changing as environmental and regulatory considerations are now having greater impact on their logistics decisions (Rogers & Tibben-Lembke 1998). According to a US based-survey conducted by Rogers and Tibben-Lembke (1998), over 28.9% of the respondents cited legal disposal issues as their reason for implementing RL. Empirical finding also corroborate this trend as the PM, PW, and RA investigated accepts drugs back from

customers, and engage in PRL in order to eradicate EDD from circulation, and prevent the improper disposal of EDD drugs, which can be hazardous to the environment if not processed appropriately.

Professional Ethics and Corporate Reputation

Empirical findings revealed that some PCs in the Nigerian pharma accept drugs back from customers, and engage in PRL in order to adhere to their professional, and industry ethics as well as to maintain a good corporate reputation. Hence, this directly or indirectly enhances customer satisfaction, societal developments, environmental protection and the mitigation of the environmental impact of their supply chain activities.

These motivations are all associated with PCs' effort to achieve good corporate citizenship including CSR, and sustainability objectives. A sustainable organisation is one that contributes to sustainable development by simultaneously delivering economic, social and environmental benefits (Markley & Davis, 2007). The sustainability goal addressed through RL is beneficial to pharmaceutical companies with end-of-life products (Kabir, 2013).

The aforementioned empirical findings revealed that PCs in Nigeria engage in PRL for multiple reasons, which make it hard to set the boundary between the strategic factors (Economic, legislative, and Corporate Citizenship). For example, CC1 (PM) accepts drugs back from customers based on contractual obligation. At the same time, this transaction is also perceived as an opportunity to meet regulatory requirements, adhere to professional ethics, prevent improper disposal, maintain corporate reputation, protect brand image and maintain customer satisfaction, bringing economic, legislative and corporate citizenship benefits to the company. These findings correspond to the triple bottom line framework developed by Elkington (2004), depicted in Figure 2.6 and discussed in section 2.8.5 of this thesis.

In the light of the aforementioned forces driving PRL, empirical findings also reveal that PCs do not accept drugs back from customers if the drug has been tampered with, if there is no RCA in place, and there is no proof of purchase (POP) to facilitate the RL process. Furthermore,

drugs are not accepted back if customers lack a cogent reason for the return. Rogers and Tibben-Lembke (1998) however stated that European firms are required by law to take back transport packaging used for their product. Europe (The Netherlands and Germany) has a strong environmental tradition, both in legislative terms and with respect to the concerns of their societies, while the US is characterized by its liberal returns policy (Rubio et al, 2008).

8.4.3 The "Why Perspectives" of PRL (Sender)

Having discussed the factors motivating PCs (Receivers) to accept drugs back into the PRL network, it is necessary to identify the key reasons drugs are returned by customers (Senders). According to De Brito and Dekker (2003), products are generally returned or discarded either because they are malfunctioning or do not function anymore, or they or their function are no longer needed.

Somuyiwa and Adebayo (2014) identified the key reasons for customer returns as defective products, unwanted products, liberal return policies, incorrect products, warrantee returns, and damaged products. De Brito and Dekker (2003) further categorised the types of reasons why senders return products into the RL network according to the senders' hierarchy in the PSC network; starting with manufacturing (manufacturing returns), going to distribution (distribution return) until the products reach the end-customer (customer returns).

This study adopts the aforementioned method of categorisation as depicted in Figure 8.5, which summarizes the typology of reasons Senders return drugs to the suppliers.

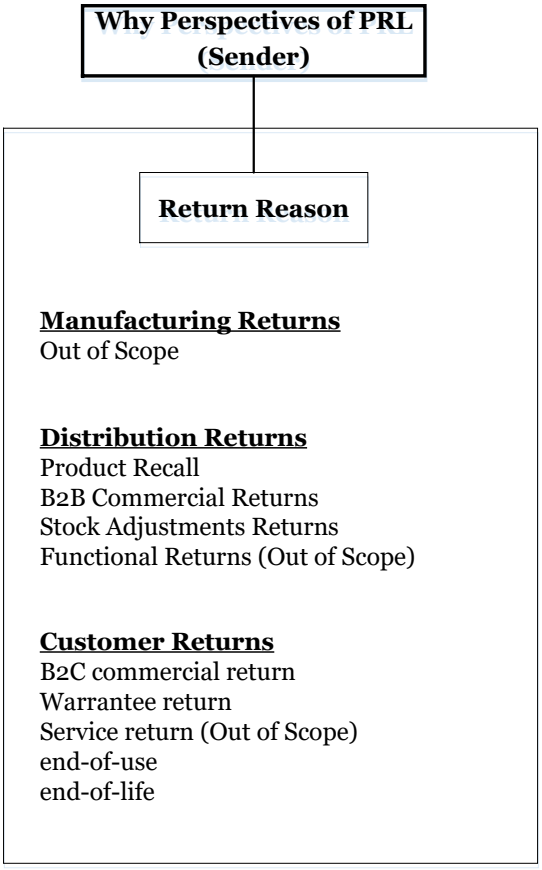

Figure 8.5: The typology of "return reason" based on PSC hierarchy adapted from De Brito (2003)

Let us now go into more detail of the three typologies of the senders' PSC hierarchy obtained from extant literature, and Senders' reasons for returning drugs back to suppliers based on the empirical findings of this study.

Manufacturing Returns

As discussed in Chapter Two of this thesis, manufacturing returns are returns recovered during the production phase; they consist of unutilised raw materials remaining after production is completed, intermediate or finished products that failed quality checks and require rework, production left-overs and by-products derived during production (De Brito & Dekker, 2003). The scope of this study, however, did not cover returns recovered during the production phase (manufacturing return). Instead, this study focused on finished drugs

(Quality and Market Released) with the PRL networks of PCs operating in the B2B sector of the NPI.

The empirical findings of this study revealed that customers return drugs to PM due to expiration, damage, lack of sale, too short remaining shelf life, and adverse events. As these customers' returns to PM are not initiated during the production phase, these types of return will be classified either as distribution returns or customer returns.

Distribution Returns

Distribution returns refers to all those returns that are initiated during the distribution phase of finished products, and can be categorised into product recalls, B2B commercial returns, stock adjustments, and functional returns (De Brito and Dekker, 2003).

Product Recalls

This is a type of return whereby drugs are recollected or returned by senders because of safety or health problems with the products. The PM or the supplier of the drugs usually initiates, and drives this type of return. Empirical evidences from this study revealed that occasionally, drugs are returned by senders due to product recall (defective drugs).

B2B Commercial Returns

These are drugs returned by Senders (B2B customers) such as retailer, wholesalers, hospital pharmacies to their suppliers based on the RCA. The empirical evidence of this study revealed that wrongly delivered drugs, damaged deliveries, drugs with a too short remaining shelf life, expired drugs and unsold products are returned to suppliers by B2B customers. For example, CC3 (PW) returns drugs to suppliers if discovered damaged, or defective, or in case of over-supply or wrong delivery. CC5 (HBP) return drugs to suppliers due to product quality issues,

and SEDD for refund and exchange. The PRL process involves drive sales and eliminates EDD drugs from shelf and inventory.

Stock Adjustments Returns

This is a type of returns that occur during stock re-distribution, i.e. the returns occur when PC re-distributes stocks between its warehouses, and retail outlets (De Brito & Dekker, 2003). This is often associated with seasonal products, and products with varying demand. Drug demand variation is typically not driven by seasonality. Empirical findings from this study revealed that drugs are returned from PCs' retail outlets to the DC and vice versa. There is also movement or transfer of drugs between retail outlets of PCs e.g. PW, PR, HBP etc. to facilitate sales and consumption before expiry as well as to re-allocate stock to meet unforecasted market demand from different outlets.

Empirical findings also revealed that returned drugs from customers and short-dated drugs in the inventory are often re-introduced into the forward chain including channel partners where the drugs will be consumed before expiry. Drugs are also returned by customers via the suppliers' sales representative. In this case, the sales representative executes the return process in order to ensure that returned drugs are invoiced correctly, and sock reconciliation activities performed correctly. These types of return corroborate extant literature and are classified as stock adjustment returns (SAR).

Functional Returns

This type of distribution return concerns all products whose inherent function makes them go back and forward in the chain. A classic example of such returns are distribution carriers such as pallets, crates, containers and packaging. This study did not investigate this type of returns as the focus is mainly on the PRL of finished drugs in the B2B sector of the NPI. Nevertheless, product recall, commercial returns, stock adjustment returns, functional returns are all

classified as distribution returns as they are all initiated during the distribution phase of products.

Customer Returns

Customer returns are those returns initiated once the product has at least reached the final customer/end-consumer (De Brito & Dekker, 2003). Empirical finding reveal that CC1 (PM) and CC2 (PI) engage only in B2B business transaction, i.e. sale of drugs to wholesalers, community pharmacies, hospital pharmacies, public hospitals, NGOs etc., while CC3 (PW), CC4 (PR), and CC5 (HBP) engage in both B2B and B2C transaction, i.e. sale/dispensing of drugs both to PCs and end-consumers. End-consumers in this case normally return drugs to CC3 (PW), CC4 (PR), and CC5 (HBP) for exchange or refund due to quality issues encountered (packaging), customer change of mind, short-dated, expiry, wrongly ordered, over-supply, and manufacturing defect. Patients' left-over drugs at the hospital are also returned to the hospital pharmacy through the nurses (CC5) for re-use.

<u>B2C commercial return</u>

According to De Brito and Dekker (2003), customers return product due to a variety of reasons namely, B2C commercial returns (reimbursement guarantees); warranty returns; service returns (repairs, spare-parts…); end-of-use returns; end-of-life returns. The empirical findings of this study revealed that B2C commercial return occurs when customers change their mind about purchasing a drug, it is wrongly ordered, or their needs and expectations are not met, and for proper disposal. This kind of return commonly occurs shortly after the customer acquires or purchases the drug. In this case refund or exchange is often executed based on the supplier's take-back policy, and RCA.

Warranty and Service returns

These returns are initiated due to incorrect functioning of the product during use, or to a service that is associated with the product and from which the customer can benefit (De Brito & Dekker, 2003). In the e-commerce and consumer electronic industry for example, sometimes returns can be repaired, and the customer gets refunded or gets a new product in exchange. After the warranty period has expired, customers can still benefit from maintenance or repair services, but no longer have a right to get a substitute product for free.

Based on their nature, drugs cannot be repaired or refurbished; only the packaging can be replaced if damaged. Expired and defective drugs are simply destroyed and properly disposed. The need for destruction has been identified to be associated to the inability or difficult constraints of regulated facilities of manufacturers to ensure pharmaceuticals were handled properly after leaving their control and to ensure a secure chain of custody (Kabir, 2013).

The empirical findings of this study revealed that drugs that cause adverse effect are returned by customers and are categorised as warranty returns; some end-consumers return drugs to CC3 (PW), CC4 (PR), and CC5 (HBP) due to the adverse effects encountered as a result of usage. Service returns of drugs are non-existent at the PCs investigated; this can be attributed to the fact that drugs cannot be repaired or refurbished.

End-of-use returns

These are products returned in situations where the user has a return opportunity at a certain life stage of the product (De Brito & Dekker, 2003). Examples of such products are leasing cases and returnable containers like bottles, or used books. The empirical findings of this study revealed that some drugs are left behind by patients admitted at hospitals, clinics etc. and are returned to the HBP via the hospital nurses. There is also evidence that medical/pharmaceutical devices are sometimes returned to the supplier for refurbishment or

repair. This type of return can be classified as end-of-use returns but it is outside the scope of this study.

End-of-life returns

These are the type of returns whereby the products are at the end of their economic or physical life. They are either returned to the manufacturers or suppliers because of legal product-takeback obligations, RCA or collected by companies like brokers for value-added recovery (De Brito and Dekker, 2003). This study's empirical findings revealed that expired and damaged drugs are returned by customers to their suppliers. Due to the chemical nature of drugs, they are either destroyed in-house by the suppliers or submitted to the RA for proper disposal to be carried out.

Empirical findings revealed that the ecological impact of improper drug disposal is not a factors considered by PCs when selecting PRL and drug disposal strategies. This corroborates Saha and Darnton's (2005) argument that the fundamental reasons companies implement green logistics is not due to a genuine concern for the environment but mainly in response to governmental legislation, non-governmental organisations (NGO), customer satisfaction, business expansion, cost savings, and corporate image. Consumerism activities in Nigeria are at low level compared to that of the developed countries; thus, firms are not under any pressure to be environmentally friendly (Oko and Nkamnebe, 2013). Table 8.1 summarizes the "why perspective" of PRL in the NPI context both from the receiver's and the supplier's viewpoint.

Table 8.1: The Why Perspective Framework of PRL practices in the NPI

Strategic Factors		**Strategic Cost, Overall Quality, Customer Service**	**Legislative Concern**	**Environmental Concern**
The 3 RL Triangle		**Economics**	**Legislative**	**Corporate citizenship**
The Why PRL Perspective (Receiver)	In-direct gain	*To fulfil contractual obligation,*	*To fulfil contractual obligation, To comply with regulatory requirement*	*To prevent drug abuse*
	Direct gain	*To maximise sales and democratise consumption*		*For proper disposal*
	Direct gain	*To optimise sales and revenue*		*Maintain a good corporate reputation*
	In-direct gain	*To protect the brand-image*		*To protect the environment*
	In-direct gain	*To maintain good customer relationship and satisfaction*		*To adhere to their professional ethics*
	In-direct gain	*To maintain accountability and control of transactions*		
	In-direct gain	*To reduce customer returns*		
	In-direct gain	*To reduce unnecessary wastage*		
	In-direct gain	*To prevent EDD drugs from circulation*		*To prevent EDD drugs from circulation*
The Why PRL Perspective (Sender)	**Manufacturing Returns**		*For Proper Disposal*	*For Proper Disposal*
	Out of scope			
	Distribution Returns			
	Product Recall			
	B2B Commercial Returns			
	Wrongly delivered drugs, damaged deliveries, drugs with a too short remaining shelf life			
	Expired drugs, slow-moving, defective, over-supply			
	Product quality issues, to prevent loss of revenue, to drive sales			
	To eliminate SEDD drugs from inventory, and risk of dispensing EDD drugs			
	To prevent loss of investment			
	For destruction and proper disposal			
	Stock Adjustments Returns			
	to facilitate sales before expiry and to allocate stock appropriately to meet demand.			
	to ensure invoicing, sales record, and sock reconciliation			
	Functional Returns			
	Out of scope			
	Customer Returns			
	B2C commercial return			
	For exchange or refund due to quality issue encountered (packaging),			
	Customer change of mind about the purchase, customer already have the drug at home			
	Short-dated (RCA), wrongly ordered, over-supply			
	Slow-moving drugs on SOR, manufacturing defect			
	warranty return			
	Quality issue, Manufacturing defect, Adverse effect			
	service return			
	Out of scope			
	end-of-use			
	Patients' left-over drugs for re-use			
	end-of-life			
	Expired drugs			

The empirical findings also reveal that EDD drugs not returned by senders due to the operating model and nature of the contractual agreement with the customers (Distributors). Once there

is no contractual provision for return, customers will not have the right to return SEDD drugs suppliers. Furthermore, PM and PIs do not return drugs to suppliers due to the legal prohibition on exporting SEDD drugs.

Some PCs also do not return drugs to suppliers because they democratise consumption by pro-active introduction of short-dated drugs into high consumption rate channels. Empirical evidence also revealed that drugs are not returned by end-users if used or partly used, if satisfied with the drug, or they forget to return left-overs.

8.4.4 The "How Perspective" of PRL

This section discusses how PRL works in practice based on the empirical findings obtained from the field of study, and extant literature on RL. Traditionally, RL is triggered by customers returning defective products to the retail stores, which, acting as "gatekeepers", would in turn return them to their consolidation centres or suppliers (Atasu et al., 2013). The consolidation centre would normally decide whether the returned goods could be used for the purpose of recapturing value as giveaways or bonus packs to customers or charitable organisations or be returned to the manufacturer for reconditioning or refurbishment or otherwise be destroyed or appropriately disposed of (Loo-See et al., 2016).

A viewpoint of RL can therefore be obtained by considering how key processes/activities are carried out in RL systems and how value is recovered in the reverse chain (De Brito & Dekker (2003). According to Schwartz (2000) and Tibben-Lembke and Rogers (1998), every RL system should include the following key functions: gatekeeping, collection, sortation and disposition. Steven (2004) argued that RL can be decomposed in several steps: collections, Transportation and Transhipment, warehousing, sorting, and processing activities.

The empirical findings of this study revealed that key PRL activities around drug returning are collection (gatekeeping/inspection), transporting, warehousing, inspection, sorting, and recovery processes such as re-sale, re-use, re-distribution, and disposal (flushed down the drain, buried, incineration, open-air burning etc.). These empirical findings corroborate

extant literature such as Schwartz (2000), Steven (2004), Tibben-Lembke and Rogers (1998), Atasu et al., (2013), Loo-See et al., (2016), De Brito (2003), De Brito and Dekker (2003) as well as Somuyiwa and Adebayo (2014) who also highlighted that key RL activities can be outsourced or managed in-house.

De Brito (2003) also supported these findings and confirmed the two types of recovery options, namely Direct recovery and Process recovery. Figure 8.6 depicts the typologies of key PRL processes and two types of recovery options based on the empirical findings. Although De Brito (2003) rightly highlighted that process recovery includes repair, refurbishing, remanufacturing, retrieval, recycling, and incineration, this study argued that the process of recovery in the NPI comprises only the disposal option (flushed down the drain, buried, incineration, open-air burning etc.) as depicted in Figure 8.6. Pharmaceuticals are not like consumer electronics where recalled or returned products can be repaired, resold, recycled, or donated. Recalled or returned pharmaceuticals (expired, defective), in contrast, are destroyed, and properly disposed.

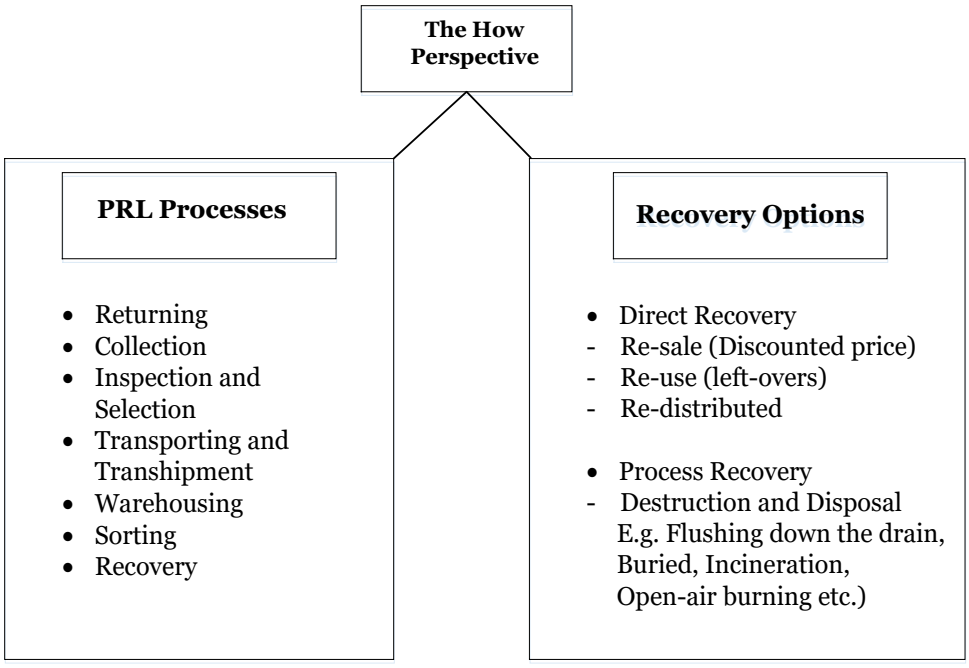

Figure 8.6: Typologies of PRL Processes and Recovery Options adapted from De Brito (2003)

Based on the empirical findings of this study, six different PRL process flow (the How perspective of PRL) were identified, and each PRL process flow provides category-specific insight on how PRL operations are carried out by the PSC stakeholders investigated. As these PRL process flows per case-category have been presented in section 7.9.4 of this thesis, let us now discuss the key activities that make up the PRL operations in relation to extant literature on RL.

Returning

The process of returning drugs has not been identified, considered, or discussed in extant literature as a separate key process in PRL operations. Rather, it has been collectively addressed as the collection process; Steven (2004) argued that RL can be decomposed into several steps as collections, transportation and transhipment, warehousing, sorting, and processing activities. From the Sender's perspective, this study, however, suggests that the return process differs from the collection process in PRL.

Hence, this study argues that the drug returning process in PRL comprises activities carried out by customers in getting products back to the point of purchase (collection point). The empirical findings therefore confirmed that drugs are physically returned to PCs by internal customers such as the ROLs, satellite outlets etc., intermediaries such as PC's Sales Representatives, and from external customers such as PW, PR, HBP, and end-consumers. This therefore further implies that the return process in PRL operations is specifically characterised by all customers' activities involved in the reverse movement of drugs from internal and external sources.

Collection

This process comprises all activities required to gather the products, which may be distributed over a wide area (Steven, 2004). Collection assembles the products for the RL system (Tibben-Lembke & Rogers, 1998). In this study, collection is a process initiated by PCs (Receiver).

Empirical findings revealed that PMs receive/collect drugs returned by customers at their collection point (CW/DC). PIs' sales representatives are responsible for the arrangement of collections from customers' facilities, and then courier them to the CW/DC. PWs receive/collect drugs returned by customers at their ROL, consolidate them with on-stock SEDD drugs, and then forward them to the DC for exchange and appropriate processing.

PR also accept/collect returned by customers at their ROL for exchange and refund while HBP accept/collect drugs returned by patients and those returned from the satellite pharmacies at the pharmacy main store. The RA collects drugs submitted by clients at their designated collection facility while WDA arranges collection of EDD drugs from PCs' facility based on the service agreement.

This suggests that collection activities are performed either at PCs' own collection point, or at customers' collection point depending on the contractual agreement. Collection activities by the RA are conducted at the RA's collection point or conducted by the WDA at the client's collection point.

Gatekeeping and Inspection

This function is an integral part of the collection process. The gatekeeping process screens or determines which products to allow into the RL network/pipeline. Gatekeeping is basically the screening of defective and unwarranted returned merchandise at the entry point into the RL process (Tibben-Lembke & Rogers, 1998). Based on the empirical findings of this study, the gatekeeping process generally comprises the following basic activities:

1. Check the proof of purchase given by the customer, i.e. the receipt issued at the point of sale;
2. Check if the returned drug matches the description stated on the receipt;
3. Check if the drug is returned within the allowed time window;
4. Check the physical condition of the returned drug to ensure that it is untampered;
5. Identify the customer's reason for return

These gatekeeping activities are a major factor that makes the entire reverse flow of drugs manageable and profitable (Tibben-Lembke & Rogers, 1998). The inspection exercise is sometimes part of the gatekeeping process, and sometimes done separately depending on the company's strategy. Returned and on-stock drugs are quality assessed to inform the type of recovery to be executed.

Empirical findings revealed that majority of PMs, PIs, PWs, PRs, HBP have procedures in place for the collection, sorting, storing and processing of returned and SEDD drugs. The inventory controller at PMs conducts the in-house gatekeeping, and reports the shelf-life of stock to relevant stakeholders such as marketing, operations department etc., who decide the next course of action. Gatekeeping and inspection are also conducted once customers' returns are received at the DC. On-stock EDD drugs are usually separated from stock for a decision to be made on the type of recovery to be implemented.

Not all PI, PR, and HBP have procedures in place for the PRL operations, due to lack of management commitment, and the business model. Gatekeeping is however conducted by the sales representatives, who then initiate the return of the drugs from customers to the CW for further processing and reimbursement. Gatekeeping is also conducted upon receipt at the CW, and the drugs inspected in order to determine the appropriate recovery option.

PWs' registered pharmacist coordinates the PRL activities at the ROLs while the gatekeeping operations are conducted by sales personnel once drugs are returned by customers. In-house gatekeeping is also conducted by store pharmacists via the monthly shelf/inventory stock checks for SEDD drug. Identified SEDD drugs are forwarded to the CW for exchange, and for further processing. Further gatekeeping are also conducted at the CW by auditors once the drugs are received which determines the next course of action.

Gatekeeping by PR is initiated once customers request a return authorisation. Based on the outcome of the screening process, the store pharmacist instructs customers to return the drug or sends a representative to collect the drugs from the customer. Once collected, the drug undergoes inspection in order to determine the appropriate recovery option. PR also conducts a daily, weekly or monthly stock check (Gatekeeping and Inspection). Short-dated drugs (1 to 8 shelf-life) are removed from the standard shelf and reported to the store pharmacist immediately for recovery option to be advised.

Gatekeeping and inspection activities are conducted on a daily, weekly, and quarterly basis at the HBP's main store and satellite stores. Depending on the outcome of the exercise, recovery options are implemented. EDD drugs are usually removed from stock, quantified, and documented before implementing the process recovery option.

As all companies involved in the business of regulated products are mandated to maintain EDD drug-free inventory, and submit EDD drugs to the RA for proper disposal, gatekeeping and inspection exercises are an essential and inevitable aspect of the PRL processes. The RA initiates its gatekeeping processes via the implementation of clients' EDD drug submission application procedure. Once drugs are physically delivered at the RA's designated facility or site, another round of gatekeeping processes is conducted to confirm the deliveries before initiating the storage and process recovery option.

Transporting and Transhipment

This key function involves the management of the physical flow of returns and related products from the collection point to a point of storage, and proper disposal. Empirical findings revealed that the transportation and transhipment of customer returns and SEDD drugs takes place based on RCA, the company's take-back policies, and the value recovery option adopted by the stakeholders involved. Depending on the RCA, some customers are responsible for the transportation of the drugs back to the suppliers while in other cases the

supplier's sales representative arranges the physical collection and transportation of the reported drugs from the customers back to the supplier's CW/DC.

Depending on the service agreement between the channel partners, transportation of drugs back to the suppliers is done by the end-consumer, customers' in-house logistics team, or supplier's sales representative, while some third-party transport service providers are appointed by the supplier. These findings corroborate Somuyiwa and Adebayo's (2014) point that most of the time, the services of a third-party logistics provider (3PL) are used for transportation.

Besides the traditional transportation of SEDD drugs from the customers back the suppliers, empirical findings revealed that there is also transhipment of drugs intra-organisationally, and between channel partners for different purposes such as stock adjustment, stock reconciliation, consumption democratisation, market demand etc. For example, some PW, PR, and HBP transport short-dated drugs intra-organisationally to different consumption outlets including external channel partners in order to meet demand, prevent wastage, or enable consumption of the drugs before expiry.

Due to the chemical nature of drugs, EDD drugs need to be properly destroyed and disposed by the PC. Depending on resource availability, management commitment, organisational policy and PRL strategy employed, transportation of these drugs to the RA or government approved dump-site is usually done by the PC's logistics team. In some other cases, especially at the PW, and PR, the collection and the transportation of rugs to the RA are done by a third-party transport service provider appointed by the PCs or by the WDA.

Warehousing

This key function involves the storage of the returned product, and related products before a selected recovery process commences. All PCs investigated have storage systems/facilities for executing this function as it is an essential part of PRL operations. In the developed world,

emphasis during waste storage is on minimizing the risk to health and safety, by the prevention of access by vermin and of environmental contamination (Kinobe et al., 2012).

Sorting

Sorting comprises the activities that intend either to segregate different products or to segregate among several units of a product on the basis of their condition (Somuyiwa & Adebayo, 2014). It also involves deciding the recovery option to be implemented based on the condition of the drugs returned and those in stock.

The empirical findings revealed PCs sort returned and on-stock drugs based on the state and condition of the drugs, e.g. the shelf-life of drugs, expiry, damage and defective, after which they will be routed according to the recovery decision adopted; Direct Recovery or Process Recovery, please see Figure 8.6. Direct recovery options (Re-sell, Re-use, Re-distribute) are usually implemented for returned drugs with a long shelf-life, as well as those with a short life span, while the process recovery option is implemented for expired and defective drugs.

Recovery

This function or exercise results in either the transformation of products (drugs) into reusable products (re-sale, re-use, and re-distribution) or sending the products for proper disposal (Somuyiwa & Adebayo, 2014).

Empirical findings revealed that returned drugs with long-shelf life are normally returned back to stock for re-sell, and re-use. Depending on the organisational type, and the direct recovery option adopted, short-dated drugs are usually separated from normal drugs inventory, and routed to the one of the following routes: displayed on a separate shelf for sale at discounted price (Sales Democratisation); marked for dispensing using the FEFO method; re-use in the hospital, separated for use as sample; re-distributed to ROL or channel partners where the drugs will be consumed before expiry; In some cases, short-dated drug and those with damaged packaging are donated to staff, and charitable organisations.

The empirical findings further revealed that the only process recovery option implemented by the PCs investigated is disposal. Hence, expired, and defective drugs basically disposed. This is sometimes done in-house without the permission or notification of the RA or in-house with the permission and presence of a RA official. Drugs may also be disposed by the RA, WDA, or ACPN. Disposal appears to be the only process recovery option as pharmaceuticals are not like consumer goods where recalled or expired returns can be repaired, refurbished resold, or donated. Expired pharmaceuticals, in contrast, are destroyed and properly disposed.

In addition to the fact that unusable drugs are typically destroyed due to chemical nature, disposal as the only process recovery option can also be attributed to inadequate knowledge, capability, technologies, and infrastructure to execute other process recovery options such as repair, refurbishing, remanufacturing, retrieval, or recycling. This corroborates that RL work in developing countries is characterized by low value addition due to the low reprocessing involved. This may be because of the inefficiencies arising from lack of product-specific knowledge on recycling or reprocessing (Kinobe et al., 2012).

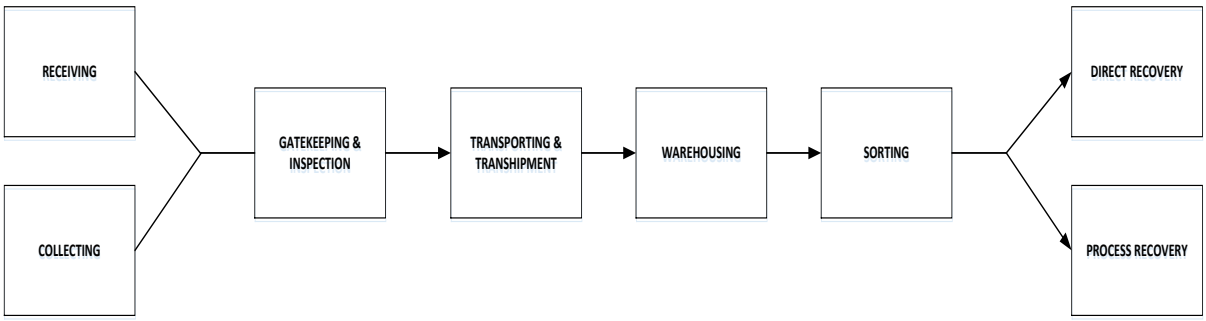

Figure 8.7: Key PRL Processes

Figure 8.7 present a generic overview of these key PRL processes described. According to the empirical findings, some of these key activities are outsourced to third-party service providers such as the transportation of drugs from customers back to suppliers' CW/DC, the transportation of EDD drugs by third-party transport service providers to the RA, as well as the collection, transportation and disposal of EDD drugs by the WDA.

In some cases, key PRL activities are managed internally including collection, transportation, transhipment, sorting, and recovery. This empirical finding also corroborates Somuyiwa and Adebayo's (2014) point that that it is possible to manage all the key activities in a centralized manner or through facilities distributed over various locations. The aforementioned direct recovery options suggest PCs investigated practice PRL for the mitigation of wastage, facilitate revenue generation, and consumption democratisation.

8.4.5 The "Who Perspective" of PRL

RL activities involve multiple stakeholders and multiple relationships between stakeholders and the firm, as well as between stakeholders within a firm. To understand the "who perspective" of RL, it is imperative to identify who these stakeholders are, and their role and influence on RL system. According to Álvarez-Gil et al. (2007), the flow of raw material is related to suppliers, and the stream of finished goods clearly involves manufacturers, wholesalers, distributors, retailer and customers. Hence RL activities imply complex relationships between individual firms and multiple stakeholders.

Carter and Ellram (1998) portrayed stakeholders as internal and external factors that drive and constrain the business operations of a firm. The survival and success of a firm is contingent on its capability to establish and maintain a relationship with its network (internal and external) of stakeholders (Post et al., 2002). The multiple interests of the PSC stakeholders in the PRL operation of a firm corroborate the descriptive and instrumental nature of the stakeholder theory.

PSC Internal Stakeholders

Empirical findings revealed that key internal players responsible for the PRL management of returned, and SEDD drugs are: the management team, supply chain team, inventory controller, customer service team, warehouse team, quality team, finance team, sales representative, end-customers, quality team, warehouse team, logistics team, internal auditors, warehouse staff, store staff, store managers, store pharmacist, procurement staff, and sales staff (Figure 8.8).

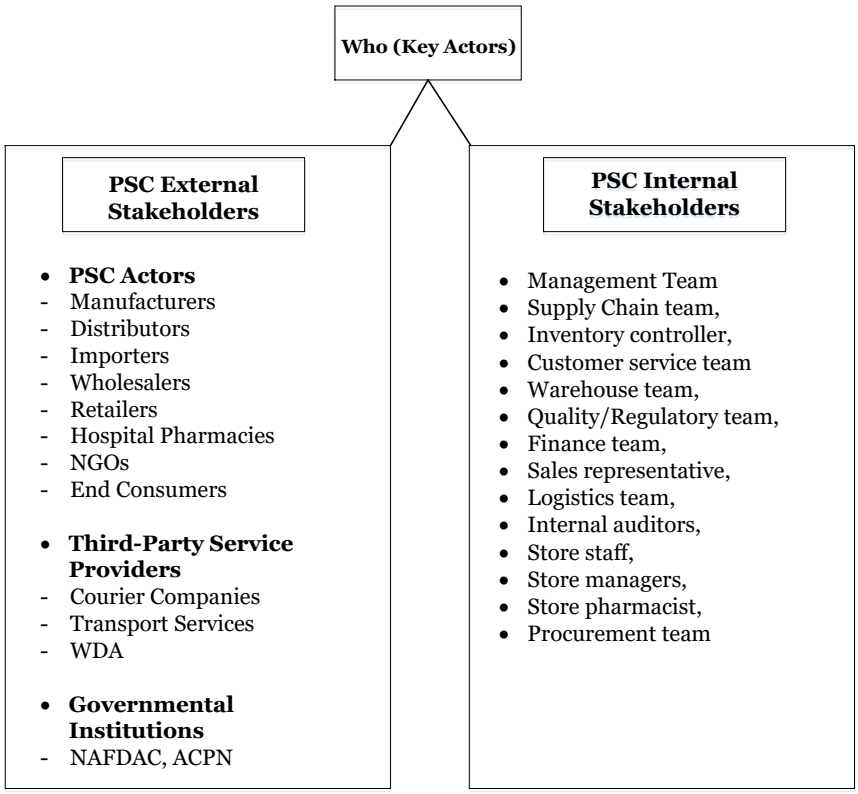

Figure 8.8: The Typology of the key actors (Internal and External) in the PRL Network, adapted from De Brito (2003)

In cases where companies risk damaging their corporate image through the use of intermediaries, such firms normally set up their own internal RL system to avoid this risk (Khan & Subzwari, 2009). Concern about the health and safety risk regarding the handling or misappropriate handling of returned products (drugs) by intermediaries is another justification for managing collection in-house (Khan & Subzwari, 2009).

The empirical findings of this study confirm that the returning, collection, and processing of returned, and SEDD drugs may not take place only in-house; the destruction and disposal exercises can be done in-house or externally by the WDA and RA. Destruction and disposal of EDD drugs occur in-house mainly due to the logistics and disposal cost charged by the RA, inadequate regulatory enforcement, bureaucratic bottle-necks at the RA, and availability of technical know-how and capacity. Where in-house destruction and disposal is approved by the RA, the exercise takes place in the presence of the RA officials.

PSC External Stakeholder

The key players in RL process include members of the forward supply chain, specialised facilitators of RL such as the third-party collection agents, recycling specialist, public private organisation and also non-government charitable organisations (Khan & Subzwari, 2009). De Brito and Dekker (2003) also identified stakeholders involve in RL activities as manufacturers, independent intermediaries, specific recovery companies, RL service providers, municipalities, and public-private foundations. Each stakeholder is driven by different forces represented in the driving triangle for RL (Figure 2.5) as each stakeholder has different objectives and they may compete with each other in the process (De Brito and Dekker, 2003).

PSC Stakeholders

The empirical findings of this study confirmed that stakeholders involved in the PRL practices of the PCs investigated are predominantly members of the PSC e.g. the PMs, distributors (Pre-wholesalers), sales representatives, PWs, PRs, HBP (public and private), clinics, nursing homes, patients, end-consumers, company owned ROLs, DCs, doctors from hospitals, registered PI, HBP main store, satellite pharmacies, the OMS; specialised facilitators such as courier companies, transport service providers; the regulatory bodies such as NAFDAC, ACPN, and the WDA (LASEPA, LAWMA). Figure 8.8 depicts these PRL actors comprising both internal and external stakeholders.

Third-Party Service Provider

In situations whereby RL is not a core competency or ultimate strategy of an organisation, finding time and resources to effectively plan, implement and control RL process can be very challenging; this is where third-party service providers come into play (Stock, 2001). Many retailers and online-based companies are hiring third-party providers to implement their RL programme aimed at expediting the return process, redistribution and ultimately improve their customer satisfaction (Meade & Sarkis, 2002).

Empirical finding of this study however reveals that third-party service providers comes into play only in the area of transportation, destruction and disposal. The other RL activities (returning, collection, sorting, reporting) are done in-house and in some case the destruction and disposal activities are done in-house depending on the organisational policy, commitment, and capabilities.

The aforementioned driving forces also signify the influences of internal and external stakeholders on PRL practices. The empirical findings of this study reveal that internal stakeholders (management team) and external stakeholders (customers, suppliers, the RA and WDA) have influence on the PRL operation of PCs. Álvarez-Gil et al. (2007) described these characteristics as the power of stakeholders to influence the firm, the legitimacy of the stakeholders' claims, and the urgency of the stakeholders' demands as related to the organisation depicted in Figure 3.5.

Internal stakeholders (the management team) develop policies for the management of SEDD drugs to minimise wastage, and the management of healthcare provision. External stakeholder such as customers play a major role as they rapidly becoming well informed about product quality and consumer right. Hence, customers return drugs when required for exchange or refund. Suppliers also have influence on the PRL operation via the types of RCA setup with channel partners. The operational and strategic influences of the identified key actors (Internal and external) on the PRL operations of the PCs investigated corroborate the descriptive accuracy, instrumental, and normative nature of the stakeholder theory as defined in section 3.2.3 (p. 164 – 165) of this thesis.

Governmental Institution

The empirical findings of this study confirm that although the destruction and disposal exercises sometimes take place in-house, the exercise is often carried out by external stakeholders such as the WDA, ACPN, and RA. The empirical findings also revealed that the level of RA or legislative (Government) influence on PRL practices of PCs investigated is arguably low or non-existent compared to the influence of other stakeholders, as well as the

level of their influence on the PRL operations in developed countries. This characteristic can be attributed to the inadequacy and effectiveness of regulatory enforcement in Nigeria.

According to Sarkis et al. (2010) social sustainability can be greatly influenced by various regional and cultural characteristics. Hence, RL practices vary not only between companies and across industries but also across regions due to the differences in geography, cultural characteristics, stakeholder interest and level of social-infrastructural development.

8.4.6 The "Where Perspective" of PRL

To generate insight on more specific RL issues such as locations of collection points, distribution centres, and disposal sites in a physical RL network, this section discusses PRL practices from the "Where perspective" viewpoint. The where perspective provides insight on the physical network structure where the actors are located, and products are collected and processed (Xie & Breen, 2014).

As reported in section 2.8.2, and 4.4.1 of this thesis, Nigeria has a total of 14,607 public and 9,034 private healthcare facilities; 128 registered PMs, 724 drug distributors, 1,534 PRs, and 300 PIs; estimated 10,000 unregistered patent and propriety drug stores selling OTC products only, most of which are located in various parts of the country including villages and poor communities where fully fledged pharmacies do not exist.

Triangulated empirical findings revealed that actors involved in PRL operations, and the physical structures are located both at internal and external locations (figure 2.14) i.e. the actors and the physical PRL structure are located within PCs, at different locations and regions of Nigeria. As PCs are dispersed all over Nigeria, with the majority located in Lagos State, collection points for end-customers' returns, B2B customers' returns, processing points, and disposal points are present all over the country. In other words, PSC stakeholders' facilities serve as the physical network structure where PSC actors are located, and where PRL activities take place.

External Location

Based on triangulated empirical findings, PCs with multiple ROLs have physical network structure dispersed in different parts of the country. EDD drugs are collected from different locations (ROL) across Nigeria, and transported to the DC in Lagos State for further processing. This is because the majority of PM, PI, and PWs' headquarters are located in Lagos state, so the PRL process is centralised. Empirical findings revealed that the centralized structure often causes delays in completing the PRL processes due to the distances of many of the ROLs from DCs in Lagos State.

It is possible to manage PRL in a centralised manner or through facilities distributed over various location (Somuyiwa & Adebayo, 2014). The empirical findings revealed that some PCs managed to mitigate the impact of distance by decentralising their PRL processes, and expanding their physical network structure setting up ROLs in various location, and regional DCs, hence, expanding their regional reach, improving PRL processes, and product return processing lead-time.

In some cases, based on the RCA in place, suppliers' sales representatives are responsible for arranging the collection of SEDD drugs from their B2B customers' collection points (ROL, DCs, HBP main store etc.) while some B2B customers are responsible for arranging the return of EDD drugs to their suppliers e.g. shipment of drugs from HBP back to the OMS.

PCs are generally responsible for submitting EDD drugs to the RA for proper disposal. Some PC also transport EDD drugs to the RA (ACPN, NAFDAC). Some PCs with resource and managerial commitment to PRL have a service agreement with the WDA (LAWMA and LASEPA) who collects EDD drugs from various collection points in Lagos for proper disposal.

Internal Location

Triangulated findings of this study revealed that, having obtained regulatory approval from the RA, some PCs conduct PRL operations in-house including the destruction and disposal exercise of EDD drugs (In the presence of a RA official). This approach helps the PCs to maintain control of their PRL operations and to reduce the cost of logistics and disposal charges. There is, however, empirical evidence that some PCs not only conduct the PRL operations in-house but also conducts the process recovery exercise (disposal) without regulatory approval from the RA. This can be attributed to the absence of managerial commitment to PRL, the service fee charged by the RA, and the cost of logistics.

In summary, triangulated empirical findings revealed that the actors in the PRL are located internally and externally. The PSC stakeholder' facilities constitute the physical network structure where the actors are located. All PSC stakeholders investigated offer collection point for customer returns (B2B and B2C) and process returned drugs and on-stock SEDD drugs.

Essentially, the physical network structure where the actors involved in PRL activities comprises the retail outlets, pharmacy main store, satellite pharmacies, transport/courier collection points, DC, CW, WDA's facilities, RA's collection facilities, and dump Sites. Hence, the physical network structure is an important factor that influences the PRL strategy PCs adopt. Please see Figure 8.9. Arguably, there is relatively a well-established physical PRL network structure in the region investigated for this study.

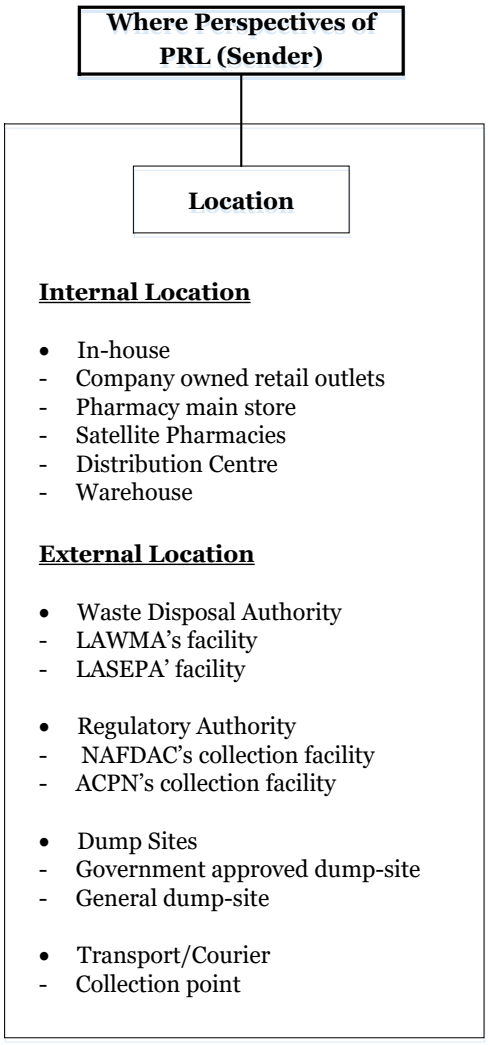

Figure 8.9: Typology of "location" where the actors are in the PRL network

8.4.7 The "When Perspective" of PRL

Product recall requires companies to be able to reverse the normal logistics flow from supplier to customers so that products deemed unsuitable can be located, and returned to the source in a timely and cost-effective manner (Bowersox et al., 1996). This is critical for pharmaceutical products where patient health can be put at risk if drugs are not withdrawn expeditiously (Ritchie et al., 2000).

The "when perspective" of PRL is therefore designed in this study to generate insight on PRL practices from the viewpoint of the time and frequency when key activities are initiated in the PRL network. The "when perspective" of PRL is unique in how it is recognised in this study,

and arguably to the body of knowledge, as the phenomenon has never been addressed in extant literature. The timings and frequencies of when key PRL activities are initiated at each category of PSC stakeholder are described in chapter six, section 6.2.13, 6.314, 6.4.14, 6.5.14, 6.6.13, and 6.7.12 of this thesis. Table 8. in this section thematically presents the timings of when key PRL activities are initiated per case-category, and the frequencies of occurrence of these activities per case-category.

Triangulated empirical data revealed that B2B customers return drugs based on RCA while end-consumers return unwanted drugs to the supplier based on the supplier's take-back policy. Table 8. shows that end-consumers typically return unwanted drugs to suppliers within 24 hours of purchase. Customer returns are handled immediately for exchange or refund purposes. Intra-organisational reverse movement (Transhipment) of drugs takes place on a weekly, monthly and quarterly basis depending on the PRL strategy employed.

Empirical data revealed that HBP, for example, regularly conduct stock adjustment exercises on a quarterly basis. This exercise initiates the reverse and forward movement/transfer of drugs from the hospital's satellite pharmacies to the pharmacy main store, and vice versa. Hence, EDD drugs are eliminated from inventory, and short-dated stock re-allocation/re-distribution (Direct Recovery) into the forward chain is facilitated. As waste elimination and product recalls are of growing concern to HBP, from time to time RL activities are inevitable especially when a recalled drug is a drug dispensed to hospital patients or end-users (Ritchie et al., 2000).

Empirical data also revealed scheduled and periodic exchange, forward, and reverse movement of drugs between B2B channel partners, e.g. returns from B2B customers to suppliers, products from B2B customers to channel partners, products from B2B customers to the RA, and suppliers to the RA etc., depending on PSC stakeholders' RL policy, RCA, and Service agreements. The combination of situational, scheduled and periodic reverse movement of drugs within and across PSC stakeholders generates useful insight on PRL practices from the viewpoint of when key PRL activities are initiated in the PRL network.

It is however, important to note that the time-frames identified in the "when perspective" findings of this study seems not to have the same magnitude in other supply chains such as the battery, electronics, automotive, e-commerce industry etc. where the time-frame of key RL activities is not a critical factor determining product re-use. EDD drugs cannot be re-use, repaired or recycled. Hence, necessitating the need for an effective PRL systems aimed at preventing and eliminating EDD drugs from circulation, mitigating wastage through pro-active stock management and dispensing processes, and proper disposal of EDD drugs.

Table 8.2: Key PRL activities and Time-frame

Key PRL Activities	**Time-frame**					
Case-Category	**CC1**	**CC2**	**CC3**	**CC4**	**CC5**	**CC6**
Returning by end-users	NA	NA	Within 24 hours	Within 24 hours	Within 24 hours	No Data
Collection and **Inspection** of end-user returns	Immediately	Immediately	Immediately	Immediately	Immediately	
Transporting and **Transhipment** (Returns from the RO/SR/SU to DC/CW/MS)	NA	Immediately	Weekly	NA	Quarterly	
Collection, **Inspection**, and **Sorting** (PC)	NA	NA	Weekly/Monthly	Bi-weekly/Monthly	Daily	
Returning to Supplier (B2B)	NA	NA	Depends on RCA	Depends on Response time of the Supplier, and RCA	RCA, and time-frame agreed with suppliers	
Direct-Recovery (Re-use/Resale)	Re-sold with 3 to 6 months to expiration	Re-sold to customers within 3 months to expiry	Re-sold to customers within 3 months to expiry	Re-sold to customers within 3 months to expiry	Re-sold to customers within 3 months to expiry	
Withdrawer from Circulation	Less than 1 month to expiry	NA	Once Expired	Once Expired	NA	
Warehousing and **Process Recovery** (Destruction & Disposal)	Once every 6 month/ every 3 to 4 year	Depends on the product type, expiry date, and receipt date. An average of 6 months	One Month	Every Month or Bi-Monthly	Weekly. Depend on RCA	

Based on the triangulated empirical findings of this study, and the corroboration of extant literature, Figure 8.10 is a visual representation of the characteristics of PRL practices in the Nigeria private sector. This provides empirically informed and theoretically grounded insight into RL practices from the PSC stakeholders' perspective. As indicated earlier, the seven perspective RL framework adapted for this study originally stems from De Brito and Dekker's (2003) RL framework, modified by Xie and Breen (2014).

The seven perspective of PRL framework proposed by this study not only provides an empirically informed and theoretically grounded insight, but also provides a holistic structure for understanding issues related PRL practices as well as rendering visibility to vast assortment of matters involved. According to De Brito and Dekker (2003), this type of perspective-driven approach for characterising RL is supported by Thierry et al, (1995) and Fleischmann et al., (1997). Having characterised PRL practices, the next section discusses empirically based measures that can facilitate PRL practices in Nigeria.

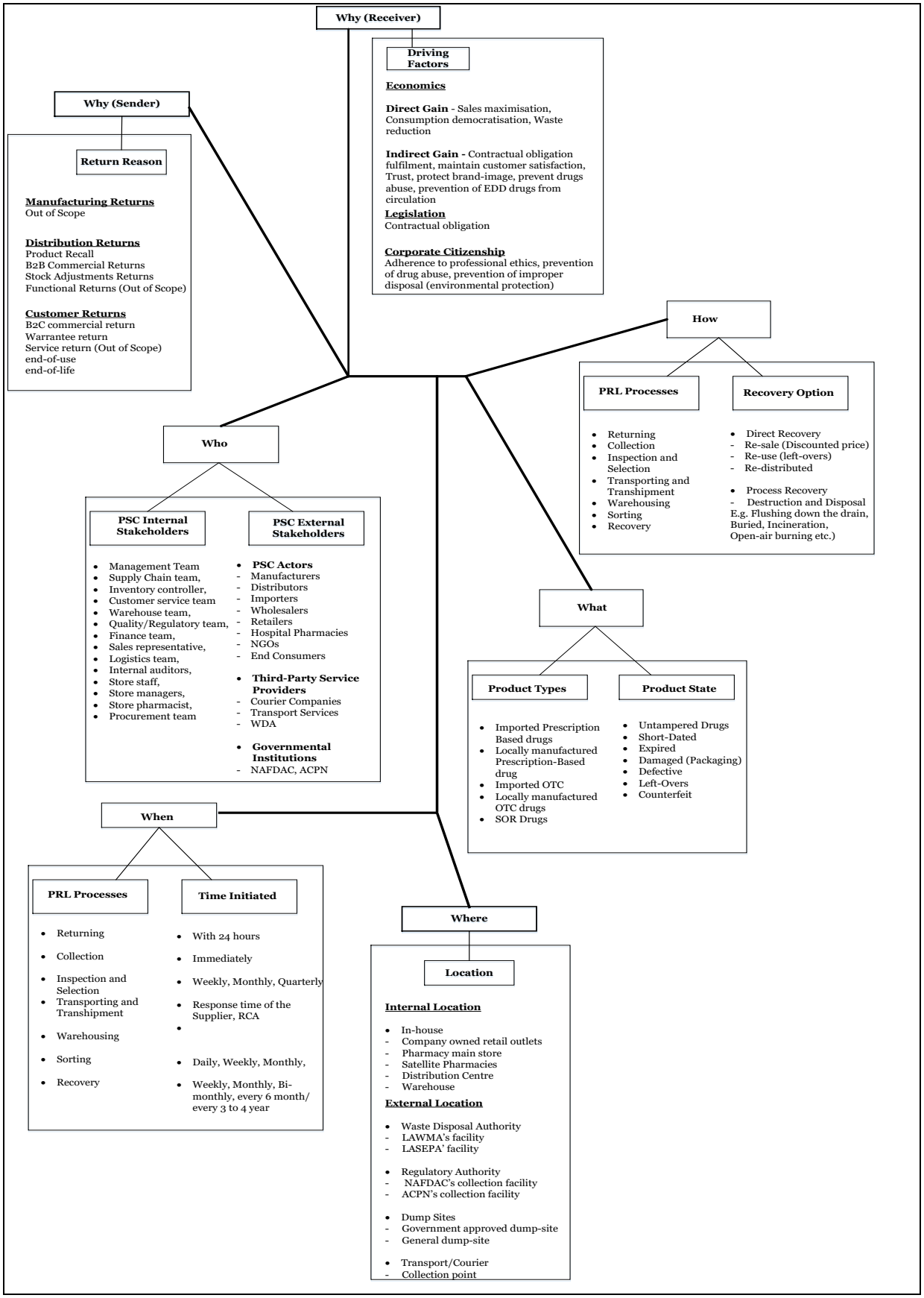

Figure 8.10: Framework for understanding PRL. Adapted from De Brito and Dekker (2003)

8.5 PRL Facilitators in Nigeria

Customers' attitudes and governmental regulations towards the environmental impact of products and processes force companies to employ environmentally friendly alternatives and implement new practices of product returns management (Pochampally et al., 2009). In the UK, customers have the right to return ordered products to the suppliers within 90 days of purchase, facilitated by environmental legislation, enforcement of recovery quotas, and product take-back responsibility of companies (Somuyiwa & Adebayo, 2014).

The need for compliance to regulatory/legislative requirements to recover or take back product is a major reason why companies embark on RL (Khan & Subzwari, 2009). This can be accredited to the strict regulatory enforcement by the regulatory body. In fact, some companies engage in RL only as it relates to product return to their suppliers. This mentality is rapidly changing as environmental and regulatory considerations are now having greater impact on their logistics decisions (Rogers & Tibben-Lembke 1998).

A US based-survey conducted by Rogers and Tibben-Lembke (1998) revealed that the legal disposal issue is one of the major reason companies implement RL. In Europe, concerns for end-of-life products are heavily facilitated by legislation (Toffel, 2004). The volume and the impact of environmentally-related legislation such as recycling quotas, packaging regulations and manufacturing take-back responsibility have increased tremendously (De Brito & Dekker, 2003). For example, EU directives, and regulations enforce responsibilities on all entities in the household battery recycling system (Xie & Breen, 2014). The enforcement of these regulations forces companies' interest in and implementation of RL programmes.

Some manufacturers in a non-regulated market engage in product recovery to reduce production cost, enhance brand image, enhance customer satisfaction, for aftermarket protection and to pre-empt pending legislation and regulation (Zhu et al., 2008). Essentially, profit maximisation, regulatory compliance, customer satisfaction, product recall, and waste

elimination through the recycling of unused or unwanted supplies provide powerful reasons for developing effective RL process (Ritchie et al., 2000).

The empirical findings of this study supports this extant literature, and as described in the "Why perspectives" section of this chapter. This study's empirical findings further revealed that the actual implementation of PRL is largely or mainly facilitated by the presence of RCA and SOR agreements between channel partners, proof of purchase, as well as PCs' commitments towards PRL. SEDD drugs are returned to suppliers by B2B customers based on the RCA and SOR agreement. Returns will be rejected by the suppliers if such agreements are not in place to facilitate the return, exchange, and refund process between the channel partners. These findings corroborate the point made by Rogers and Tibben-Lembke (1998) that companies are only concerned with RL as it relates to product return to their suppliers. This mentality will change if environmental and regulatory considerations have greater impact on their logistics decision.

End-consumers are able to return drugs back to the suppliers within 24 hours of purchase. This B2C return process is facilitated by the company's liberal product take-back policy. Empirical findings also revealed that PRL is facilitated by drugs disposal programmes/initiatives organised by ACPN for its members, which encourages the submission of EDD drugs for proper disposal.

In summary, triangulated empirical findings confirmed that the implementation of PRL practices are not necessarily facilitated by governmental legislation. On the contrary to the evidence in most developed countries. PRL practices in the NPI are largely facilitated by the combination of RCA, SOR, Companies liberal take-back policy and disposal programmes/initiatives. This corroborates Sarkis et al.'s (2010) viewpoint that cultural, legal, social, political and a host of other macro-environmental variables differ by location and some research findings pertinent to a certain region may not be fully applicable in other regions and locales.

8.6 Importance, and Impact of PRL on Business Operations

How returns are handled has significant repercussions; it is a signal to customers as to the importance the organisation attaches to corporate responsibility (Loo-See et al., 2016). Poor returns management results in loss of customer confidence, an increase in returns inventory taking up space, incurring storage costs, and causes general costs to escalate (Schwartz, 2000). The following highlighted empirical findings reveal the importance the investigated PCs place on PRL practices, and the impact of the phenomenon on their business operations.

1. Despite the logistics cost involved, PRL is an important practice as it is considered unethical and unprofessional to have EDD drugs on stock or having any aspect of PSC contributing to the circulation of EDD drugs. Although this suggests a positive managerial attitude and commitment towards PRL, empirical findings suggest that the level of managerial commitment and resource availability towards PRL differ between PCs (cases) and PSC stakeholders (case-categories).

2. PW, and PR implement PRL to manage slow-moving and fast-moving stock, and to free up shelf space for saleable products, thereby facilitating pro-active removal of EDD drugs and short-dated drugs from inventory via the FEFO inventory-order fulfilment management method.

3. PM, PI, and PR are able to mitigate wastage through a pro-active identification of short-dated drugs, and democratising sales and consumption facilitated by PRL processes. This outcome contributes to the sustainability initiatives of these companies as it reduces potential effects of disposal on the environment.

4. PRL provides visibility on the type of product returned, enables PCs to capture valuable information from consumers such as the level of acceptability of the drug, and consumers' perceptions, which can be used by manufacturers to improve product quality.

5. PRL practices facilitate adherence to contractual obligation, and regulatory requirements, maintain brand integrity, corporate reputation, customer satisfaction, and prevent loss (refund or exchange from suppliers). Hence, they help improve the sustainability of the company's revenue generation mechanism.

6. PRL facilitates the disposal and destruction processes; effective management of these processes depends heavily on the effective implementation of PRL systems by all supply chain stakeholders.

7. PRL practices increase the complexity of logistics, and operational cost required for managing returned drugs and SEDD drugs. They delay and reduce profit in the short-term due to the cost of implementation.

8. PRL practices help improve compliancy to regulatory requirements and adhere to professional ethics, and protect the environment from improper disposal of drugs, which ultimately improves corporate reputation.

9. PRL helps facilitate accountability, transparency, and inventory control of unusable drugs. This leads to the elimination of EDD drugs from inventory, and mitigates the risk of selling or dispensing EDD drugs to customers. Hence, its increases customer satisfaction, trust and confidence in the pharmaceutical services.

8.7 Knowledge of RG, and Factors Hindering Compliance/PRL practices

According to the empirical findings, the pharmacy profession and practices in Nigeria are guided by the NDP. The main goal is to make available at all times to the Nigerian public adequate supplies of drugs that are effective, affordable, safe and of good quality, to ensure

rational use of these drugs and also to increase and/or stimulate production of essential medicines.

Inadequate knowledge of the RGs

The lack of adequate knowledge and awareness of the RGs hinders compliance as well as the effective implementation of PRL. The empirical findings of this study revealed that although all respondents acknowledged the presence of law prohibiting the sale of EDD drugs, not all acknowledged the existence of RGs for handling EDD drugs. Some respondents who were not aware of RG do had knowledge of the requirement for handling SEDD drugs, which they acquired from academic and professional training.

Complexity of logistics, bureaucratic bottle-neck, and capacity issues

The complexity of the logistics processes involved in managing EDD drugs, the bureaucratic bottle-neck of the RAs in processing drug submission application, and capacity issues encountered by RA to properly conduct large scale drug destruction and disposal exercises hinders the effective implementation of PRL. These factors signify the poor state of infrastructural facilities required to facilitate proper disposal of EDD drugs and ultimately impedes effective PRL practices.

Ineffective governmental policies, and enforcement

Previously, lack of government commitment and regulatory inconsistencies have been highlighted as obstacle (Erhun et al., 2005). The empirical findings of this study revealed that ineffective governmental policies, inadequacy of law enforcement, bribery and corruption are major factors hindering regulatory compliancy and PRL practices. This corroborates Oko and Nkamnebe's (2013) points that factors that impede RL can also be attributed to the poor enforcement of regulations; firms are not under the effective control and supervision of governmental agencies charged with the responsibilities of environmental protection. The industry lacks strict supervision of regulatory agencies (Ngwuluka et al., 2011).

Cost of logistics and disposal

The financial impact of destruction and disposal of drugs is a factor hindering regulatory compliance and PRL practices of the PCs investigated. The NPI generates both hazardous and non-hazardous wastes like its counterparts in other countries of the world, but the waste not well managed, with the majority of the health and safety personnel having little or no modern knowledge of waste management (Ngwuluka et al., 2011).

Attitude towards PRL practices is another factor hindering regulatory compliance, and PRL practices in Nigeria. The awareness and return rate for battery waste is higher than those of waste medicines; the involvement of actors in battery RL is much greater and more active than those in the waste medicine RL. This can be attributed to the level of support and enforcement from top management (Xie & Breen, 2014).

8.8 PRL: Improvement Opportunities

Having discussed the various characteristics of PRL practices in the Nigerian pharmaceutical context, including the impact on business operation using empirical findings from the nineteen PSC stakeholders, and extant RL literature to generate empirically informed and theoretically grounded insight into the phenomenon of study, the following highlights are measures envisaged by respondents on how their companies' PRL practices can be improved.

Respondents emphasised that effective implementation of PRL operations is contingent on the collective commitments of all PSC stakeholders. It was also emphasised that the effective implementation of any improvement initiative will depend on the collective commitments of all stakeholders involved especially the RA and management. According to Somuyiwa and Adebayo (2014), for RL systems to be successful, top management must guide and support the implementation.

1. Regulatory policies and enforcement must be improved to drive the flow of returned, short-dated, expired, and damaged drugs efficiently. According to Oko and Nkamnebe

(2013), improved policies of social responsibility of firms, enhanced regulatory and supervision of RL practices by government regulatory bodies is required. This will help improve the health and environment standard of Nigeria and generate a good public image for companies (Oko & Nkamnebe, 2013)

2. PCs should invest in training and re-training programmes for staff on various protocols to observe when handling drug returns. Management should ensure that all staffs are as meticulous as possible in their professional duty, and capable of anchoring the mission statement of the company, thereby protecting the pharmaceutical ethics of the company.

3. PCs should be encouraged to invest in more public awareness campaigns regarding the adverse effects of drugs and what end-users should do when in possession of SEDD drugs.

4. It will be beneficial to the industry and the public for all PCs to adopt a common process and standard for PRL practices. The RA is expected to take a leading role in conjunction with PCs in the formulation, implementation, and enforcement of SOPs for processing SEDD drugs.

5. There should be managerial commitment to excellent customer service especially effective resolution of issue relating to drug returns, security of drugs in the warehouse, transportation, and recovery. This corroborates Somuyiwa and Adebayo's (2014) recommendation that RL should not be managed in isolation, but should be integrated with all functional areas that affect, or can be affected by the returned products.

6. PCs should invest in information systems to facilitate stock management process, procurement process, return processes, intra and inter-company communications, product traceability and control. The commonly used ERP packages generally lack the ability to properly deal with returns (De Kool, 2002). Hence, PCs should not only invest in

ERP systems but also consider in-house development of dedicated software to manage both the forward and reverse flow of drugs. Such specialized software system checks return for expiration date and damages, speeding up return handling (De Brito, 2003).

7. The adoption of the most appropriate method of destruction and disposal of EDD drugs can be one of viable way of improving PRL practices holistically.

8. PRL practice can also be improved by decentralising and expanding the geographical reach of PCs. Geographical expansion, and decentralisation of DC will reduce over dependence on CW/DC often located in Lagos State.

9. The management of PRL activities should be taken from sales representatives and allocated to a specialised department to manage. This is an effort to save cost, reduce inventory, reduce complexity and improve the efficiency of the return handling process.

Further details of how these findings (improvement measures) can be implemented in the NPI are presented in chapter nine, section 9.4.2 (p. 453 - 458) of this thesis as they form part of the practical contribution of this study.

8.9 Chapter Summary

This chapter has discussed novel insight obtained from Chapter Seven's cross case-category analysis. It has compared and contrasted the empirical findings for each construct to extant RL literature, thereby confirming whether the PRL practices employed by the nineteen companies corroborate the RL fundamentals described in the extant literature or the case companies operates under a different RL fundamental.

Furthermore, this chapter has compared relationships between analytical generalisations derived from the empirical data, and the extant literature. Hence, confirming whether the

empirical findings corroborate extant literature, extend extant theory or contradict and why. As a result, typologies of PRL practices were adapted and mapped out. Improvement opportunities envisaged by respondents were consolidated and highlighted.

Chapter Nine will therefore present the summary of this thesis, address the RQs, highlight the theoretical and practical contributions of this study, as well as indicate the implications for further research.

CHAPTER NINE: CONCLUSION AND IMPLICATIONS

9.1 Thesis Summary

This thesis explored PRL practices in Nigeria by investigating nineteen different PCs operating in the private sector of the NPI including the national regulatory authority. This chapter hereby concludes the thesis by first recapitulating the summary of key outputs of this study, followed by conclusions regarding the five RQs. Then, the limitations, and future research directions, followed by the theoretical and managerial contributions of the thesis.

RL is a relatively new concept in logistics, but is rapidly gaining strategic importance as a profitable and sustainable business strategy. RL is practised in many industries, including automobiles, electronics, e-commerce, food and beverages, and pharmaceuticals.

9.1.1 Summary of the SLR findings

The SLR of this study also confirmed the increasing interest in RL research in the academic community. The SLR revealed that the majority of RL research in the pharmaceutical context employed qualitative methods. This finding reinforces the argument that majority of RL research is exploratory in nature, suggesting the relative newness of RL practices. Although the dominance of quantitative method was not significantly reflected in this study's SLR, it is however important to keep in mind that the quantitative research method is still the dominant method in logistics research.

Nevertheless, the relatively higher percentage of qualitative method observed from this study's SLR suggests an increasing acceptance of qualitative research methods in logistics research as researchers are becoming more interested in the "how" and "why" RQs (Sachen & Datta, 2005). The SLR further revealed the increasing popularity of mixed-method usage in logistics research. This can be attributed to the increasing call for rigour in logistics research as the use

of mixed-methods improves the veracity of research results, mitigates potential bias and overcomes the sterility of single method approaches (Collis & Hussey, 2003).

The SLR findings revealed that the growth of RL research has not been completely geographically widespread, as it is largely dominated by research from North America and Europe. Furthermore, RL research in the pharmaceutical context as a whole is still relatively scares and none of the extant RL literature provides insight from the Nigerian pharmaceutical perspective. This can be attributed to the relatively low level of socio-economic development, absence of incentives to facilitate RL practices, low level of awareness of RL practices, and low level of interest in RL research in Nigeria. Considering the enormous health risk associated with the presence of EDD drugs and counterfeit drugs in circulation, the researcher envisioned an ethical need for this study.

The SLR findings also indicated that the majority of RL research lacks theoretical underpinnings which suggests a limited body of theoretically grounded research on RL. Nevertheless, the SLR findings also highlighted a gradual increase in the use of theories in RL research in recent time. In order to develop an empirically informed insight on PRL practices from the Nigerian pharmaceutical perspective, and to further contribute to the use of theory in RL research, this exploratory study explored the PRL operations of nineteen registered PCs operating in Nigeria.

9.1.2 Summary of factors that hindered Data Collection of this Study

The phenomenon was explored using the seven perspectives framework of RL including constructs such as Export Returns, PRL Facilitators, PRL's Importance and Impact, knowledge of RG and Factors Hindering Compliance and Improvement Opportunities. Factors that hindered data collection in Nigeria based on the researcher's experience include inaccurate contact details, traffic congestion, time constraint and unavailability of interviewees, company policies and protocol, cultural differences, absence of financial

incentives and fear of being implicated. The impact of these factors was mitigated through the proper identification of the researcher as a genuine University of Hull PhD student, clarity as to the research purpose to the interviewees, assuring confidentiality and anonymity, as well as interviewing only PSC practitioners directly involved in RL operations.

9.1.3 Existence of PRL practices in Nigeria

Empirical evidences showed that PSC activities have been in existence in Nigeria since the 1940s. This suggests a relatively long history of PSC operation in Nigeria. Due to the chemical nature of pharmaceuticals, it is not technically or economically feasible to repair or recycle EDD drugs for re-use as their consumption is not only detrimental to public health but improper disposal is also hazardous to the environment. The return of EDD drugs back to the point of origin for proper disposal is therefore a necessary operation. As a result, it is the contention of this study that PRL has equally been in existence in Nigeria the 1940s just as PSC operations. PRL practices in Nigeria are, however, not of the same level of sophistication as the practices in developed countries due to the lower level of interest, management commitment, and socio-economic development in Nigeria.

9.1.4 Practicality of Export Returns

Empirical findings confirmed the non-existence of export operation of EDD drugs from any PCs in Nigeria back to any subsidiaries or any suppliers outside Nigeria. Empirical evidence showed that the exportation of EDD drugs to any destination outside Nigeria is prohibited by law. This corroborates Ngwuluka, et al.'s (2011) confirmation that the exportation of EDD chemicals and pharmaceuticals out of Nigeria is illegal. This prohibition leads to attempts by some PCs to re-sell EDD drugs to unsuspecting customers, and in the event that they are unable to do so, the waste may be released into the environment and/or waters (Ngwuluka, et al., 2011).

The empirical findings revealed that some PCs need not consider legal prohibition related to the export of EDD drugs as their drugs are locally sourced from indigenous pharmaceutical suppliers. Hence, EDD drugs are returned to indigenous suppliers, disposed in-house, forwarded to the WDAs or the RA. Irrespective of the source (foreign or indigenous) of drugs in circulation, reverse movement of SEDD drugs is restricted within the geographical boundary of Nigeria.

9.1.5 Type and State of product in PRL Network

This study explored what are actually being discarded or returned into the PRL network by considering the type and state of the drugs. The empirical findings revealed that the types of product entering the PRL network are prescription based drugs and OTC drugs, while the state of drugs entering the PRL network are untampered drugs, short-dated drugs, expired drugs, drugs with damaged packaging material, defective drugs, left-over drugs, and counterfeit drugs. The empirical findings of this study revealed that the state of the drugs in the PRL network strongly affects the recovery process adopted by PCs. De Brito and Dekker (2003) pointed out that the type of recovery options employed by companies is influenced by how the product deteriorates: Intrinsic deterioration, Homogeneity deterioration, and Economic deterioration.

9.1.6 Strategic reasons for PRL (Receivers)

With regard to the "why perspective" of PRL (Receiver), the empirical evidence showed that the PCs investigated engage in PRL practices for multiple reasons, which makes it difficult to set the boundary between the three strategic drivers of RL. PCs (Receivers) engages in PRL practices to the following economic reasons: to fulfil contractual obligations with channel partners; to ensure proper disposal; to maintain customer satisfaction, cordial customer/supplier relationship, and trust between channel partners; to maintain

accountability and control of inventory, returns, refund, invoicing, and related stock reconciliation transactions; to maintain sales, to boost inventory turnover and minimise revenue loss; to reduce unnecessary wastage associated with drugs expiry; to achieve indirect gains via brand protection, to protect their brand image, and corporate reputation; and to reduce customer returns.

PCs (Receivers) also engage in PRL practices due to the following reasons related to corporate citizenship objectives: drug abuse prevention; to eliminate EDD drugs from shelf/inventory, and eradicate EDD drugs from circulation; to prevent improper disposal of EDD drugs which can be hazardous to the environment if not processed appropriately; adherence to professional ethics and corporate reputation. These reasons are all associated with PCs' effort to achieve good corporate citizenship, CSR, and sustainability objectives.

The empirical findings, however, show no compelling evidence that PRL operations at the PCs investigated are influenced by regulatory requirements or by the Basel Declaration. This suggests that legislation has very little influence on why PCs engage in PRL practices in Nigeria, contrary to the findings in extant literature. This low level of legislative influence can be attributed to the inadequate regulatory policy, knowledge of RG, and enforcement. According to Ngwuluka et al. (2009), international regulatory policy requiring PCs to be responsible for the proper management, treatment and disposal of their waste is yet to be implemented in developing countries and can as well be an indicator that the government is yet to make waste management a priority.

9.1.7 Strategic reasons for PRL (Senders)

With regard to the "why perspective" of PRL (Senders), the empirical findings revealed that drugs are generally returned or discarded because they have expired, are short-dated, have adverse effects, were wrongly ordered, or are no longer needed. Senders are either external channel partners or internal partners. The types of reasons why Senders return drugs into the

PRL network are categorised according to the hierarchy of the Sender in the PSC network. Hence, there are Manufacturing returns, Distribution return (product recall, B2B commercial return, Stock adjustment returns), and Customer returns (B2C commercial return, warranty returns, end-of-use, and end-of-life returns).

Manufacturing returns, service returns, end-of-use returns, and functional return are out of the scope of this study. The first are initiated during the production phase, the second do not exist as drugs cannot be repaired or refurbished, the third largely involve medical devices, but sometime include left-over drugs and the fourth involves products whose inherent function makes them go back and forward in the chain e.g. distribution carriers and packaging.

9.1.8 PRL process flow and Key activities

With regard to the "how perspective" of PRL, triangulated empirical findings confirmed six different PRL process flows. As described in chapter seven, section 7.9.4 (P. 354 – 364) of this thesis, each process flow provides specific insight into the sequence of events in which PRL processes are carried out by the PCs investigated. Within each PRL process flow, seven key PRL activities (Returning, Collection, Gatekeeping and Inspection, Transportation and Transhipment, Warehousing, Sorting, Recovery) were identified in correlation to extant literature on RL, indicating specific activities carried out by each PSC stakeholder and hence generating insight on the "how perspective" of PRL.

9.1.9 Product Recovery Strategy adopted by PCs

Empirical evidence showed that the recovery option for returned or short-dated drugs is direct recovery (Re-sell, Re-use, Re-distributed) and that of EDD drugs is process recovery (Disposal). Contrary to extant literature on RL, the only process recovery implemented by the PCs investigated was disposal (flushed down the drain, buried, incineration, open-air burning

etc.). This can be attributed to the chemical nature of drugs as well as inadequate product knowledge, technical know-how, technologies, and infrastructure to execute other process recovery options such as repair, refurbishing, remanufacturing, retrieval, or recycling.

Empirical findings also revealed that the ecological impact of improper drug disposal is not a factors considered by PCs when selecting PRL and process recovery methods.

9.1.10 Key Actors involve PRL operations

With regard to the "who perspective" of PRL, triangulated empirical findings revealed that the key actors responsible for the management of PRL operations comprises of internal and external PSC stakeholders. Internal players are the management team, supply chain team, inventory controller, customer service team, warehouse team, quality team, finance team, sales representative, end-customers, quality team, warehouse team, logistics team, internal auditors, warehouse staff, store staff, store managers, store pharmacist, procurement staff, and sales staff.

External stakeholders include all PSC stakeholders, which depending on the PC can be made up of the PMs, distributors (Pre-wholesalers), PIs, sales representatives, PWs, PRs, HBP (public and private), clinics, nursing homes, patients, end-consumers, ROLs, CW/DCs, HBP main store, satellite pharmacies, the OMS, courier companies, transport service providers, the RA (NAFDAC, ACPN), and the WDA (LASEPA, LAWMA).

9.1.11 Location of PRL Actors and Physical Structure

With regard to the "where perspective" of PRL, triangulated empirical findings revealed the actors in the PRL are located internally and externally. The PSC stakeholder's facilities constitute the physical network structure where the actors are located. All PSC stakeholders investigated offer collection point for customer returns, processes returned drugs, and on-

stock SEDD drugs. Essentially, the physical network structure where the actors engage in PRL activities are the ROLs, pharmacy main store, satellite pharmacies, transport/courier collection points, DC, CW, WDA's facilities, RA's collection facilities, and dump sites.

9.1.12 Time and frequency of key PRL activities

With regards to the "when perspective" of PRL, this perspective was specifically designed to generate novel insight on PRL practices from the stand point of time, and frequency of when key RL activities are initiated in the PRL network. This is arguably a unique contribution to the body of knowledge as the phenomenon has never been addressed in extant literatures the way it is recognised in this study. Triangulated empirical data revealed that end-consumers typically return unwanted drugs back to suppliers within 24 hours of purchase and such returns are handled immediately for exchange or refund purposes.

B2B customers return drugs to suppliers based on RCA. Hence, there are scheduled and periodic exchange, forward, and reverse movements of drugs between B2B channel partners depending on PSC stakeholders' RL policy, RCA, and Service agreements. Intra-company reverse movement (transhipment) of drugs takes place on a weekly, monthly, and quarterly basis depending on the PRL strategy employed. As waste elimination and product recalls are of growing concern to HBP, periodic RL activities are inevitable, especially when a recalled drug is a drug dispensed to hospital patients or end-users (Ritchie et al., 2000). The combination of the situational, scheduled and periodic reverse movement of drugs within and across PSC stakeholders generates this novel insight on PRL practices from the "when perspective".

9.1.13 Benefits of the Seven Perspective Framework

The seven perspectives of PRL presented in this study not only provided an empirically informed and theoretically grounded insight into the phenomenon, but also provide a holistic structure for understanding issues related to PRL practices as well as he visibility of a large number of matters involved. According to De Brito and Dekker (2003), Thierry et al, (1995) and Fleischmann et al., (1997), support this type of perspective-driven approach for characterising RL.

9.1.14 Summary of Factors Facilitating PRL

With regard to the PRL facilitators, triangulated empirical findings revealed that the implementation of PRL practices at the PCs investigated is not necessarily facilitated by governmental legislation, contrary to the evidence in most developed countries. This corroborates Sarkis et al.'s (2010) viewpoint that cultural, legal, social, political and a host of other macro-environmental variables differ by location and some research findings pertinent to a certain region may not be fully applicable in other region and locales. PRL practices are largely facilitated by the presence of RCA, and SOR agreement between channel partners, proof of purchase, as well as PC's commitments towards PRL (PC's liberal product take-back policy).

PRL is also facilitated by drugs disposal programmes/initiatives organised by ACPN for its members which encourages the submission of EDD drugs for proper disposal. Drugs returned by customers without a pre-purchase RCA in place are generally rejected by the suppliers. These findings corroborate the point made by Rogers and Tibben-Lembke (1998) that companies are only concerned with RL, as it relates to product return to their suppliers. This mentality will change if environmental and regulatory considerations have greater impact on their logistics decision.

9.1.15 Importance of PRL to PCs

Triangulated empirical findings revealed that PRL is important to the PCs investigated because the PCs consider it unethical and unprofessional to have compromised drugs. Although this suggests a positive managerial attitude and commitment towards PRL, the empirical findings suggest that the level of managerial commitment and resource allocation towards PRL vary per PCs and per PSC stakeholder.

This study found out that PCs implement PRL in order to free shelf space for saleable products and facilitate pro-active removal of SEDD drugs from inventory to mitigate the risk of dispensing EDD drugs. This increases customer satisfaction, trust and confidence in the pharmaceutical services; mitigates wastage, and democratises consumption. It enables capture of valuable information from consumers, such as the level of acceptability of the drug, and consumers' perceptions, which can be used by manufacturers to improve product quality. Other reasons are adherence to contractual obligations; to adhere to professional ethics; to adhere to regulatory requirements; to maintain brand integrity and corporate reputation; to prevent loss (Refund or exchange from Suppliers) and to facilitate proper recovery processes.

9.1.16 Summary of Factors Hindering PRL operations

The practices, however, increase the complexity of logistics and operational cost required for managing returned drugs, and SEDD drugs; it also causes delays and reduces profit in the short-term due to the cost of implementation.

The empirical findings confirmed that the pharmacy profession and practices in Nigeria are guided by the NDP. The empirical findings revealed compliance to regulatory requirement and PRL practices are hindered by inadequate knowledge of the RGs; the complexity of logistics, bureaucratic bottle-necks, and capacity issues; ineffective governmental policies, and enforcement; the cost of logistics and disposal and attitudes towards PRL practices.

9.1.17 Measures Envisage to Improve PRL practices

Triangulated empirical findings also revealed measures envisaged by respondents to improve their companies' PRL practices. Respondents emphasised that effective implementation of PRL operations is contingent on the collective commitments of all PSC stakeholders; Regulatory policies and enforcement must therefore be improved to drive the efficient flow of returned and SEDD drugs; PCs should invest in training and re-training programs for staff on various protocols to observe when handling drug returns, and ensure that all staff are meticulous in their professional duty; PCs should be encouraged to invest in more public awareness campaigns regarding the adverse effects of drugs and what end-users should do when in possession of SEDD drugs.

All PCs should adopt a common process and standard for PRL practices; there should be more managerial commitment to excellent customer service especially on issues relating to drug returns, security of drugs in the warehouse, transportation, and recovery; PCs should invest in information systems to facilitate stock management process, procurement process, return processes, intra and inter-company communications, product traceability and control; PCs should endeavour to adopt the most appropriate method of disposing of EDD drugs. Other suggested strategies were geographical expansion and decentralisation of DC to reduce over dependence on CW/DC, and removal of PRL activities from sales representatives and their allocation to a specialised department to manage.

In the following section, the researcher addresses the RQs based on the empirical evidence obtained from the field of study.

9.2 Conclusion Regarding the RQs

RQ1: What are the characteristics of PRL practices in the B2B segment of the NPI?

The majority of the PCs in the private sector are indigenous but PMs are largely multinational companies. Empirical evidence showed that PSC operations have been in existence in Nigeria

since the mid-1940s, suggesting a relatively long history of PRL activities. The types of product entering the PRL network are prescription and OTC drugs while the state of drugs when entering the PRL network are untampered, short-dated, expired, damaged (packaging material), defective, left-overs, and counterfeit.

PCs (Receivers) engage in PRL for multiple reasons, mainly economic and corporate citizenship reasons. PCs, however, do not engage in PRL because of legislative reason due to inadequate regulatory policy and enforcement. PCs (Senders) generally engage in PRL operation due to drug expiry, short-dated, adverse effects, wrongly ordered, and no longer needed. Strategic reasons for drugs return can be categorised as Distribution return (product recall, B2B commercial return, Stock adjustment returns), and Customer returns (B2C commercial return, and end-of-life returns) based on Senders' PSC hierarchy.

There are six different PRL process flows in the private sector of the NPI (B2B). Each PRL process flow (PM, PI, PW, PR, HBP, RA) provides specific insight on the sequence of events PRL processes and are all characterised by seven key PRL activities namely Returning, Collection, Gatekeeping and Inspection, Transportation and Transhipment, Warehousing, Sorting and Recovery.

The key actors responsible for the management of PRL operations comprises internal and external PSC stakeholders. Internal players include the management team, supply chain team, inventory controller, customer service team, warehouse team, quality team, finance team, sales representative, end-customers, quality team, warehouse team, logistics team, internal auditors, warehouse staff, store staff, store managers, store pharmacist, procurement staff, and sales staff.

External players include all PSC stakeholders. Depending on the PSC stakeholder, external players can be a combination of any of the following PSC entities: PMs, distributors (Pre-wholesalers), PIs, sales representatives, PWs, PRs, HBP (public and private), clinics, nursing homes, patients, end-consumers, ROLs, CW/DCs, HBP main store, satellite pharmacies, the

OMS, courier companies, transport service providers, the RA (NAFDAC, ACPN), and the WDA (LASEPA, LAWMA).

The physical network structure where PRL players are located includes the ROLs, pharmacy main store, satellite pharmacies, transport/courier collection points, DC, CW, WDA's facilities, RA's collection facilities, and dump sites. Hence, PRL players are located both internally and externally. Senders (end-consumers) typically initiate the PRL process within 24 hours of purchase, returned drugs issues are immediately for exchange or refund purposes.

Senders (B2B customers) initiate the PRL process based on the terms and conditions of the contractual agreement with their channel partners. Intra-company reverse movement (Transhipment) of drugs takes place on a weekly, monthly, and quarterly basis depending on the PRL strategy employed.

RQ2: What are similarities and differences in the PRL operations of PSC stakeholders?

RQ3: How do the similarities and differences if any influence the PRL operations?

RQ2 and RQ3 are addressed in details in chapter seven of this thesis based on empirical evidence obtained from the field of study. The PSC stakeholders share similarities as none engages in the ER due to legal prohibition. All PSC stakeholders acknowledged the existence of RG for handling EDD drugs and engaged in PRL due to economic reasons and corporate citizenship objectives. All PSC acknowledged ineffective governmental policies and regulatory enforcement as a major issue and their PRL operations are facilitated by pre-purchase RCA, SOR agreement, and company's product take-back policy.

All PSCs considered PRL as an additional operational cost and each stakeholder type investigated exhibits different organisational structure, operational and strategic mission, and business model. These differences dictate the type of customers they engage, the type of business partners they employ, and ultimately the type of PRL strategies they implement.

RQ4: What are the facilitators, drivers, and inhibiting factors of PRL practices in Nigeria?

PRL practices in Nigeria is facilitated by the presence of RCA and SOR agreements between channel partners. Proof of purchase, PCs' commitments towards PRL (PC's liberal product take-back policy) and drugs disposal programmes/initiatives organised by ACPN aimed at encouraging the submission of EDD drugs by PCs for proper disposal.

PCs' engagement in PRL practices is driven by two strategic reasons, namely, economic reasons and corporate citizenship objectives. The economic reasons include need to fulfil contractual obligations with channel partners; to ensure proper disposal; to maintain customer satisfaction, cordial customer/supplier relationship, and trust between channel partners; to maintain accountability and control of inventory, returns, refund, invoicing, and related stock reconciliation transactions; to maintain sales, boost inventory turnover, and minimise revenue loss; to reduce unnecessary wastage associated with drugs expiry; to achieve indirect gains via brand protection, to protect their brand image, and corporate reputation and to reduce customer returns.

The corporate citizenship drivers include need for drug abuse prevention; to eliminate EDD drugs from shelf/inventory, and eradicate EDD drugs from circulation; to prevent improper disposal of EDD drugs which can be hazardous to the environment if not processed appropriately; adherence to professional ethics and corporate reputation. These reasons are all associated with PCs' effort to achieve good corporate citizenship, CSR, and sustainability objectives.

Factors that hinders RG compliance and PRL operations includes the lack of adequate knowledge and awareness of the RGs; complexity of logistics processes involved in managing EDD drugs, bureaucratic bottle-neck at the RAs in processing drug submission applications; capacity issues encountered by RA to properly facilitate large scale destruction and disposal exercises. This indicates an inadequate state of infrastructural facilities to facilitate effective PRL practices and proper disposal. Other factors include ineffective governmental policies and

inadequate law enforcement; bribery and corruption; cost of logistics and disposal of drugs; poor attitude towards PRL practices and regulatory compliance especially by PR.

RQ5: Are there improvement opportunities envisage? If yes, what are they?

Based on the empirical findings discussed in Chapter Eight of this thesis, there are ample improvement opportunities envisaged for PRL practices in Nigeria. Details are presented section 9.4.2 (p. 453 – 458) as practical contributions of this study.

9.3 Limitations and Future Research Directions

There are some limitations to this thesis, which leave ample scope for future research. The most notable limitations and their corresponding future research directions are as follows:

1. This study conducted single semi-interview with one respondent each at majority of the PCs investigated. The risk of bias associated with obtaining data from a single respondent was mitigated by conducting interviews with PSC practitioners from different PCs. Nevertheless, there are ample scope for future PRL researcher to conduct multiple interviews with PSC practitioners within the same organisation.

2. From a regional perspective, this research focused only on PRL practices in the private sector of the NPI, limiting the research findings to the private sector of the NPI. Similar investigation could be carried out in the public sector of the NPI. A comparative study of both sectors can also be performed in order obtain a cross-sector perspective of the phenomenon.
    2.1. Furthermore, this study focused mainly on nineteen PCs; sixteen operate in Lagos state while the remaining three operate in Abuja. Hence, there is ample scope for future research in all the 36 states of Nigeria in order to generate a broader and a more robust insight of PRL practices in Nigeria.

2.2. There is also scope for a Pan-African, and cross-country exploration of PRL practices which can further generate both broader and specific insights into this phenomenon at country, regional, continental level.

3. From an industrial perspective, this research explored RL practices within the context of the NPI. There is ample scope to conduct similar RL research in other industries in Nigeria such as the food and beverage industry, electronics industry etc., as well as a comparative study of two or more industries.

4. From a methodological perspective, this study employed only the qualitative research method, i.e. multiple case study using a semi-structured interview data collection technique. There is, therefore, scope for the usage of mixed-methodology i.e. the usage of both qualitative and quantitative research methods in a single research, thereby facilitating multidimensional insights into the phenomenon studied. As there have been increasing calls for rigour in logistics research, the use of different research methods can overcome potential bias and sterility of single method approaches (Collis & Hussey, 2003).

5. From PSC stakeholders' perspective, this research focused mainly on the reverse movement of finished drugs (OTC and prescription drugs) during the distribution phase i.e. during the movement of drugs between suppliers and customers as well as within PCs and their ROLs. There is therefore scope to explore PRL practices that are initiated during the production phase of drugs at PMs. This generally involves unutilised raw materials remaining after production is completed, intermediate or finished products that failed quality checks and require rework, production left-overs and by-products derived during production (De Brito & Dekker, 2003).

5.1. Furthermore, there is also potential for the exploration of PRL operations between PMs and raw material (API, packaging materials) suppliers.

6. From a data source perspective, this study's findings are based on empirical evidences obtained mainly from PSC practitioners. The end-users' perspective was not considered in this study. The veracity of this study can be further enhanced in future research by engaging and obtaining insights from end-consumers.

7. From a product perspective, this study focused mainly on the RL of OTC and prescription drugs. There is therefore ample scope for the exploration of PRL practices for other types of pharmaceutical products such as medical devices and medical equipment. These pharmaceutical devices sometimes require repair, refurbishment, or return to the supplier due to service related reasons. It would therefore be a valuable addition to the body of knowledge to obtain insight on the RL of these types of product.

    7.1. Furthermore, there is ample scope for the exploration of PRL practices of functional products in the NPI. Functional products are products whose inherent function makes them go back and forward in the chain (De Brito & Dekker, 2003). A classic example of functional products is the distribution carriers such as pallets, crates, containers and packaging materials.

8. The SLR of this study identified several theories used in RL research. Although this study uses the stakeholder theory to corroborate empirical findings on the "why and who perspectives" of PRL, future RL research might use other theories as a theoretical lens to examine PRL issues in developing countries.

The researcher recognises these research limitations due to the accessibility issues encountered, time limitation and resource constraints. Fundamentally, these limitations did not devalue the quality of this research, its empirical findings, and contributions. This study provides valuable platforms and a basic starting point for future PRL research i.e. a valuable platform for PRL research in the context of developing countries, and a basic structure (the

seven-perspective RL Framework) which future researchers can utilise to explore various issues in RL.

9.4 Contributions

9.4.1 Theoretical Contributions

This research makes a valuable contribution in developing an empirically informed and theoretically grounded understanding of PRL practices by adapting and operationalising the seven perspectives framework of RL in the context of nineteen companies operating in the private sector of the NPI. Specifically,

1. This study has explored RL practices in the pharmaceutical industry of a developing nation (Nigeria), which has never been done before. As a result, concepts in RL especially in the pharmaceutical industry has been developed via open coding of data. As concepts are regarded as the building blocks of theory (Voss et al., 2002), this study contributions towards the conceptual understanding of PRL practices in Nigeria ultimately contribute to towards theory development in this field;

2. This study identified empirically informed factors that facilitate, drive, and inhibit PRL practices in Nigeria, which are different from those generally discussed in extant literature but corroborate the stakeholder and RL theory. This attribute corroborates Eisenhardt, (1989)'s points that the examination of literature that conflicts with the emergent theory increases confidence in the research findings, provides opportunities for more creative and frame-breaking modes of thinking;

3. Concepts are regarded as the building blocks of theory (Voss et al., 2002). This study identified the concept of ER and defined it as drugs sourced from foreign pharmaceutical entity, imported into Nigeria for consumption, but that need to be returned to the source for exchange, refund, disposal or any other purposes etc. To the researcher's knowledge,

ER has not been designed nor defined in extant literature even though the concept exist in practice;

4. This study extended the six-perspective content framework of RL initially developed by De Brito and Dekker (2003), and adapted by Xie and Breen (2014) to a seven-perspective content framework of PRL by including the "when perspective" of PRL to the framework. This generates a new insight of PRL from the perspective of when key PRL activities such as drug return, collection, inspection, sorting, and recovery processes are initiated. Hence, the perspective further contribute to our understanding of RL.

5. Multiple case research is applicable to either predict similar results among replications, or to show contrasting results, but for predictable, explainable reasons (Ellram, 1996). As a result, this study developed a typology of six important PRL process flows. Each PRL process flow depicts PSC stakeholder-specific processes. The typologies facilitate the development of stakeholder-specific PRL process flows, and highlight elements peculiar to each PSC stakeholder type;

6. Researchers must avoid what is referred to as confirmation bias, or the tendency to seek out and report data that supports their own ideas about the key findings of the study (Miles & Huberman, 1994). Having avoided confirmatory bias, this study reaffirms the applicability and the versatility of seven key PRL activities (Returning, Collection, Gatekeeping and Inspection, Transportation and Transhipment, Warehousing, Sorting, Recovery) commonly shared by PSC Stakeholders.

7. This study contributes to the usage of qualitative research methods in logistics research, and the usage of stakeholder theory as a theoretical lens to view a RL research. According to Donaldson & Preston, (1995), it is justified in management literature based on its descriptive accuracy, instrumental power, and normative validity.

9.4.2 Practical Contributions

This thesis provides numerous implications for practitioners in the PSC network as well as the government. Most notable are the following improvement opportunities highlighted in the empirical findings discussed in Chapter Eight. This includes the need for the collective commitment of all PSC stakeholders towards RL; improvement of regulatory policies and enforcement; investment in training and re-training programmes for PRL actors; investment in public awareness campaigns on the adverse effect of drugs and the handling of EDD drugs; adoption of common standard, and processes for PRL operations; investment in information systems; improvement of intra and inter-company communications; improvement of process recovery methods; decentralisation of DC via geographical expansion and re-organisation of roles and responsibilities in the PRL network.

It appears there is a low level of understanding of these aforementioned matters in the NPI when compared to the level of understandings and practices in the developed countries such as the UK and the NL, with which the researcher is familiar. Hence, this study provides the following managerial contributions:

1. Fundamentally, successful implementation of PRL practices, and related improvement initiatives are contingent on the collective commitments of all PSC stakeholders directly and indirectly involved in PRL operations. They include the management team of PCs, raw material suppliers, WDA, NAFDAC, ACPN, PCN, etc. There should be a mechanism to facilitate and to harness this required commitment. Hence, an industry PSC working group comprising a special interest group on PRL should be set up to serve as a platform where PRL issues can be discussed. Such special PRL interest group can be similar to the Pharmaceutical Services Negotiating Committee (PSNC) in the UK. Most of PSNC's work involves discussions and negotiations with the Department of Health to secure the best possible remuneration, terms and conditions for NHS pharmacy contractors in England and Wales.

2. There is a need to develop an integrated approach where the public, private and community sectors can work together to develop local solutions that promote best in class PRL practices. This can be achieved through the prioritisation of PRL practices both by the governmental institutions and the industry; investment in RL research, especially in the pharmaceutical sector, and availability of data on the impact pharmaceutical waste, and the benefit of effective PRL practices.

3. Industry should be aware that drug return is not a single act. Drug return is a process that begins long before the drug reaches the shelves and end-consumers. In order to improve the efficiency of the PRL processes, and improve the end-consumer experience, PSC practitioners need to be able to step back from the narrow view of a return and see the bigger picture that encompasses all facets of the PSC. Hence, industry and government should not only consider investing in PRL research but also investment in training and re-training programmes, apprenticeship programmes, and diploma programmes, including specific product return training to educate PSC practitioners, and all associated staff about PRL best practices. According to Ngwuluka et al., (2011), such training programmes should be done for the staff of the RAs, the key PSC players in the public and private sectors, PSC practitioners, health care workers and the public. This will not only boost the industry's awareness of PRL but will also empower the public and practitioners with the knowledge and skills required for the successful implementation of PRL operations.

4. Annual review and update of regulatory policies governing PRL practices as well as policies concerning social responsibility of PCs should be meticulously conducted by relevant industry professional bodies such as the RA, ACPN, PCN, etc., in collaboration with the RA such as NAFDAC. According to the BMA (2011) policy on dispensed but unopen medication in the UK, returned medicines cannot be reissued to other patients as the quality of the medicine cannot be guaranteed based on physical inspection alone. Reason

being that, the storage condition of the drugs cannot be guaranteed, once drug has left the pharmacy. Some drugs are sensitive to heat, light or moisture and can become less effective if not stored properly. This kind of regulatory policies update should be considered for implementation in the NPI as it will enable the PRL operation to effectively mitigate the risk of SEDD drugs consumption

5. Actors' compliance in fulfilling their duties is essential to the RL operation and success (Xie & Breen, 2014). Hence, stricter supervision and enforcement RGs by government is highly recommended to facilitate best in class PRL practices in Nigeria like those implemented in Europe and the US. This is achievable through periodic audit of PCs' RL processes. The RA can implement a mystery shopper programme to test the compliance of PCs to the RG. With appropriate disciplinary measure enforced in case of non-compliance, awareness of RGs and PRL operations will be improved. Launching a compliance scheme facilitates the return or management of waste medicines, therefore encouraging actors to become more engaged (Xie & Breen, 2014). However, if enforcement cannot be applied through legislation, education and public awareness campaign are found to be the key mechanisms to encourage positive and heightened environmental behaviour with regard to waste medicines (Erol et al., 2010; Prahinski & Kocabasoglu, 2006).

6. The success of an RL system requires cross-boundary cooperation among the actors within the whole reverse chain (Xie and Breen, 2012). Hence, collaboration between suppliers (PM) and B2B customers regarding RCA needs to be encouraged in order to establish a more robust term that is both realistic and agreeable to parties involve. This type of collaboration will go a long way to improving the efficiency of the PRL processes and making it error-free.

7. Industry and government should develop policies to encourage the adoption of the most appropriate and ecologically friendly process recovery method for disposing EDD drugs.

Reducing, reusing and properly disposing of waste medicines require an increase in awareness of this issue and an associated increase in activity and support (Xie & Breen, 2014). Hence, industry and government should consider increasing investment in public awareness campaigns across the whole country about the environmental effect of improper drug disposal, and the enormous socio-economic benefit of having EDD drugs returned into the PRL network. According to Xie and Breen, (2014), medicine waste campaigns organised by the Dynamic Group in 11 UK regions led to positive changes in end users' behaviour relating to ordering repeated medicines and disposing of waste medicines.

8. It appears that there are no standardised PRL procedures for PSC practitioners and PRL players. From a best practice perspective, industry and government should endeavour to adopt a common process and industry standard for PRL practices. Regulatory bodies such as the NAFDAC, ACPN, and PCN need to take a leading role in conjunction with the industry to formulate, implement and enforce SOPs for handing standard drug returns and SEDD drugs. Benchmarking with the practice in the UK (Black Country Partnership NHS Foundation Trust (2017) policy document), the NDP and SOP should be aimed at informing all health professionals that have any involvement with medicines the correct procedures for the safe handling, ordering, storage, transportation, and safe disposal of medicines. Black Country Partnership NHS Foundation Trust (2017) policy document

9. From a best practice perspective, there is a gap between the way PRL practices are done in Nigeria and the practices in developed countries. As mentioned above, industry and government should look at the possibility of benchmarking European PRL standards as best practice; adopting proven PRL practices from countries like the UK and the NL. The adoption of best practices need to be set up and implemented on an industry basis, or governmental legislation/policy basis or in conjunction with a special interest group for PRL.

10. Greater managerial commitment is needed towards excellent customer service, especially in the areas of drug returns, drug security, warehousing, transportation, and value recovery. Hence, PRL should not be managed in isolation, but should be integrated with all functional areas that affect, or can be affected by the management and control of drugs.

11. One of the most serious problems that firms face in the execution of RL operation is the lack of a good information system (Tibben-Lembke & Rogers, 1998). Industry and government should therefore invest in ICT and information systems (MRP and ERP systems) to facilitate transparency in the return processes, product traceability and control, stock management, as well as intra and inter-company communications. According to Tibben-Lembke and Rogers (1998), failure in effective gatekeeping can create significant friction between suppliers and B2B customers, not to mention lost revenue. Hence PCs' gatekeeping processes needs to be improved through the effective use of ERP systems. According to Alam and Ahsan (2007), the adoption of ICT in the organization is mostly influenced by government support. Hence, governmental support through initiatives such as tax incentives aimed at facilitating development and advancement of the ICT industry in Nigeria is highly recommended.

12. Industry and government should consider increasing investment in the geographical expansion of pharmaceutical facilities across Nigeria, and encourage the decentralisation of DCs in order to reduce the perpetual over dependence on one CW/DC often located in Lagos State. Business incentives, such as tax incentives and capital incentives, have resulted in environmental improvements (GEMI, 2006). Hence, the proposed increase of investment in geographical expansion can be encouraged through business incentives such as tax incentives for PCs that implement effective PRL systems.

The researcher suggests the consideration and implementation of these highlighted recommendations by industry and government to facilitate PRL best practices in Nigeria.

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APENDICES

APPENDIX ONE: SEMI-STRUCTURED INTERVIEW GUIDE

Preamble: This semi-structured interview is designed to elicit relevant empirical information for the conduct for a research study on "Reverse logistics practices in the Nigerian Pharmaceutical Industry" All responses will be confidential and only aggregate analysis will be presented, along with any relevant quote to support a particular point of view.

1. Introduce interviewer and thank interviewee for agreeing to take part in this 45-60-minute interview;
2. Remind interviewee that the purpose of our study is to explore reverse logistics practices in the B2B private sector of the Nigerian pharmaceutical industry;
3. Advise interviewee that the interview objective is to solicit their expert views and opinions about these practices as guided by questions;
4. Assure confidentiality and anonymity regarding any attributed comments;
5. Ask whether the interview can be recorded for the purpose of ensuring the interviewee's meanings and comments are properly interpreted; and
6. Obtain verbal consent from interviewee to the above and proceed.

Case Profile

1. Job Title:
2. Years in Profession:
3. Years with the company:
4. Company Specialities/major Business:
5. Numbers of employees in company:
6. Industry sector classification:

The What Perspective of Reverse Logistics

1. What kind of products does your company manufacture or supplies customers?

2. Does your company allow drugs to be returned by customers?
   a. If yes, what kind of products [usable, expired, damaged drugs]?
   b. If no, why not?

3. If yes, in practice, how does your company receives drugs back from customers?
   a. What is the state of the drugs normally received back from customers? [usable in-warrantee, usable out-of-warrantee, expired, damaged drugs]

4. Do your company manufacture drugs or purchase from suppliers?
   a. If yes, what type of drugs [finished drugs, work-in-progress drugs, AI]?
   b. If no, what is the source?

5. Does your company return drugs back to her suppliers?
   a. If yes, what are the state of the drugs [usable, expired, damaged drugs]?
   b. If no, what is the reason?

6. If no, what does your company do with the returned/obsolete drugs?

7. What impact dose these activities have on your company? In terms of *[Operational Cost, Revenue/Profits, Legislative Compliance, Environment, Corporate Reputation, Sustainability etc.]*

8. What are the key challenges your company faces in managing drug returns?

The Why Perspective of Reverse Logistics

1. Why do your customers/partners return drugs back to your company? *[Quality Issues, Expiration, Damaged, Legislative Reason, Corporate citizenship, Environmental concerns, etc.]*
    a. If customers or partners do no not return drugs, why don't they?

2. Why does your company accept drugs back from customers/partners? *[Economic Reason, In-warrantee agreement, Legislative Reason, Brand protection reason, corporate citizenship Reason, Environmental concern, etc.]*
    a. If your company do not, what is the reason?

3. Why does your company return drugs back to her suppliers? *[Quality Issues, In-warrantee, Expiration, Damaged, Legislative Reason, Corporate citizenship Reason, Environmental concerns etc.]*
    a. If your company do not, what is the reason?

4. Why do your suppliers accept drugs returned by your company?
    a. What kind of drugs do they accept? [Usable in-warrantee, out-of-warrantee, expired, damaged drugs etc.]

The How Perspective of Reverse Logistics

1. How important are reverse logistics practices to your company?
    a. Very important; why?
    b. Not important; why not?
    c. Indifferent; why?

2. Are there procedures in place for the collection, sorting, storing and processing of returned drugs by your company *[usable, damaged and expired drugs]*?
    a. If no, what is the reason?
    b. If yes, please describe the process/procedure;
    c. Are the procedures followed?
    d. If no, what is the reason?

3. Are there better ways of performing these activities (Reverse Logistics)?

4. How long does your company keep the returned drugs before processing?
    a. What reason account for this?
    b. If your company do not keep the returned drugs, which company do the storage and processing?

5. How does your company process the expired/damage drug in her inventory? Please describe the process…
    a. Why does your company process the expired/damage drug inventory the way it currently does?
    b. Are there better ways of performing these activities?

6. How often does your company return drugs back to suppliers or forward drugs to service providers?
    a. Please describe the process;
    b. Are there better ways of performing these activities?

The Who Perspective of Reverse Logistics

1. Who are your company's customer?

2. Who are your companies' suppliers or co-manufacturers?

3. Which supply chain stakeholder (s) *[customers, supplier, distributors, wholesalers, retailers, hospital pharmacies etc.]* returns drugs to your company?

4. Who are the stakeholder/companies responsible for collecting, sorting, storing, reporting and disposing the returned drugs? *[Manufacturers, Distributors, Wholesalers, Retailers, Hospital, Service Providers]*
    a. What is the nature of your company relationship with these companies?

5. Which stakeholder(s) has influence on the way your company manages returned drugs (usable and unusable drugs)?

6. Who are the actors/employees within your company responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs?

The Where Perspective of Reverse Logistics

1. Where are the stakeholders located that are involved in the reverse logistics operation (collection, storage, re-sell, and disposal) of your company?

2. How far are they from your company? *[Local government area, state etc.]*

3. What influence/impact dose the location of stakeholders has on the collection, storage, and processing strategy of returned drugs?

Improvement of reverse logistics practices to international standard

1. On a scale of 1-10 how well do you feel your company manages drug customer returns overall?

2. What are the laws governing the handling of returned, damaged, and expired drugs?

3. Is your company compliant? What are the factors hindering compliancy?

4. What is your company doing to improve her reverse logistic practices (collection, processing, storage, resell and disposal of returned or expired drugs as well as reporting to regulatory authorities)?

5. Does your company have in place the following polices: ethical trading initiative? CSR?

APPENDIX TWO: WITHIN CASE ANALYSIS

Detailed Write-ups of each nineteen Cases

1. **Case Research A (CRA):** Pharmaceutical Manufacturer

Case Profile
CRA is one of Africa's largest consumer healthcare companies. The product portfolio consists of many well-known brands, and categories such as nutritional health drinks, oral healthcare and wellness. CRA also imports prescription drugs (Acting as a wholesaler) while its pharmaceutical products include treatments for asthma, malaria, depression, migraine, diabetes, heart failure, digestive conditions, hepatitis A and B, diphtheria, tetanus, whooping cough, typhoid and cancer.
Export Return
CRA being a multinational company do not purchase drugs from external supplier but sometimes import drugs into Nigeria from its foreign subsidiaries. There are however no return flow or export of drugs back to its subsidiaries outside Nigeria. There are no return flow of finished drugs back to their subsidiaries outside Nigeria. If by any chance drugs expire on stock, CRA bears the lost and destroy the drugs together with any other expired/damaged /defective (EDD) drugs. Drugs are also not returned EDD drugs back its foreign subsidiaries due to legal ramifications, complexity, cost of logistics activities required to export expired drugs.
Importance of PRL Practices
Pharmaceutical Reverse Logistics (PRL) practices is considered very important at CRA. Hence, there are procedure in place for the collection, sorting, storing and processing of returned and EDD drugs.
Knowledge of RG
There are standard statutory guidelines given by the regulatory authority (RA) to guide companies in handling EDD. According to the respondent, details of these guidelines is known by the quality department; CRA is compliant to the RG.
PRL Facilitator
The return processes are facilitated only via specific return contractual agreement (RCA) between suppliers and CRA.
PRL Impact on Business Operation

PRL activities have impact on business operations in terms of the amount of labour hours used in executing the activities, complexity of managing returns such as short-dated, expired and damaged drugs (SEDD drugs) and the additional logistics cost the activities incur.
The What Perspective of Reverse Logistics
CRA allows drugs EDD drugs to be returned by customers. If drugs will be returned from any channel partners, it is mostly likely going to be damaged drugs or defective drugs.
The Why Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
CRA accepts the drugs back from customers due to economic reasons, RCA, and legislative reasons, and for brand protection purpose. However in practice, drugs are not usually returned by the customers (distributors) due to the operating business model.
The Why Not Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
EDD drugs are not returned due to the RCA with the major distributors as products normally passes through a systematic quality checks before being purchase and delivered customers (Major-Distributors). Once the drugs are purchased, the distributors take ownership of the stock. Hence, once the drugs expire on-stock, the distributor will bear the loss, destroyed the drugs in conjunction with the manufacturer and the RA.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers (Distributors) generally return drugs due to expiry, damage, and adverse events. The returns is facilitated only via specific RCA.
The Why Not Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
EDD drugs are not returned to CRA due to the RCA with the major distributors. Drugs normally pass through a systematic quality checks before being purchase and delivered. Once the drugs are purchased, the distributors take ownership of the stock. Once, drugs expire on-stock, the distributor will bear the loss. The complexity and cost of logistics activities required to export EDD drugs to subsidiaries outside Nigeria discourages returns to the subsidiaries.
The How Perspective of Reverse Logistics
There is procedure in place for the collection, sorting, storing and processing of returned and unusable drugs. Drugs are usually received back via the company logistics net-work, and EDD drugs are stored in quarantine upon receipt. According to the respondent, return handling procedures are always followed. The duration of time CRA keep returned drugs before processing varies depending on type of reason for the return. Drugs are rarely return to the company due to the business model. EDD drugs in inventory are destroyed in-house in the presence of RA's officials.
The Who Perspective of Reverse Logistics
CRA's customers are mainly the distributors (Pre-wholesalers). The only supply chain stakeholder that return drugs to the company are the major distributors. The stakeholders

responsible for collecting, sorting, storing, reporting and disposing the returned drugs is CRA. The disposal activities are done in-house in the presence of RA officials, and sometimes with distributors.
CRA sells off products (drugs) to its major distributor (pre-wholesaler) who then take ownership of the stock and responsible for the distribution of the drugs to customers such as retailers, hospitals, wholesalers etc. The RA acts as the regulator and enforcement body. These stakeholders including internal management, service providers, and the RA have influence on the PRL operation of CRA. The stakeholders responsible for the day to day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are the supply chain team, quality team, finance team and the and sales department.
The Where Perspective of Reverse Logistics
The stakeholders involve in the PRL operation of CRA are located in-house and the external stakeholders are all located within Lagos State. Hence, location have little or no impact on the PRL activities of the company. As the destruction takes place in-house, the operational and logistics cost is relatively low.
The When Perspective of Reverse Logistics
The duration of time CRA stores returned drugs before processing varies depending on the reason for the return.
Improvement of Reverse Logistics Practices
According to the respondent from CRA, PRL practices can be improved via the usage of technology (ERP systems), and communication technologies to facilitate transactions between channel partners. CRA is working on improving its product traceability capabilities through better use of ERP system which will also help to manage demand and reduce expired inventory.

2. **Case Research B (CRB):** Pharmaceutical Manufacturer

Case Profile
CRB manufactures, markets, and distributes pharmaceutical products that meet international standards. The company was established in 1976 and has been supplying drugs to Federal Ministry of Health (FMoH), State Governments, Parastatals and private Market. All the company's products are subject to Good Manufacturing Practice (GMP) and Good Laboratory Practice (GLP) for Quality Control.
Export Return
CRB manufactures drugs, import AI and, some drugs from foreign manufacturers. CRB however do not return drugs back to its suppliers due to the complexity of the logistics, and operational cost. Hence, the destruction of EDD drugs is done locally.
Importance of PRL Practices

PRL practices is considered very important as it enables the capturing of relevant information such as the level of patient acceptability of the drugs, as well as public perception of the drugs.
Knowledge of RG
CRB respondent acknowledged the existence of RG for managing EDD drugs. The RG are followed but several factors can inhibit compliancy.
Factors Hindering Compliancy
According to the respondent, factors hindering compliancy are the complexity of logistics operation involve, the bureaucratic bottle-neck at the RA, the lack of time, and questionable capacity of the RA guarantee proper disposal of EDD drugs.
PRL Facilitator
Drugs are returned by customers primarily based on the RCA with CRB.
PRL Impact on Business Operation
PRL activities has a cost impact on revenue, and profit of the company. Despite these negative impact, return activities enables CRB to be compliant to regulatory requirement, professional ethics which enhances the corporate reputation of the company.
The What Perspective of Reverse Logistics
CRB produces and supplies pharmaceutical drugs and allows drugs to be returned by customers. The kind of products normally returned are damaged drugs such as those with squeezed packs.
The Why Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
Drugs are accepted back from customers for brand protection purposes, corporate citizenship, and environmental concern.
The Why Not Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
RG on the management of EDD drugs are followed but inhibiting factors includes the complexity of logistics operation involve, the bureaucratic bottle-neck of the regulatory bodies, the lack of time, and capacity of the regulatory agency to ensure proper disposal of the drugs.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers return drugs back to CRB mainly because of damages to the drugs.
The Why Not Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers

CRB do not have any reason to return drugs to suppliers as products are manufactured in-house. Although AI are procured from suppliers, unusable raw material are not usually returned to suppliers due to the complexity of the logistics involve and the additional logistics and operational cost. Unusable drugs and raw material are usually sent to the regulatory agency for proper disposition and destruction. Customer do not return drugs back if they are satisfied with the drug.
The How Perspective of Reverse Logistics
There are procedures in place for the collection, sorting, storing and processing of returned drugs. Drugs returned by customers are processed immediately upon receipt. This is to manage, resolve and prevent the escalation of drug related issue. Return activities to suppliers are not a frequent occurrence. Drugs that expires while in inventory are usually removed from inventory, quarantined together with those returned by customers. EDD drugs are normally submitted to the RA for destruction once every 3 to 4 years. CRB normally first notify the RA, and provides details such as the name of the drug, quantity requiring destruction, total value of the drugs, batch number, manufacturing date, expiration date etc. Pay the appropriate destruction fee, book an appointment, and then transport the drugs to the RA's facility in Lagos.
The Who Perspective of Reverse Logistics
CRB customers are mostly distributors, wholesaler, hospital pharmacies, clinics, and government hospitals. All AI are purchased from foreign manufacturers. All these customers return drugs to the company when required. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs is the company itself and the RA. The actors/employees within the organisation responsible for the day-to-day reverse logistics activities are the warehouse manager, admin manager, sales manager and the quality team.
The Where Perspective of Reverse Logistics
The stakeholders involved in the reverse logistics operation are located in-house and within the Lagos State. The location of stakeholders does not have any negative impact on the collection, storage, and processing strategy of returned drugs as they are all located in-house and in the same state. As the destruction takes place in Lagos, the logistics cost is relatively low.
Improvement of Reverse Logistics Practices
According to the respondent, CRB is working on improving its PRL practices by encouraging public awareness of adverse effect and public education of what to do with EDD or any compromised drug.

3. **Case Research C (CRC):** Pharmaceutical Manufacturer

Case Profile

CRC is a pharmaceutical that produces OTC and prescription drugs. The company has the capacity to produce 4 billion tablets and 30 million bottles of 60 ml liquid preparations annually.
Export Return
CRC manufactures its own finished drugs. Hence, return of drugs to any stakeholder is not in existence.
Importance of PRL Practices
PRL practices is very important as it enable CRC to implement the RCA effectively and adherence to its contractual and regulatory obligations.
Knowledge of RG
There are guideline governing the handling of returned, EDD drugs. Details is however unknown to the respondent from CRC.
Factors Hindering Compliancy
CRC is compliant to the RG but factors such as cost of destruction and greed hinders compliancy to RGs.
PRL Facilitator
Based on RCA, short-dated drugs are allowed to be returned by customers. Where there is no RCA, drugs will not be allowed to be returned.
PRL Impact on Business Operation
PRL activities is considered to be an additional operational cost and loss in revenue.
The What Perspective of Reverse Logistics
Drugs normally received back from customers are short-dated drugs. CRC manufactures its own finished drugs. Hence, return of drugs to any stakeholder is not in existence. When drugs expire on stock, damaged or returned by customers, they are consolidated and stored in quarantine. The RA will be notified, request for collection and destruction of the drugs.
The Why Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
Customers return drugs back to CRC mainly because the drugs have become short-dated and there is also RCA in place to facilitate such returns.
The Why Not Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
Where there is no contractual arrangement, drugs will not be allowed to be returned to CRC. This is because the drugs were sold to customers with long shelf-life. Sometimes company do

not accept drugs back from customers because the drugs that were sold to customer have a long shelf-life. CRC is compliant to the RG but factors such as cost of destruction and greed hinders companies from complying with RGs.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers return drugs back to CRC mainly because the drugs have become short-dated and there is also RCA in place to facilitate such returns.
The Why Not Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
CRC manufactures its own finished drugs. Hence, return of drugs to any stakeholder is not in existence. Once there is no contractual provision for return, customer will not have the right to return usable, SEDD drugs.
The How Perspective of Reverse Logistics
There are procedure for the collection, sorting, storing and processing of returned drugs that have RCA. No procedure for those without RCA but sometimes CRC do not accept drugs back from customers because the drugs with long shelf-life were sold to customer. The short-dated drugs (3 to 6 months to expiration) returned by customers are given out to the sales rep to sell at a discounted price to retail pharmacies and also ensure that the drugs are sold out at the pharmacies. Once the drugs becomes less than 1 month to expiration, the drugs will be withdrawn from circulation i.e. collected from the retail pharmacies and returned back to CRC. Consolidated with other quarantined returns, the RA will be notified, request for collection and destruction of the drugs.
The Who Perspective of RL
CRC's customers are retailers, clinics, wholesalers, hospitals etc. CRC do not have any finished drugs suppliers or co-manufacturers. The stakeholders that return drugs to CRC are the retailers and wholesalers. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the retailers, wholesalers, CRC and the RA.
The When Perspective of RL
Drugs returned by customers are processed immediately upon receipt. This is to manage, resolve and prevent the escalation of drug related issue.
Improvement of RL Practices

4. **Case Research D (CRD):** Pharmaceutical Manufacturer and Importer

Case Profile
CRD is a leading pharmaceutical manufacturing company in Nigeria. With well over 200 different drug products and formulations across different therapeutic classes and pharmacological segments, CRD provide offerings and options to prescribers and patients that

are second to none. From cardiovascular, anti-diabetic, chemotherapy, anti-retrovirals, psychiatry, analgesics, haematinics, nutraceuticals among many others, we bestride the industry with towering dominance and respectable stature.
Export Returns
CRD do not return drugs back to her suppliers because the imported drugs are marketed and owned by the company. It is also waste of capital to export unusable product back to the suppliers as the cost of export and logistics is high. To reduce the negative impact of having to destroy high volume of short-dated drugs, CRD normally sell these short-dated drugs at a discounted price to hospitals, donate to staffs and use as samples. Drugs with damaged packaging are also sold at a discounted price to staffs.
Importance of PRL Practices
PRL practices is very important CRD as it helps prevent the forward flow and circulation of EDD drugs in the market. It also helps to maintain brand integrity.
Knowledge of RG
One of the guideline governing the handling of returned, and EDD drugs is that companies must first notify the RA in writing when drugs need to be disposed. Upon receipt of the request by the RA, Pay Advise will be issued to CRD for the destruction service.
Factors Hindering Compliancy
RG for managing EDD drugs are followed but the complexity of logistics operation involves, the bureaucratic bottle-neck of the regulatory bodies, the lack of time, and capacity of the regulatory agency to ensure proper disposal of the drugs inhibit compliancy.
PRL Facilitator
PRL is facilitated by a pre-purchase RCA.
PRL Impact on Business Operation
The impact of PRL practices on the business operation is the additional operational cost incurred. The practice however provides visibility on the type of drugs being returned and valuable information about the performance of the drugs, public perception and the acceptability of the drugs.
The What Perspective of Reverse Logistics
CRD manufactures OTC, ethical and prescription-base drugs. CRD allow drugs to be returned by its customers if the drugs are damage, tampered before receipt, adverse event or complaints after usage. The drugs are usually in usable, defective (Adverse event), expired, damaged, short-dated (6 months to expiration) state when returned by customers.
The Why Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies

CRD accept drugs back from customers in order to fulfil her contractual obligation and maintain good customer relationship and satisfaction.
The Why Not Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
CRD do not return drugs back to its suppliers as the drugs are imported, marketed and owned by the company. It is considered a waste of capital to export SEED drugs to suppliers; the cost of export and logistics is high. Short-dated drugs are normally sold at a discounted price to hospitals, donate to staffs and use as samples. Hence, CRD rarely allow drugs to expire on stock. Drugs with damaged packaging are also sold at a discounted price to staffs who sometimes also sell them to friends and relatives but are never commercialise to channel partners because of the damaged packaging.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers return drugs back to CRD if the drug is slow-moving, and have become short-dated due to lack of sale. Hence, they need to be returned based on pre-purchase RCA. Customers typically return drugs to CRD for exchange and then re-distribute to retailers.
The Why Not Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
CRD do not return drugs back to her suppliers as the imported drugs are marketed and owned by the company. It is also waste of capital to export unusable product back to the suppliers as the cost of export and logistics is high. CRD reduces returns by selling short-dated and damaged drugs at a discounted price to hospitals, donate to staffs and use as samples.
Hospitals rarely return drugs as they ensure that the right quantity of drugs that meet their specific demand are purchased at every given time. The rate of consumption in hospitals are quite high so hospitals pharmacies generally follow the FEFO principle (First Expire First Out) when dispensing. According to the respondent, most manufacturers and importers would want to conceal information about their expired drugs; this sometimes result in practices such as revalidation of product expiry date, carrying out the destruction exercise in-house. The RA normally fine (Administrative charges) companies that engages in such practices.
The How Perspective of Reverse Logistics
There are procedure or SOP in place for the collection, sorting, storing and processing of SEDD drugs. It is the duty of the inventory controller to communicate shelf-life of products about to expire to the marketing and operations divisions. After which a decision is taken on when, who and how to distribute such products. Some of these short-dated (6 months to expiration) drugs are donated to charity organisation, hospitals and staff and all are informed about the expiring date of the drugs. To prevent drug from been expiring while in the company inventory. By so doing, CRD indirectly transfer the destruction responsibility to the other channel partners especially if the drugs are not consumed before final expiration. Not all products can be given to staff as some are prescription-based drugs. Hence, these drugs are often distributed as samples to doctors or hospitals where such products would be required by patients.
Drugs that expired while in inventory will be removed, collated, stored in quarantine. The RA will be notified requesting for collection and destruction. The RA will give payment advice for the service. Once payment is made and a day, time and location is scheduled. The drugs will be dumped at the agency approved location for destruction. A representative of the company will be present during the destruction exercise and a certificate of destruction will be issued. The respondent however stated that this return and destruction process can be improved. CRD

normally store the returned or unusable drugs under quarantine for about 6 months before processing.
The Who Perspective of Reverse Logistics
CRD's customers are distributors, and sales representative sell the drugs directly to wholesalers, NGO, and hospitals. The supply chain stakeholder that returns drugs to CRD are the distributors; they return drugs for exchange and then re-distribute to retailers. Hospitals rarely return drugs as they ensure that the right quantity of drugs that meet their specific demand are purchased at every given time. The rate of consumption in hospitals are quite high so hospitals pharmacies generally follow the FEFO method of stock allocation when dispensing.
The stakeholder/companies responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the RA, and waste disposal service provider. The actors/employees within CRD responsible for the day-to-day reverse logistics operations are the inventory controller, warehouse employee, customer service, sales representatives.
The Where Perspective of Reverse Logistics
The stakeholders involved in the PRL operation are located in the same state (Lagos state). Their location however does not have any negative influence on the collection, storage, and processing strategy of returned drugs. The stakeholders being within the same state makes the revere logistics operation especially the waste disposal operation take place easily with relatively low cost of logistics.
The When Perspective of Reverse Logistics
CRD normally store the returned or unusable drugs under quarantine for about 6 months before processing.
Improvement of Reverse Logistics Practices

5. **Case Research E (CRE):** Pharmaceutical Importer and Distributor

Case Profile
CRE is a family owned pharmaceutical marketing company. It was incorporated in the year 1995 and licensed by Pharmacists Council of Nigeria in the year 2000. Since the commencement of full operations in the year 2000, CRE has been engaging in sales, distribution and marketing of quality and affordable brands of pharmaceutical products in its bid to promote healthy living. The company presently has over seventy-Five (75) registered products in its stable and has been able to pharmaceutical products of various theraphutical segments which has become brand leaders into the Nigerian markets such as Anti-Malarials, Anti-Infectives, Anti-Inflammatory, Anti-Helminthes, Anti-Hypertensive, Laxatives, Multi-vitamins among others. CRE's products are also marketed in some other countries in the West Coast of Africa and has developed an effective product distribution network across the six (6) geo-political zones of the country.

Export Return
CRE do not return drugs to suppliers due to the distance of the company from suppliers (oversea), complexity and cost of logistics.
Importance of PRL Practices
PRL practices is very important to CRE. Hence, there are procedures in place for the collection, sorting, storing and processing of returned drugs.
Knowledge of RG
The respondent acknowledge the awareness of RG for handling returns, and EDD drugs. Fine will be issued by the RA if EDD drugs are found in saleable stock inventory.
Factors Hindering Compliancy
A factor that hinders compliancy is identified to be associated with ineffective governmental policies and enforcement.
PRL Facilitator
There are RCA in place to facilitate the return process.
PRL Impact on Business Operation
PRL activities increases operational cost, reduce revenue and profits of the company. PRL however enhance compliancy to regulatory requirements, protect the environment, and enhances corporate reputation. The key challenge faced by CRE when handling drug returns is the complexity of managing drugs inventory especially when it involves high volume and diverse products. The cost of warehousing, inventory, storage capacity of returned drugs are another major challenge. Availability of labour and land space for destroying expired drugs are also challenges faced by CRE.
The What Perspective of Reverse Logistics
CRE allows drugs to be returned by its customers only if the reasons are cogent enough e.g expired or short-dated drugs. Shorted-dated drugs are usually converted to a mandatory order to be resold to customers within 3 months to expiration.
The Why Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
CRE allows drugs to be returned by its customers only if the reasons are cogent enough i.e. if the drugs are short-dated or nearing expiration. Drugs are also return to the company when there are discrepancies such as over-supply and wrong delivery.

The Why Not Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
CRE do not return drugs to suppliers due to the distance of the company from suppliers (oversea), complexity and cost of logistics.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers return drugs back to CRE due to short-dated stock and availability of RCA to facilitate the return process. Drugs are also return to CRE when there are discrepancies such as over-supply and wrong delivery.
The Why Not Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers do not return drugs back to CRE if there is no RCA in place to facilitate the return process. However, the return of drugs from CRE back to its suppliers is non-existence due to the distance of the suppliers (oversea), complexity and cost of logistics involve.
The How Perspective of Reverse Logistics
There are procedures in place for the collection, sorting, storing and processing of returned drugs by the company. The drugs are normally received from customers in bin-card, and stored in the warehouse under quarantine. The duration of time company keep returned drugs before processing depends on the product type, expiration date, and date of receipt of the drugs. The returned and expired drugs are usually destroyed by open-air burning via the RA.
The Who Perspective of Reverse Logistics
CRE's customers are wholesalers, and retailers while the suppliers are manufacturers. The supply chain stakeholder that returns drugs to the company are wholesalers while the stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs is CRE. The stakeholder that influences the PRL operations at CRE are the managerial team, customers, and the RA. The actors/employees within CRE responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are the warehouse team, logistics team, and the sales representatives
The Where Perspective of Reverse Logistics
The stakeholders involved in the PRL operation of CRE are located in-house. Hence, location have not negative impact on PRL operations and strategy. CRE utilises ERP system to process, and share information. The stakeholders are located within proximity.
The When Perspective of Reverse Logistics
The duration of time CRE keeps returned drugs before processing depends on the product type, expiration date, and date of receipt of the drugs.
Improvement of Reverse Logistics Practices

The respondent acknowledge the awareness of RG for handling of returned, and EDD drugs. A factor that hinders compliancy can be attributed to the ineffective governmental policies. CRE is therefore putting in place measures to improve its PRL practices by ensuring that drugs are sold before expiry, reducing the quantity of imported slow-moving drugs, and discontinuing the importation of short-dated drugs.

6. **Case Research F (CRF):** Pharmaceutical Importer and Distributor

Case Profile
CRF is a privately-held licensed pharmaceutical company founded in 1999. The company engages in the importation of approved pharmaceutical product globally, and distribution of these products in line with regulations of the RA in Nigeria, and other countries in Africa. CRF acts as manufacturers' representative, and also enters contract manufacturing agreement to satisfy end-markets demand. CRF also offers consulting services to general consumer market goods. CRF is also a leading name in the supply of discounted pharmaceutical products including major branded and generic pharmaceuticals products manufactured under the WHO certified manufacturing facilities.
Export Return
CRF do not return drugs back to its suppliers as the drugs usually go through a thorough inspection and quality check before receipt from suppliers. CRF is not allowed by law to export expired products out of Nigeria. Hence, the company takes ownership once drug expired on stock.
Importance of PRL Practices
PRL practices is very important for CRF due to the importance of retrieving expired or defect drugs from circulation.
Knowledge of RG
There are RG for the handling of EDD drugs. All EDD drugs must be collated and saved in a safe environment (Quarantine). The RA office in the region or state must be informed so that safe disposal of the product can be done.
Factors Hindering Compliancy
Factors that hinder adherence to RG is the tediousness of the process and cost of logistics involved in handling EDD drugs. According to the respondent, destruction of expired drugs by small to medium scale companies are normally done in a non-compliant manner. This approach enables these companies to save cost and time. In contrast, the RA tend to focus more in regulating larger companies.
PRL Facilitator

CRF usually have a SOR agreement, and RCA with customers. These pre-purchase arrangements help to facilitate drug return, exchange and refund process.
PRL Impact on Business Operation
PRL activities have impact on CRF's business operation in a number of ways. Once drugs expire on stock, they are usually written off as loss. According to the respondent, the act of collecting the drugs from the point of return, movement to the point of destruction and the act of destruction itself involve a very cumbersome logistics processes.
The What Perspective of Reverse Logistics
CRF imports and supplies OTC, prescription drugs and ethical products. CRF allows drugs to be returned by its customers and the kind of products normally returned are EDD drugs, and SOR drugs.
The Why Perspective of Reverse Logistics (Receiver)
Companies receiving from Customers and Suppliers Receiving from Companies
CRF accepts the drugs back from customers in order to fulfil their contractual obligations. Company F usually have an SOR RCA with customers, and this RCA help facilitates drug return process. Damaged and expired drugs are also accepted back from customers in order to maintain good customer relationship, good public reputation, and brand image.
The Why Not Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
CRF do not accept drugs back from customers if there is no RCA in place. CRF do not return drugs back to the contract manufacturers once received or purchased as the drugs normally go through inspections and quality checks before transported. This eliminate the need for future return. Furthermore, CRF procures the exact quantity needed to meet market demand. CRF is also not allowed by law to export expired products from out of Nigeria. Hence, CRF takes ownership once drug expired, and responsible for the proper disposal of the drugs.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers return drugs back to CRF if the drugs are defective, damaged, or expired. This is facilitated by RCA with the supplier.
The Why Not Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers cannot return drugs back to CRF if there is no RCA in place. CRF also do not return drugs back to the contract manufacturers once received as the drugs normally go inspections and quality checks before shipment. CRF procures the exact quantity needed to meet market demand, and are not allowed by law to export expired products out of Nigeria. Hence, CRF takes ownership once drug expired, and it's responsible for the proper disposal.
The How Perspective of Reverse Logistics
There are no written procedures in place for the collection, sorting, storing and processing of returned drugs at CRF. The procedure is known by staffs, verbally communicated by the management as the operation is considered to be a routine activity. The management do not

consider it necessary to have written procedure as the sales representatives are expected to know what to do. If drugs are not returned to CRF, such drugs will be considered sold by the company and the sales representatives will be charged or invoiced for payment to the company. It is therefore the sole responsibility of the sales representatives to initiate the return process the earlier drugs are reported defective, damaged or expired. This is to prevent being invoiced for drugs that have been reported unusable.

Although there are no documented procedure for returns, the procedure is strictly followed as the return operations and process has direct impact on their account, sales revenue and commission. Once EDD drugs are collected from customers, the drugs will be itemised, and the sales representative will notify the central warehouse. The drugs will be invoiced product back to CRF, and couriered to the central warehouse in Lagos. CRF keeps EDD drugs consolidated in a quarantined storage for an average of 6 months before destruction.

The Who Perspective of Reverse Logistics

CRF's customers are wholesalers, retailers, hospitals, and clinics. CRF's suppliers are international and contract manufacturers. The supply chain stakeholders that return to the company are mainly wholesalers. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are courier services or transport service providers, the company warehouse team, quality department, Sales representatives, and the RA. The stakeholders that influences the way CRF manages returned drugs are the company management, the customers, and the RA. The actors/employees within CRF responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are customers, sales reps, courier companies, quality team, and warehouse team.

The Where Perspective of Reverse Logistics

The stakeholders involved in the PRL operation are located in-house, with the states, regions of Nigeria. CRF sales points is disperse all over Nigeria. Hence, collection can take place from all over Nigeria especially where the sales representatives are managing. The central warehouse is in Lagos and the destruction also take place in Lagos. The impact location of stakeholders have on the collection, storage, and processing strategy of returned drugs is the distance, cost and complexity of logistics involve. It is the management strategic decision to have one central warehouse location in Lagos where all returns drugs collected from different part of the country are quarantined before destruction.

The When Perspective of Reverse Logistics

CRF keeps the drugs consolidated in a quarantined storage for an average of 6 months before destruction. The disposal or destruction method employed by CRF is determined by the types of products in question.

Improvement of Reverse Logistics Practices

CRF implements training and re-training programs for staffs on various protocols to observe when handling EDD drugs and returns. The respondent suggested that the return management should be completely taking away from the sales representatives. There should be a special department to responsible for managing the return activities end-to-end. The return process should therefore be handled directly by CRF as an effort to save cost, reduce inventory and labour.

7. **Case Research G (CRG):** Pharmaceutical Wholesaler

Case Profile
CRG is a wholesale, retail and dispensing pharmaceutical company established for the distribution and retailing of locally manufactured and imported drugs, as well as the provision of free consultation and counselling for customers by well trained professionals. CRG's stores offer a comprehensive range of pharmacy services, such as dispensing of OTC, and prescription medicines, blood pressure and cholesterol checks and food intolerance testing. CRG's product range includes vitamins and supplements, dental care, special diet and sports nutritional foods, cosmetics, toiletries, perfumery, homeopathy and aromatherapy, along with a wide range of home diagnostic equipment.
Importance of PRL Practices
PRL practices is very important to CRG as it aimed to maintain EDD drug free inventory. Hence, CRG implement PRL in order to manage slow-moving stock and fast-moving stock and to determine which drugs to have more or less. It also enables the company to clear off space on the shelf. PRL practices also helps to maximise sales and manage returns.
Knowledge of RG
According to the respondent, employees are aware of the company's guidelines and policies for handling EDD drugs. CRG can be penalised if expired drug is found on the shelf. EDD drugs must be removed from shelf once discovered, short-dated drug must be removed from shelf 1 month to expiration.
PRL Impact on Business Operation
CRG losses sales when drugs are returned by customers and delays profits. Challenges facing CRG when handling the drug returns are as follows: damaged of the returned drugs during transport, lost during in-transit, delay in response time, and reimbursement for the returned drugs. Delay is also encountered in getting the returned drugs exchanged by the suppliers. This leads to the need to source drug from alternative suppliers which may increase the lead-time of drug supply
The What Perspective of Reverse Logistics
CRG allows drugs to be returned by customers within 24 hours as long as they are untampered drugs, and are wrongly ordered drugs. Customers generally work into the store to return drugs back and they are generally untampered, wrongly ordered or damaged drugs. CRG purchases finished drugs from suppliers and also normally return drugs back to suppliers when necessary. The drugs normally returned back to suppliers are expired drugs, damaged drugs (packaging), and slow-moving drugs under SOR agreement.
The Why Perspective of Reverse Logistics (Receiver)
Companies receiving from Customers and Suppliers Receiving from Companies

CRG accept drugs back from customers in order to maintain good customer relationship and satisfaction, and protect the company reputation. Suppliers accept the drugs back because of the RCA in the SOR, and to maintain good corporate reputation.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers return drugs back because they encountered quality issues, expiry, damaged, short-dated, and cost. CRG return drugs back to suppliers because they are slow-moving on SOR contract, expiry, and damaged.
The How Perspective of Reverse Logistics
There are procedures in place for the collection, sorting, storing and processing of returned drugs the company. On a monthly basis, the store pharmacy check the store shelf and inventory for short-dated drugs. Forward short-dated drugs to the warehouse on a weekly basis using the same truck, new deliveries from the warehouse are made. Auditors in the warehouse will quality check the returned drugs. After certification or market release for re-sale, the short-dated drugs are send back to the store to be sold at discounted price, some are donated to Charity organisation, primary healthcare centres, federal medical clinics (based regulatory approval) while some are returned to the supplier based on SOR agreement.
If the drugs are not sold even after been discounted, drugs will be removed from shelf and send back to the warehouse for re-auditing, consolidation with other expiring drugs, recorded and write-off for destruction (burning) or returned back to the suppliers depending on the sales agreement. On a monthly basis, drugs has no SOR or return agreement will be shipped to the state waste disposal authority (LAWMA) who will then destroy the EDD drugs.
The Who Perspective of Reverse Logistics
CRG customers are end-consumers and the suppliers are wholesalers, importers, and manufacturers. The supply chain stakeholder that return drugs back to CRG are the end-customers. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are internal auditors, warehouse staff, procurement staff, store staff, and transport service providers.
According to the respondent, all the stakeholders have indirect influence on the method CRG used in managing returned drugs. The RA has the greatest influence and CRG can be penalised if expired drug is found on the shelf. The actors/employees within CRG responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are store managers (pharmacist), internal auditors, warehouse staff, procurement staff, and store staffs.
The Where Perspective of Reverse Logistics
The stakeholders involved in the reverse logistics operation are located in-house, the state and country. The company has several retail pharmacies across the country with central warehouse within in each state. The location of stakeholders have influence on the PRL operation as there can be delay and complexity in the return process is the stakeholders are far apart.
The When Perspective of Reverse Logistics

CRG allows drugs to be returned by customers within 24 hours as long as they are untampered drugs, and are wrongly ordered drugs. Returned drugs are kept for an average of one month before processing so as to allow time accumulation and for proper auditing of the drugs. The frequency of returns to suppliers varies product and the respective RCA. Drugs are also returned back from the store to the warehouse on a weekly basis once noticed during checks, and auditing.
Improvement of Reverse Logistics Practices
In order to improve PRL practices, CRG is adopting the use of ERP system; a central software for managing inventory and stock at each store. There are also commitment to provide prompt follow-ups on returns related issues and feedbacks to ensure corrective actions are put into motion on all cases.

8. **Case Research H (CRH):** Pharmaceutical Wholesaler

Case Profile
CRH is an indigenous pharmaceutical wholesaler that ells all types of drugs including OTC and prescription drugs.
Importance of PRL Practices
PRL activities have a very positive impact on CRH as it enables the company to proactively remove short-dated stock from its inventory. PRL system enables the company to prevent loss and wastage by identifying short-dated drugs on-time and pushing those drugs into the forward chain where usages usage can be maximised e.g. hospital, clinics etc. CRH further benefits from PRL practices as it help improve its corporate reputation and maintain compliancy to regulatory requirements.
Knowledge of RG
The respondent is not aware of the RG that governs the handling of returned, and EDD drugs.
Factors Hindering Compliancy
The only reason for non-compliance to the RG is the lack of adequate knowledge of the procedure for handling EDD drugs.
PRL Impact on Business Operation
PRL activities have a very positive impact as it enables the company to proactively remove short-dated stock from their inventory. PRL system enables the company to prevent loss and wastage by identifying short-dated drugs on-time and pushing those drugs into the forward chain where usages usage can be maximised e.g. hospital, clinics etc. According to the respondent, CRH do not have any challenges when managing drug returns as they are able to maximise usage through proper inventory management, supply and collaboration with channel partners.

The What Perspective of Reverse Logistics
CRH allows drugs to be returned by customers but customers don't usually send product back. According to the respondent, it is very rare that customer send product back except when wrong product is sold or delivered to them. The company purchase finished drugs from manufacturers and do not return drugs as they always explore all options to avoid the need for return by selling short-dated drugs at discounted price to hospital, and clinics where the drugs will be consumed within a short period of time or where the consumption rate is high.
The Why Perspective of Reverse Logistics (Receiver)
Companies receiving from Customers and Suppliers Receiving from Companies
CRH accept drugs back from customers if customer provide proof that the wrong drugs was sold to them which rarely happen. The only circumstances whereby drug will be return to suppliers is when the drug has been reported defective, over-supply and when wrong drug was delivered to CRH.
The Why Not Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
CRH do not return drugs back to its suppliers as all options are always explored to avoid the need for return e.g. selling short-dated drugs at discounted price to hospital, and clinics where the drugs are consumed at a rapid rate. CRH accept drugs back if customers provide proof of purchase. On the other side, CRH do not return drugs to suppliers as they usually do not have reason to do so. Short-dated (6 months to expiry) are pro-actively sold to clinics and hospitals where the drugs will be consumed before expiring.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers do not return drugs to CRH except when wrong drug was purchased as the company do not sell expired drugs to customers. The only circumstances whereby drug will be return to suppliers is when the drug has been reported defective, over-supply and when wrong drug was received.
The Why Not Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
CRH do not return drugs back to suppliers because they always explore all options to avoid the need for return such as selling short-dated drugs at discounted price to hospital, and clinics where drugs are consumed at a very high rate. Customers do not return drugs to CRH except if wrong drug was purchased as the company do not sell expired drugs to customers. CRH do not return drugs to suppliers as they usually do not have reason to do so. Short-dated (6 months to expiry) are pro-actively sold to clinics and hospitals where the drugs will be consumed before expiring.
The How Perspective of Reverse Logistics
There are procedures in place at CRH for the collection, sorting, storing and processing of returned drugs. On a daily basis, the shelf and stock is checked for short-dated stock. Drugs less than 6 months to expiration are considered short-dated, removed from the shelf, and recorded as short-dated. These drugs are set aside for sale at a discounted price to hospitals and clinics where the drugs will be consumed at a rapid rate before expiration. According to the respondent, no better ways of performing these activities is currently envisage. Drugs that

need to be return to the suppliers are returned immediately after the return decision is made. The supplier will be contacted, provide the product description, related information, and the supplier will then arrange collection and exchange. No drug is allowed to expire on stock as the stock movement is closely and properly managed.
The Who Perspective of Reverse Logistics
CRH's customers are retailers, hospitals and clinics. CRH's suppliers are manufacturers. No supply chain stakeholder returns drugs CRH except if wrong drug was delivered to customers (retailers, hospitals or clinics) which rarely happen. The only reverse flow of drugs is that between CRH retail stores and its warehouse (intra-company), collaboration and information sharing relationship. The stakeholders that influences CRH the management of returned drugs are the company managerial team, customers, and regulatory authority. The actors/employees within CRH responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are store staffs, store pharmacists, warehouse manager, quality team, and logistics manager.
The Where Perspective of Reverse Logistics
The stakeholders involved in the reverse logistics operation are located in-house and distance of the stakeholders from the company has no negative impact on the collection, storage, and processing strategy of returned drugs.
The When Perspective of Reverse Logistics
On a daily basis, the staff conducts shelf and stock is checked for short-dated stock. Short-dated, expired or any drugs that need to be return to the suppliers are returned immediately after the return decision is made.
Improvement of Reverse Logistics Practices
The respondent is not aware of the law that governs the handling of returned, damaged, and expired drugs. As a matter of professional and company policy, CRH do not sell drugs that is less than six months to retailers because many will not accept them. CRH however sells short-dated drugs to hospital and clinic where the drugs will be consumed before expiration. According to the respondent, CRH do not have any challenges when managing drug returns as they are able to maximise usage through proper inventory management, supply and collaboration with channel partners. Hence, no better ways of performing these activities is currently envisage.

9. **Case Research I (CRI):** Pharmaceutical Wholesaler

Case Profile
CRI is the first Nigerian integrative pharmacy and healthcare provider with over 20 branches located in major cities of Nigeria. It is the fastest growing pharmacy chain in W/Africa and committed to its corporate mission of helping people achieve optimum health and vitality. The company has distinguished itself as the pharmacy of choice through the provision of high quality healthcare products such as medicines, nutritional supplements, natural remedies,

home medical equipment, mobility aids and pharmacy services, by certified and well-informed healthcare professionals, in hygienic environment. CRI also offer excellent customer and counselling services aimed at educating people on the available options in obtaining holistic healthcare solutions.
Importance of PRL Practices
PRL practices is very important because it helps improve product quality as there are sometimes a particular quality customer really want from a product, it enables CRI to feedback to its suppliers on issues encountered by customers and how the product can be improved to meet customer needs. PRL system also helps improve the corporate image, and corporate reputation of the company as well as competitive advantage over its competitors.
Knowledge of RG
The respondent acknowledged the presence of RG governing the handling of returned, damaged, and expired drugs and compliancy of the company.
Factors Hindering Compliancy
According to the respondent, factors hindering compliancy can be the amount of volume and value of drugs requiring disposal or destruction. Considering the value of the drugs, volume and the impact on the company's bottom line, this negative financial impact discourages compliancy.
PRL Facilitator
CRI normally return drugs back to its suppliers for based on RCA.
PRL Impact on Business Operation
According to the respondent, CRI is specialised in supplying high quality drugs and in good condition. Hence, the drugs should not be allowed to be returned by customers as the return impact the inventory balance. Stock balancing process is a cumbersome process as the drug will have to be send to the inventory management team, with reasons for the return. Many times the returned drugs are not damaged, customer send products back mainly because they no longer want the product. Those drugs sent back to suppliers is a loss of sale for the company and the process of managing the returns is time consuming.
Considering the value of the drugs, volume and the impact on the company bottom line, this loss discourages compliancy. Hence, CRI explores different measures to push short-dated and expired drugs for sale. Some expired drugs (3 month after expiration) are re-audited, re-inspected, quality re-checked by the manufacturers. If the manufacturers certify the drugs good for consumption and market release the drug, the company will then re-market the drugs for re-sale. CRI is however mandated to inform all end-customers at the point of purchase that the drugs are good for use even though it is 3 months after expiry.
The What Perspective of Reverse Logistics

CRI allows drugs to be returned by customers although they are always sold to customers in good condition. The only time customer return product is when they probably purchase a wrong drug and they want to return it. This often happens when a patient send another person to purchase the drug on their behalf. The drugs normally received back from customers are usable in-warrantee drugs. CRI purchases finished drugs from suppliers and will return drugs back to suppliers if damaged, or expired.
The Why Perspective of Reverse Logistics (Receiver)
Companies receiving from Customers and Suppliers Receiving from Companies
Expired drugs are normally not returned back by customer but if by chance customer return expired drugs, CRI normally accept it mainly to maintain customer satisfaction, and protect company's reputation. The drugs are also accepted back in order to prevent abuse of drugs and to prevent improper disposal. The suppliers accept the returned drugs in order to maintain a good relationship and customer service. Hence, suppliers accept both damaged and expired drug from CRI.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Drugs are always sold to customers in good condition. The only time customer return drug is when they probably purchase a wrong drug and need to be returned. This often happens when a patient send another person to purchase the drug on their behalf. Customers generally return drugs back for exchange and refund because they are wrongly ordered. On the other side, CRI normally return drugs back to its suppliers for based on RCA and for proper disposal.
The Why Not Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
CRI purchases finished drugs from suppliers, and return drugs back to the suppliers if they are damaged, or expired.
The How Perspective of Reverse Logistics
There are procedures in place at CRI for the collection, sorting, storing and processing of returned drugs. Once product is return to CRI, customers are not refunded immediately except in special cases where it is necessary. Once wrongly ordered, the product will be returned for exchange, the customer will be advised to return on a specific day for the exchange. Meanwhile, the procurement team and the distribution centre will be informed about the reason for the return in order for a return authorisation to be issued. The returned process is initiated immediately once a customer returns a product to the store. This is to avoid delay in providing the customers, refund, exchange or any necessary feedback.
Drugs that got expired while on stock are pulled out and separated from the saleable inventory. The expired drugs will be collated according to their manufacture date, expiry date, name, and brand. The designated distribution centre procurement team will be notified. Once a return authorisation is given by the procurement team, the drugs will be send to the DC and all necessary document will be prepared for accountability and transparency purposes; evidence that the expired drugs have left the store and sent back to the DC. The procurement team will then make the decision on what to do with the drug.
Once the drugs are received at the DC, depending on the RCA with the suppliers, the drugs returned to the suppliers for disposal. This is because some of the suppliers have their own procedure for disposing and destroying expired or damaged drugs. Drugs that cannot be

returned to the suppliers will be disposed by CRI's DC. The respondent however is does not have knowledge of the disposal procedure. According to the respondent, CRI is manages the return process efficiently and there are no better ways of performing the activities.
The Who Perspective of Reverse Logistics
CRI's customers are end-consumers and procure drugs from importers, indigenous manufacturers and wholesalers. The supply chain stakeholder that return drugs to the company are end-customers. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the customers, retail stores, the DC, the procurement department, the transport department, the supplier, and the RA(THE RA).
The stakeholder(s) that influence CRI's management of returned drugs are the end-customers and the regulatory authorities. The actors/employees within CRI responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are the store managers, the pharmacist, Staffs, procurement team, Quality team, warehouse team, Logistics team.
The Where Perspective of Reverse Logistics
The stakeholders involved in the PRL operation of CRI are spread across all corner of Nigeria as the company is a chain retail pharmacy outlet. The influence/impact the location of stakeholders have on the collection, storage, and processing strategy of returned drugs is that distance causes delay. CRI manages this challenge by allowing stores at different location and region in Nigeria to have different time limit (lead-time) for drug return, and lead-time to provide customers with feedback due to the different times it takes for the returned drugs to reach the central DC in Lagos.
The When Perspective of Reverse Logistics
The returned process is initiated immediately once a customer returns a product to the store. This is to avoid delay in providing the customers, refund, exchange or any necessary feedback.
Improvement of Reverse Logistics Practices
Considering the value of the drugs, volume and the impact on the company bottom line, the negative financial impact discourages compliancy. CRI therefore explores different measures to push short-dated and expired drugs for sale. Some expired drugs (3 month after expiration) are re-audited, re-inspected, quality re-checked by the manufacturers. If the manufacturers certify the drugs good for consumption and market release the drug, CRI will then re-market the drugs for re-sale. CRI is however mandated to inform all end-customers at the point of purchase that the drugs are good for use even though it is 3 months after expiry.
CRI aim to further improve its PRL practices by expanding its geographical reach i.e. expansion of outside branches by creating other department like DCs in other geographical regions so that branches in other regions will have their own DCs. Hence reducing the over dependency on the DC in Lagos for supply and return management operations.

10. Case Research J (CRJ): Pharmaceutical Importer and Wholesaler

Case Profile
A fully indigenous pharmaceutical wholesaler with several years of service delivery to customers. CRJ is a major importer and stockist of international and local brands of high quality pharmaceuticals, groceries, beauty products, foods and much more. CRJ is noted for supply, sale and distribution of pharmaceutical consumables, quality drugs, medical equipment and drug information services. The wholesale entitle serves hundreds of supermarkets, pharmacies, hospitals, government departments in Nigeria
Importance of PRL Practices
PRL practices is very important for CRJ as the company will not want to compromise patient's drug. According to the respondent, patients need to be given the correct drugs as expected. PRL enables the company to maximise sales and reduce potential losses associated with expiring drugs by implementing first to expiry first out method of inventory management and dispensing method.
Knowledge of RG
The respondent acknowledged that there are the RA and PCN guidelines that guides the handling of returned, damaged, and expired drugs.
Factors Hindering Compliancy
According to the respondent, the main factor hindering compliancy to the RG is the cost of drug disposal and destruction.
PRL Impact on Business Operation
The impact PRL activities on CRJ is the cost of logistics involve, as well as the loss of revenue and sales of returned drugs. There are no challenges is encountered when managing drug returns for destruction and exchange purposes. The return process for the purposes of refund can however be cumbersome. CRJ would rather exchange the return drug with another item instead of the cash refund to customer. This preference sometime causes issues between the customers and the retail outlets.
The What Perspective of Reverse Logistics
CRJ allow drugs is dispensed from the store to be returned by customers. The state of some of the returned drugs are expired, damaged, compromised drug, and untampered drugs. CRJ do not manufacture but procure finished drugs from manufacturers. Hence, return drugs back to her suppliers when needed. Drugs returned are damaged, expired, and defective drugs. Drugs that cannot be returned to the suppliers are retrieved from stock, and sent to the RA for proper disposal or destruction.
The Why Perspective of Reverse Logistics (Receiver)
Companies receiving from Customers and Suppliers Receiving from Companies
CRJ accepts drugs back from customers due to the drug being expired, damaged, wrongly ordered drug and in order to maintain customer satisfaction and corporate reputation.

The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers/partners return drugs back to CRJ because the drugs have expired, damaged, wrongly ordered for exchange or cash refund.
The Why Not Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
CRJ do not normally return drugs to suppliers due to the absence of RCA for returns.
The How Perspective of Reverse Logistics
There are procedures in place at CRJ for the collection, sorting, storing and processing of returned drugs by the company. Basically in the retail store, the registered pharmacist coordinate this activity. Every sales personnel is allocated a shelf responsible and the person is responsible for the management of drugs on the shelf. Any drug that is expiring (6 months to expiration) on the shelf will be removed from the standard shelf, checked and then placed on a different shelf for short-dated drugs so that pharmacist will dispense the drugs on a first to expire, first out basis even to up to 1 month to expiration.
This is aimed at maximising sales and mitigate loss of revenue. Once the drug expires, they will be removed from the shelf, audited, documented, and store in a different/save place on the premises. The RA's officials responsible for drug collection will be contacted for collection arrangement and for destruction. According to the respondent, there is no other way of performing this activities as the store implements an effective FEFO inventory management, reverse movement and order fulfilment practices.
The Who Perspective of Reverse Logistics
CRJ's customers are end-consumers while the suppliers are manufacturer, and some wholesalers. The supply chain stakeholders that returns drugs to the company are mainly end-consumers. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the store pharmacist, sales staff and the RA. The stakeholder(s) that influences the management of returned drugs are the managerial team, the pharmacist, customers, and RA. The actors/employees at CRJ responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are the store pharmacist, warehouse staff, and sales staff.
The Where Perspective of Reverse Logistics
The stakeholders that are involved in the PRL operation of the company are located in-house and external (within the state). Hence, distance or location of the stakeholders has no the collection, storage, and processing strategy of returned drugs.
The When Perspective of Reverse Logistics
Once the drug expires, they will be removed from the shelf and stock, audited, documented, and store in a designated place on the premises.

Improvement of Reverse Logistics Practices
The respondent acknowledged that the PRL practices of the company is done efficiently. Hence, no improvement initiatives is currently in plan as the company implements an effective FEFO inventory management, reverse movement and order fulfilment practices.

11. Case Research K (CRK): Pharmaceutical Retailers

Case Profile
CRK is retail and community pharmacy specialised in dispensing medication, OTC medication, herbal medication, and diagnoses services to end-consumer.
Importance of PRL Practices
According to the respondent, CRK is indifferent about the importance of implementing PRL practices. Hence, the company has no written procedures in place for the collection, sorting, storing and processing of returned drugs. The management do not see the need for a procedure as there is no regulatory enforcement.
Knowledge of RG
The respondent acknowledged the presence of law prohibiting the company from selling or dispensing expired drugs but lack the awareness of the RGs governing the management of expired drugs as the company deals mainly with the supplier's sales representatives on issue with return arrangement for expired, unsaleable, slow moving drugs (SOR). If there is no SOR agreement between supplier and CRK, disposal and destruction of the expired drugs will be done in-house. The respondent pointed out that pharmacist have academic training on how to manage or handle expired drugs. The training is to submit all expired to RA for proper disposal and destruction.
Factors Hindering Compliancy
CRK currently do not have any time frame for keeping returned or expired drugs before processing. This is also due to the absence of regulatory enforcement of processing expired drugs within a specific time frame. The cost of destruction is another reason for the lack of interest in reverse logistics as the RA charges the companies 25000 naira for the disposal and destruction service. Hence, the company usually keep expired drugs and perform the destruction activities in-house. CRK do not often return drugs back to suppliers or forward drugs to service providers due to pricing issue, unclear terms and condition etc.
PRL Facilitator
Suppliers accept drugs returned by CRK based on RCA and the need to comply with regulatory requirement.
PRL Impact on Business Operation

CRK currently do not have any time frame for keeping returned or expired drugs before processing. This is also due to the absence of regulatory enforcement of processing expired drugs within a specific time frame. The cost of destruction is another reason for the lack of interest in reverse logistics as the RA charges companies 25000 Naira for the destruction service. Hence, retailers usually keep expired drugs and perform the destruction activities in-house. The company do not often return drugs back to suppliers or forward drugs to service providers due to pricing issue, unclear terms and condition etc.
The What Perspective of Reverse Logistics
CRK is a community retail pharmacy specialised in dispensing medication, OTC medication, herbal medication, and diagnoses services to end-consumers. CRK allows drugs to be returned by customers only when the drugs are untampered and re-saleable. Product will not be accepted back if they have been tampered. Hence, drugs must be returned in the same condition at the point of sale. CRK procures finished products from suppliers but only return drugs to manufacturers and Importer; not wholesalers. The state of the drugs normally returned are untampered drugs that have expired drugs, usable drugs that are slow-moving or drugs that are difficult to sell from the shelf, unable to pay for the drug due to no-sale, damaged drugs; perhaps damaged during handling process by the supplier.
The Why Perspective of Reverse Logistics (Receiver)
Companies receiving from Customers and Suppliers Receiving from Companies
CRK allows drugs to be returned by customers only when the drugs are untampered and re-saleable. Hence, drugs must be returned in the same condition at the point of sale. CRK accept drugs back from customers/partners if the customer has a good reason for returning the drug. Wrong drug may have been purchased which can be exchanged for a different drug or refunded if the customer already has the drug at home. Suppliers accept drugs returned by your company based on RCA and the need to comply with regulatory requirement. CRK accepts drugs from customer and return drugs to supplier in order to maintain customer satisfaction, optimise sales and revenue but not necessarily because of regulations.
The Why Not Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
Product will not be accepted back by CRK if they have been tampered. Drugs purchased from wholesalers are not retuned back by CRK to the supplier because the suppliers do not accept returns except under SOR agreement.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers return drugs back to CRK because the drugs were wrongly ordered, encountered quality issue with the packaging, manufacturing defect. Retail pharmacies partners and hospital base pharmacies also send a list of slow-moving stock from one location to the other partner pharmacy in a different location where the drugs are fast-moving i.e. inventory in multiple location and are exchanged from time to time to meet customer demand. CRK return drugs back to its suppliers when the drugs have expired, close to expiration and when purchase is based on SOR agreement.
The Why Not Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers

Drugs purchased from wholesalers are not retuned back to the supplier because the suppliers do not accept returns except under SOR agreement. Drugs are usually not returned by end-user when they have been opened and used or when the patient has been healed.
The How Perspective of Reverse Logistics
According to the respondent, CRK is indifferent about the importance of implementing PRL practices. Hence, CRK has no written procedures in place for the collection, sorting, storing and processing of returned drugs. The management do not see the need for a procedure as there is no regulatory enforcement. According to the respondent, periodically the RA comes to CRK requesting the submission of EDD drugs but the company is simply not transparent.
CRK perform a monthly inventory and shelf check for both expired and short-dated drugs. Drugs that are one or two month to expiry are removed from the standard shelf and placed on a separate shelf where they will be displayed for sale at discounted price. This is usually done to facilitate and optimise sales before expiration. If the drugs expired, the drugs will be removed from shelf, placed on a table for auditing, and then stored in a collection bin where it will be consolidated with other expired drugs. Once the collection bin is full, the will be disposed.
CRK destroy drugs purchase from the wholesaler in-house whenever it expire before sale. Some drugs purchase from supplier's sales representative are also destroy in-house due to the loss of contact with the sales representative. Then rather than going through the difficulties of getting in touch with the sales representative, the company simply destroy the expired drug in-house. The destruction process – The packages are open, break the tablets, pure them into water and flush then them through the sewage system. Alternatively, the company staff go into the bush, dig a hole and burn the expired drugs in the pole. According to the respondent, doing this at least keeps expired drug from circulation and from public consumption.
The Who Perspective of Reverse Logistics
CRK's customers are end-consumers and suppliers are manufacturers, Importers and wholesalers. The supply chain stakeholder that returns drugs to the company are only end-consumers (Not often). According to the respondent, the return rate in the hospital based pharmacies is higher. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are in-house staffs. For drugs under SOR agreement, the supplier sales representatives are usually contacted to make collection arrangement from the pharmacy. The actors/employees within CRK responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are the store staffs and the pharmacist.
The Where Perspective of Reverse Logistics
The stakeholders involved in PRL operation of CRK are located within the same state but far from the company. Collection of unsaleable drugs under SOR agreement is done by the supplier's sales representative. Location of stakeholders does not have impact on the collection, storage, and processing strategy of the company as drug collection is done by the suppliers' sales representation.
The When Perspective of Reverse Logistics

CRK currently do not have any time frame for keeping returned or expired drugs before processing. This is also due to the absence of regulatory enforcement of processing expired drugs within a specific time frame. CRK performs a monthly manual check or 2 weeks check to retrieve expiring (2, 3 months to expiry) and expired drugs from shelf. This is done to expedite the sales of the drugs before expiration.
Improvement of Reverse Logistics Practices
Where there is no SOR agreement, CRK destroy the expired drugs in-house. According to the respondent, using the appropriate means to dispose or destroy expired drugs will be a way to improve the company PRL practices. There are better ways of performing PRL activities but the implementation will depend on the collective commitments of all stakeholders involve especially regulatory body, manufactures, importer and retailers. Greed for gain at all cost is a major impediment to reverse logistics as some manufactures and importers normally explore opportunities to increase sales by pushing for the sale of expired drugs. According to the respondent, the use of ERP system and software to monitor and control inventory is a viable way to improve the drug return process and management.

12. **Case Research K2 (CRK2):** Pharmaceutical Retailers

Case Profile
CRK2 is a retail/community pharmacy specialised in dispensing medication, OTC medication, herbal medication, and diagnoses services to end-consumer.
Importance of PRL Practices
According to the respondent, PRL practices is very important to CRK2 as it helps to maintain customers relationship, enhance customer satisfaction, maintain trust, and maintain a good corporate reputation, and to get refund from suppliers.
Factors Hindering Compliancy
Factors hindering compliancy to RG are inadequate enforcement of regulations, bribery and corruption in the system as some drugs are not registered at the RA, and offences are not punished. The registration cost at the RA is another factor that inhibits CRK from complying with the RGs.
PRL Facilitator
In cases where there is no RCA for return, damaged or expired drugs will not be returned to the supplier.
PRL Impact on Business Operation
There is a high level of patients enlightenment, CRK2 is now being ask for the expiry date of drugs before purchase. The expiry date must be boldly written on the package. As a result, CRK2 on alert and pro-active in keeping expired or damaged drugs from shelf and

implementing PRL systems. The management of expired non-refundable drug that need to be properly disposed makes PRL practices an additional cost for the company.
The What Perspective of Reverse Logistics
The company dispenses OTC (20%) and prescription drugs (80%) and allows drugs to be returned by customers if they are expired drugs at the point of sales or defective. CRK2 purchases finished drugs from suppliers and also return drugs back to suppliers when necessary. These drugs are often damaged, or expired drugs. In cases where there is no RCA for return, damaged or expired drugs will not be returned to the supplier.
The Why Perspective of Reverse Logistics (Receiver)
Companies receiving from Customers and Suppliers Receiving from Companies
CRK2 accept drugs back from customers/partners so as to maintain good customer relationship, and to prevent customer from using expired or damaged drugs. The suppliers accept drugs returned so as to maintain good supplier/customer relationship, and adhere to their contractual obligations.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers/partners normally return drugs back because the drug purchased has expired, need to get refunded, and for exchange for the right drug. The company on the other hand return drugs back to its suppliers because they have expired, to get refunded for the expired drug, to get the drugs exchanged, to prevent lost, to prevent dispensing expired drugs to patient, to ensure that good drug availability, and to maintain customer satisfaction.
The How Perspective of Reverse Logistics
There are no procedures in place at CRK2 for the collection, sorting, storing and processing of returned drugs. Instead, CRK2 use the sales invoice to determine the action to take. The invoice states what needs to be done if drug is expired or defective. The invoice provides details of what needs to be done if the drug is compromise. Some drugs are disposed in-house while some are returned to our suppliers. Once expired drugs is discover, they are remove them from the shelf, the supplier sales rep will be informed, and collection of the drug will be arranged by the sales rep. The duration of time expired drugs remain at the company depends on the time the sales rep of the supplier respond to come to collect the expired drugs. This therefore determines how long expired drug stays with CRK2.
Drugs which do not have pre-sales return agreement, CRK2 normally call other channel or business partners (store with high turnover rate) in advance to check if they have patients using such drug so that the drugs can be forwarded for sale before expiration. Once drugs expired, the company collate the drugs, put them in a covered container and place the container at a particular location near the store. Then the waste disposal organisation (LAWMA) normally come on a monthly or bi-monthly basis to collect the drugs from the assigned location.
The Who Perspective of Reverse Logistics
CRK2's customers are patients, doctors with hospitals, Nursing homes and government hospitals. The companies suppliers are manufacturers (local and international), and importers. The stakeholder that mainly returns drugs to the company are end-users/patients.

The stakeholder/companies responsible for collecting, sorting, storing, reporting and disposing the returned drugs are patients, hospitals, suppliers, and LAWMA. Suppliers have the major influence on the management of returned drugs as they normally inquire about the performance of their product and new product launch. Suppliers also lecture CRK2's representative on how to prescribe their products to patients, both existing and new product. The actors/employees within CRK2 responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs is the store pharmacist, and Staffs.
The Where Perspective of Reverse Logistics
The stakeholders involved in the PRL operation of CRK2 are located in the same state and location of the stakeholders has no influence on the PRL operations.
The When Perspective of Reverse Logistics
Once drug expire, CRK2 normally call the supplier's sales representative. The duration of time expired drugs remain at CRK2 depends on the time the sales rep of the supplier respond to come to collect the expired drugs. This therefore determines how long expired drug stays with the company.
Improvement of Reverse Logistics Practices
CRK2 improves its PRL practices by improving its drug auditing processes to ensure all product dispense by the company are of high quality. According to the respondent, CRK2 need to improve its procurement process, and implementation of mechanism of obtaining customers feedback on product quality.
The respondent suggested that if they can get the email address of their suppliers to inform them earlier before the drugs expire. One of the challenges encountered is lack of response or delayed response to email by suppliers. This is a major reason suppliers are called on the phone. Suppliers should be called in advance to pre-alert them of drugs close to expiration. By this, suppliers will be able to explore other channel to push out the drugs for sale before they completely expired.
On the part of our customers, depending on the date, week or month the drugs will be completely be consumed and expired, the company can be collecting customer details at the point of sales so that customers can be pre-alerted in advance about the expiration timing of the drug they have purchased. This will enable customers to return the drug on time for exchange and proper disposition. Proper usage of technology and communications systems is another way of improving PRL activities as well as effective collaboration with customers and suppliers.

13. Case Research L (CRL): Pharmaceutical Retailers

Case Profile
A retail pharmacy specialised in dispensing and supplying end-consumers with OTC, prescription, and ethical based drugs.

Importance of PRL Practices
PRL activities enable CRL to proactively remove damaged, expiring and short-dated drugs from stock and shelf. This mitigates and prevents the risk of selling or dispensing expired drugs to customers. PRL practices enables the company to effectively manage stock rotation and order fulfilment based on fast-moving and slow-moving stock. The PRL practices also help to improve the corporate reputation of the company and facilitate regulatory compliancy. According to the respondent, effect on the environment is not part of the factors considered when selecting drug disposition strategy.
Knowledge of RG
The respondent also acknowledged that there should be law or guideline on how to handle returned, damaged, and expired drugs.
Factors Hindering Compliancy
The major factor that hinders compliancy is the lack of adequate knowledge of the guideline for managing expired and damaged drugs by pharmacies.
PRL Impact on Business Operation
PRL activities enable the company to proactively remove, SEDD drugs from stock and shelf. This activity mitigates and prevents the risk of selling or dispensing expired drugs to customers. PRL practices also help to improve the corporate reputation of the company and facilitate regulatory compliancy.
The What Perspective of Reverse Logistics
CRL dispenses all types of drugs e.g. OTC and prescription drugs and company allow drugs to be returned by customers. Customer do not normally return drugs except when wrong product was sold or dispense. The drugs returned are always in good state (untampered) as return only takes place when wrong drug is purchased.
The Why Perspective of Reverse Logistics (Receiver)
Companies receiving from Customers and Suppliers Receiving from Companies
CRL accepts drug when retuned in good state (untampered) and exchange for the right drug, alternative drug or cash refund.
The Why Not Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
CRL do not return drugs back the suppliers because expired or damaged drugs are destroyed in-house. The only situation where drugs are return back to suppliers is when the wrong drugs is delivered or over-supply.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
According to the respondent, CRL do not sell or dispense expired drugs to customers. The only time drugs are returned back to CRL is when wrong drugs are sold to customers which rarely

happen. The only situation where drugs are return back to suppliers is when the wrong drugs is delivered or over-supply.
The Why Not Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
CRL purchase drugs from suppliers and do not return drug back to suppliers because the company conduct the disposal and destruction of expired drugs in-house.
The How Perspective of Reverse Logistics
There are procedures in place at CRL for the collection, sorting, storing and processing of returned drugs. On a daily basis, the store staff performs stock check and removes any expired or short-dated (close to expiration by days) drugs from the shelf. Drugs that are less than one month or days to expiration will also be removed immediately and reported to the store pharmacist. The store staff will place the drugs on the table for the store pharmacist to audit. After audit, the store pharmacist instruct the store staff to remove each drugs (tablets) from the cartons and packages, the tablets will be crushed and flushed down the drain or sewers (toilet) with a lot of water. The packaging will be crushed into pieces and disposed in waste bin.
The Who Perspective of Reverse Logistics
CRL's customers are primarily end-consumers and the suppliers are wholesalers. The supply chain stakeholder that returns drugs to CRL customers. The stakeholder/companies responsible for collecting, sorting, storing, reporting and disposing the returned drugs is CRL. The nature of the company relationship with these stakeholder is inter-departmental and customer to supplier relationship. The stakeholder(s) that influences PRL operation at CRL is the management team, suppliers and customers. The actors/employees within CRL responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are the store keepers, store pharmacists.
The Where Perspective of Reverse Logistics
The stakeholders involved in PRL operation of CRL are located in-house. Hence, the location of stakeholders have no influence/impact on the collection, storage, and processing strategy of returned drugs by the company.
The When Perspective of PRL (Receiver)
CRL process EDD drugs immediately once discovered to prevent the sales of expired drugs to customers.
Improvement of Reverse Logistics Practices
According to the respondent, there are better ways of performing the operation via the use of ERP systems to manage inventory.

14. Case Research M (CRM): Pharmaceutical Retailers

Case Profile
CRM is a retail pharmacist specialised in dispensing and supplying end-consumers with OTC, prescription, and ethical based drugs.
Importance of PRL Practices
PRL help to build customer trust and confident in the way the company manages drugs. PRL practices enable CRM to manage inventory, and to eliminate expired drugs from inventory. Drugs with 6 to 8 month to expiration are removed from inventory.
Knowledge of RG
The respondent acknowledge the presence of guideline governing the handling of returned, SEDD drugs. The guideline states that expired drugs should be stored separate from other saleable stock. Expired drugs should be stored in a different storage point/location designated for expired drugs. Expired drug should be documented and pass through a proper return channel for proper disposal. The RA comes to the premises every month or two to collect expired products. This enables the RA to have record of expired product so that they can look out for such batch that might be in circulation. The expired products are destroyed via incineration.
Factors Hindering Compliancy
The factors that hinder CRM's compliancy to RG is mainly negligence on the part of the company.
PRL Impact on Business Operation
The impact of PRL on business operation is the loss of revenue on EDD drugs. Despite this, PRL help build customer trust and confident in the way the company manages drugs. PRL activities facilitate better management of the inventory and the elimination expired drugs from inventory.
The What Perspective of Reverse Logistics
CRM dispenses and supplies customers with OTC, prescription, and ethical based drugs. The company allow drugs to be returned by customers if the drugs are expired, short-dated, damaged or wrongly ordered drugs. According to the respondent, the company do not sell expired drugs and it is very rare to see customers return drugs except the return of drugs that are wrongly ordered or wrongly delivered. CRM purchases drug from wholesalers, manufacturers, and registered importers. CRM also return damaged, expired, drugs with manufacturing error, any drug that is concealed back to the supplier.
The Why Perspective of Reverse Logistics (Receiver)
Companies receiving from Customers and Suppliers Receiving from Companies
CRM accept drugs back from customers because customer have the right to genuine drugs. CRM considers it necessary to take responsibility in rectifying any drug related issue and in providing the right drug to customers. These activities enables CRM to meet customer demand, build customer relationship and satisfaction. The suppliers accept drugs returned by CRM in order to maintain good customer relationship.

The Why Not Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
Drugs are not accepted at CRM because of regulatory or legislative reasons. According to the respondent, the role of legislation on pharmaceutical product is not significant in Nigeria due to inadequate enforcement of regulation in Nigeria. Hence, regulation dose not influence drug returns process. CRM however, considers PRL practices as professional and ethical duty to ensure that substandard drugs are removed from circulation.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
CRM return EDD drugs to the suppliers. Customer return drugs back to CRM because the drugs are short-dated, damaged or defective. CRM therefore return drugs back to its suppliers so as to keep the inventory free from SEDD drugs. Drugs are also returned because customer decides not to need the drugs again or they already have the drug at home.
The Why Not Perspective of Reverse Logistics (Sender)
Drugs are not returned by customer because of regulatory or legislative reasons. According to the respondent, the role of legislation on pharmaceutical product is not significant in Nigeria due to inadequate enforcement of regulation in Nigeria.
The How Perspective of Reverse Logistics
There are there procedures in place at CRM for the collection, sorting, storing and processing of returned drugs. Customer returns are handled immediately by CRM. Investigation on the possible cause of customer return is done immediately so that the drug can be isolated, investigated, dispose or returned to the supplier, refund or exchanged for the customer.
If the quality issue is from the supplier, CRM normally ensure that the supplier are contacted and informed. The drugs are then returned to the supplier as soon as possible.
On a monthly basis, CRM performs monthly inventory check for expired drugs. Short-dated drugs (7 to 8 month to expiration) are separated from drugs with longer shelf-life and place on a different shelf that is eye-catching to facilitate sale and also for dispensing at every possible opportunity. The frequency of drug returns from CRM to suppliers depends on when the short-dated or expired drug is discovered in the store (company).
For all other drugs without return agreement prior to purchase, the waste disposer agency from the RA normally comes to the company on a monthly basis to collect the expired drug for disposal.
The Who Perspective of Reverse Logistics
CRM's customers are end-consumers and the suppliers are manufacturers, wholesalers, and registered importers. The stakeholders that return drugs CRM are end-customers. The stakeholder/companies responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the drug collection unit, the retail pharmacy, customers, suppliers, and The RA.
The stakeholders that have influence PRL operation of CRM are internal stakeholder (management) who develop policies to manage drug returns and how healthcare provision is being managed. Customers also play a major role as the company's retail outlets are located in the most affluent part of Nigeria. People in the area are well informed so they influences the way the company manages drug distribution and returns.

The actors/employees within CRM that are responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are the store pharmacist, pharmacist technician, and the procurement team.
The Where Perspective of Reverse Logistics
The stakeholders involved in the PRL operation of CRM are located in strategic locations in Lagos. Hence, location of the stakeholders has no negative impact on the PRL activities of the company.
The When Perspective of PRL (Receiver)
Customer returns are handled immediately at CRM. Investigation on the possible cause of customer return is done immediately so that the drug can be isolated, investigated, dispose or returned to the supplier, refund or exchanged for the customer. The RA comes to the company every month or two months to collect expired products.
Improvement of Reverse Logistics Practices
PRL practices be improved if all pharmacist and companies follow the same method processing pharmaceutical returns. The RA should take a leading role in improving revere logistics process of drugs. PRL can also be improved by pro-actively dispensing good quality drugs and any compromised drugs must be retrieved and forwarded into the appropriate reverse channel.
The factors that hinder compliancy is largely due to negligence on the part of the company. For every firm, there should be a quality department that should be overseeing that product before dispensing.
All staffs working at the pharmacy should be meticulous as much possible in their professional duty. This mitigate the risk of staffs making mistake when dispensing drugs. Hence, protecting the pharmaceutical ethics of the company. CRM should also employees professionals capable of anchoring the mission statement of the company are recruited.

15. **Case Research N (CRN):** Pharmaceutical Retailers

Case Profile
A retail/community pharmacy specialised in dispensing and supplying OTC and prescription-based drugs.
Importance of PRL Practices
PRL practices is important to CRN as the company considers it necessary to eradicate expired drugs from shelf and inventory. CRN's management considers it unethical and unprofessional to have expired drug in procession. PRL practices is also important as it helps prevent sanctions for non-compliancy to regulatory requirement.
Knowledge of RG

The respondent also acknowledged that there should be guideline on how to manage expired or damaged drugs. This is the reason the RA is working with PCN to encourage companies to come forward with their expired products.
Factors Hindering Compliancy
Factors hindering compliancy is attributed to the distance of CRN from the location of the RA. Hence, CRN perform the destruction by itself. Lack of proper awareness of the RGs on how to process expired drugs is a major factor hindering compliancy.
PRL Facilitator
PRL Impact on Business Operation
CRN bears the cost of expired drugs that cannot be returned. The financial impact is the loss of revenue, profit and capital on expired and damaged drugs. The challenges encountered by CRN in managing drug returns is that most suppliers are reluctant in accepting back expired drug.
The What Perspective of Reverse Logistics
CRN dispense and supply OTC and prescription-based drug and also allows drugs to be returned by customers. The type of products returned are short-dated drug, wrong prescription such as drugs that customer already have at home. CRN also return drugs back to its suppliers; this is done through supplier's medical or sales representative. Although CRN return expired drugs to suppliers not all suppliers accepts back those drugs. Only drugs on SOR arrangement can be returned to suppliers while CRN bears the cost of expired drugs that cannot be returned.
The Why Perspective of Reverse Logistics (Receiver)
Companies receiving from Customers and Suppliers Receiving from Companies
CRN accept drugs returned by customers so as to maintain customer relationship and enhance customer satisfaction. Suppliers accept drugs returned by CRN base on RCA which are mainly for prescription only drugs. OTC drugs do not normally have return agreement.
The Why Not Perspective of Reverse Logistics (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
Suppliers accept drugs returned by CRN base on RCA which are mainly for prescription only drugs. OTC drugs do not normally have return agreement.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers return short-dated drugs back to CRN for refund or exchange for the right drug. CRN return drugs back to its suppliers for refund and exchange for new or right drug.
The Why Not Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers

Although the CRN return expired drugs to suppliers, not all suppliers accepts drugs back. Only drugs on SOR arrangement can be returned to suppliers.
The How Perspective of Reverse Logistics
There are no procedures in place at CRN for the collection, sorting, storing and processing of returned drugs. CRN inform the suppliers about the drugs that need and the suppliers make collection arrangement at no extra cost.
On a monthly basis, CRN conduct shelf and inventory checks for expired or expiring drugs. Occasionally, staffs also stumble into short-dated drugs or expired drugs. These drugs will be removed from the shelf or inventory immediately and dumped in to the collection or disposal bin after which destruction arrangement will be made. On a monthly basis, the expired drugs will be taken to a dump site and destroyed by open air burning. The RA are not usually notified about this operation. Expired or damaged drugs under SOR agreement are usually collected by the suppliers. CRN notifies the suppliers who then send its sales representative to collect the drugs from the company and exchange for new or alternative drugs. CRN adopts this strategy as it is less cumbersome and cost efficient
The Who Perspective of Reverse Logistics
CRN's customers are end-consumers and suppliers are manufacturers and wholesalers. The supply chain stakeholders that return drugs to CRN are end-consumers. The stakeholder responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the company staffs. The stakeholders that influences the way drug returns are being managed are the company management and the end-consumers.
The Where Perspective of Reverse Logistics
The stakeholders involved in PRL operation of CRN are the company staffs. Location of stakeholders influences the PRL operation of CRN as the company conduct the destruction activities in-house due to the distance from the RA.
Improvement of Reverse Logistics Practices
The respondent acknowledged that there should be guideline on how to manage expired or damaged drugs. This is the reason the RA is working with PCN to encourage companies to come forward with their expired products. Factors hindering compliancy is largely attributed to the distance of the company from where the RA is located. Hence, CRN conduct the destruction activities in-house. Lack of proper awareness of the RGs on how to process expired drugs is a major factor hindering compliancy. CRN engages in enlightenment campaigns on any prevalent diseases, performs some screening and testing services for patients as well as free of charge counselling services.
According to the respondent, there should be better ways of performing these activities. Considering the current social-economic and political situation in the country, if all relevant stakeholders and the RA perform their role efficiently e.g. RA conducting regular checks, free of charge expired drug collection from pharmacies and destruction, PRL practices will be optimised.

16. **Case Research O (CRO):** Hospital Pharmacy

Case Profile
CRO is a hospital pharmacy specialised in delivering pharmaceutical Services.
Importance of PRL Practices
RPL practices is very important to CRO according to the respondent.
Knowledge of RG
The respondent is not aware of the RG governing the handling of returned, damaged, and expired drugs.
PRL Impact on Business Operation
According to the respondent, PRL activities leads to the loss of revenue, additional cost and reduction in profit. PRL however help or facilitate the process of managing usable drugs inventory, saleable and unusable drugs, as well as forecasting customer demand. CRO have an edge in its relationship with the supplier. High product return rate decreases potential business potential and possibilities with the supplier. Hence, suppliers are generally at the mercy of CRO.
The What Perspective of Reverse Logistics
CRO dispenses pharmaceutical drugs and also allow drugs to be returned by customers. The kind products returned by customers are defective drugs, expired drugs, and damaged drug. Products gets returned when customer work in the store to voice their complaint to the superior officer. CRO also return drugs back to its suppliers, majority of which are returned by patients and those close to expiration. Drugs that expired while in stock are returned to the manufacturer.
The Why Perspective of Reverse Logistics (Receiver)
Companies receiving from Customers and Suppliers Receiving from Companies
Customers return drugs back due to quality issues, expiration and damage of the drug. The company accept drugs back from customers so as to give good customer service experience and also to ensure that the right drug is given to the right patients or used by the right patient. Suppliers accept drugs returned by CRO so as to foster good business relationship with the company.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
CRO return drugs back to its suppliers due to due to product quality issues, expiration and damage.
The Why Not Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers

If customers did not return drug, that implies that the drug is perfectly suitable for the customer.
The How Perspective of Reverse Logistics
There are no procedures in place at CRO for the collection, sorting, storing and processing of returned drugs. According to the respondent, the management do not see any reason for procedure since the drugs are expired and unusable. There are better ways of performing these activities. CRO process returned drug immediately and the drugs are collected on a weekly basis. The company process expired/damage drug by removing it from shelf, document the drugs and prepare the drugs for return to the supplier. CRO processes expired and damage drug inventory the way it currently does due to the arrangement with the suppliers to conduct a weekly collection.
The Who Perspective of Reverse Logistics
CRO's customers are patients. The suppliers are manufacturers and Oshodi Medical Store (OMS). The supply chain stakeholder that returns drugs to your company are customers. The stakeholders responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the manufacturers, and the OMS. The stakeholder(s) that influence the way drug returns are being managed are management, OMS, and manufacturers. The actors/employees within the company responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are store officer and pharmacist.
The Where Perspective of Reverse Logistics
The stakeholders involved in the PRL operation of the company are located in-house, the manufacturers and the OMS. All stakeholders are located within Lagos State. Hence, location has no negative influence/impact on the collection, storage, and business operation. The suppliers' sales representative comes to CRO to collect expired and damaged drugs while CRO is responsible for sending rejected drugs to the OMS.
The When Perspective of Reverse Logistics
CRO process returned drug immediately and the drugs are collected on a weekly basis. CRO process expired/damage drug by removing it from shelf, document the drugs and prepare the drugs for collection. The supplier's representative arrange collection on a weekly basis.
Improvement of Reverse Logistics Practices
The respondent is not aware of the guideline governing the handling of returned, damaged, and expired drugs. In order to improve PRL practices (collection, processing, storage, resell and disposal of returned or expired drugs as well as reporting to regulatory authorities), CRO is exploring the possibilities of implementing ERP systems to facilitate its dispensing operations.

17. **Case Research P (CRP):** Hospital Pharmacy

Case Profile

CRP is a hospital based pharmacy responsible for providing and managing all aspects of drug use in the Hospital.
Importance of PRL Practices
PRL is very important for CRP as it helps saves or prevent loss of revenue and capital. According to the respondent, if there is no medium to recall drugs or return drugs via the PRL process, CRP will loss out and will not have the chance to be refunded for the unsaleable drugs. Hence, PRL helps to sustain revenue generation process.
Knowledge of RG
According to the respondent, there are guidelines governing the handling of returned, damaged, and expired drugs. There is a policy from the ministry of health on (Guideline for Donation) aimed to prevent expiry. Based on guideline, pharmacists are not allowed to purchase drugs that is less than 80% of the shelf-life.
Factors Hindering Compliancy
Factors hindering compliancy could be ignorance and negligence to the lay down rule. The sales rep through illegal practices might have a way of bribing the pharmacies to receive short-dated drugs in their inventory so as to push their sales record.
PRL Facilitator
The suppliers accept the drugs back because there is a memorandum of understanding and agreement between the company and suppliers prior to the state of purchase; recall process is one of the terms.
PRL Impact on Business Operation
PRL activities have impact on CRP's stock balances, calculated moneys or projected sales.
The What Perspective of Reverse Logistics
CRP dispenses all types of drugs such as OTC and prescription drugs. CRP allows drugs to be returned by customer provided there is both a proof of purchase from CRP and a genuine reason for the return. The drugs will be accepted back for exchange for alternative drug or refund. The type of drugs returned are drugs patients already have and are no longer needed, expired, short-dated (customer might not have confident in the short-dated drug). Patients simply walk into the pharmacy to return the drugs. The state of drugs normally received back from customers are short-dated, expired, and drug in good state. CRP purchases drugs from suppliers and also return drugs back to its suppliers. The state of the drugs returned to suppliers are expired, short-dated, and damaged drug.
The Why Perspective of Reverse Logistics (Receiver)
Companies receiving from Customers and Suppliers Receiving from Companies
CRP allows drugs to be returned by customer provided there is both a proof of purchase from the company and a genuine reason for the return. The drugs will be accepted back for exchange for alternative drug or refund. The company accept drugs back from customers if the drugs

were purchase from CRP and there is a genuine reason for the return. Drugs are therefore accepted back for exchange for alternative or better drug, for refund so as to keep the customer happy. Drugs are also accepted back so as to protect and prevent the customer consuming expired drugs. The suppliers accept the drugs back because there is a memorandum of understanding and agreement between CRP and suppliers prior to the state of purchase; recall process is one of the terms.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers return drugs because they no longer need the drug, some might already have the drugs at home. Drugs are also returned because they are expired, short-dated drug, or lack of confidence in the short-dated drug. CRP return drugs back to its suppliers because the drugs have expired, short-dated, damaged drug. Drugs are also return to the suppliers to prevent loss of revenue as well as to eradicate expired drugs from inventory.
The How Perspective of Reverse Logistics
There are no written procedures in place for the collection, sorting, storing and processing of returned drugs or drugs to be returned by the company because it is simple process, requires very minimal operation and return activity is not a regular activity. There is a transaction already in place between CRP and the suppliers via the suppliers' sales representatives. It is therefore very easy for the company return drugs to the suppliers when required for any reason. The pharmaceutical representative will be contacted (providing details of the drugs and quantity) who will then arrange collection and exchange the drugs.
On a daily basis, once expired drug is discovered or once a drug is deemed for return, the drugs will be separated from other saleable drugs, quantified, and documented. The supplier will then be contacted (within an hour or a day max) who arrange the collection and exchange for the drugs The appropriate documentation is done on a ledger, indicating the expired or about to expired quantity, as well as quantity received from the supplier in exchange for the expired quantity. The ledger will be filled to document the drugs name and quantity that has been recalled and the quantity exchanged/replenished.
In situation where expired drug has no return agreement, the inventory count of the expired drug will be taken, value the inventory, harmonise the inventory and notify the RA in writing for destruction. The RA will provide the procedure to carry out the destruction including the location where the destruction operation should be conducted. The open air burning will be in the presence of the RA's official. This is done in order to comply with RG.
The Who Perspective of Reverse Logistics
CRP's customers are end-consumers and suppliers are manufacturers, and wholesalers. The supply chain stakeholder that return drugs to the company are end-consumers. The stakeholder/companies responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the pharmacy, suppliers, and the RA. The stakeholder(s) that influences the way drug return is managed are the end-consumers, suppliers, and the RA. The actors/employees within CRP responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned drugs are the store keeper, store pharmacy, logistics team, RA's official.
The Where Perspective of Reverse Logistics

The stakeholders involved in the PRL operation of CRP are located in-house and within the same state. This makes PRL operations and disposal activities easier.
The When Perspective of Reverse Logistics
On a daily basis, once expired drug is discovered or once a drug is deemed for return, the drugs will be separated from other saleable drugs, quantified, and documented. The supplier will then be contacted (within an hour or a day max) who arrange the collection and exchange for the drugs.
Improvement of Reverse Logistics Practices
According to the respondent, there are guidelines governing the handling of returned, damaged, and expired drugs. There is a policy from the ministry of health on (Guideline for Donation) aimed to prevent expiry. Based on guideline, pharmacists are not allowed to purchase drugs that is less than 80% of the shelf-life. According to the respondent, the company can improve its reverse logistic practices by discontinuing the purchase of short-dated drug. Fast-moving drug must not be purchase at less than 6 month from their date of expiration while slow moving drugs should not be less than 12 month before expiration. In addition, conducting a quality check of supplies to ensure that we don't go against guidelines for the types of drugs to receipt.
According to the respondent, stock balancing issues can be minimised if a good forecasting and quantification process is in place. The do not really have challenges in implementing PRL because there is already a well-functioning channel of communication between the company and the suppliers' sales representative. All that is required when drugs needs to be return is for CRP to contact the pharmaceutical representative who will arrange collection of the drugs and exchange.

18. **Case Research Q (CRQ):** Hospital Pharmacy

Case Profile
CRQ is a hospital based pharmacy or the pharmacy department of a hospital responsible for providing and managing all aspects of drug use in the Hospital. The drugs dispensed to patients are based on the prescription raised by the physician. Hence, not OTC drugs is dispensed. The pharmacy mission is to provide the highest quality and most effective pharmaceutical care. In addition to the main pharmacy, which houses office, the drug information unit, the controlled drugs/ cold room and the main out-patient Pharmacy, the department has four satellites spread within the Hospital complex, namely: The In-Patient Pharmacy, the accident & emergency pharmacy, the private wing pharmacy, and the special treatment clinic pharmacy.
Importance of PRL Practices
PRL activities helps to prevent loss of revenue and to clean the inventory from expired or defective drugs. It also helps to avoid waste and unnecessary waste. PRL is very important to the company as it helps reduce wastage, loss of revenue and maintain integrity. Patient will be happier and secured knowing that they are not going to be using expired drugs. PRL also helps to maintain good relationship and trust with patients and with the suppliers.

Knowledge of RG
The respondent is not aware of any guideline governing the handling of returned, damaged, and expired drugs. However, the respondent acknowledged that they have full knowledge of what is required to handle short-dated or expired drugs based on academic training and professional ethics.
PRL Facilitator
Suppliers accept drugs returned by CRQ due to the RCA.
PRL Impact on Business Operation
PRL is very important to CRQ as it helps reduce wastage, loss of revenue and maintain integrity. Patient will be happier and secured knowing that they are not going to be using expired drugs. PRL also helps to maintain good relationship and trust with patients and with the suppliers. During the periodical stock check, CRQ encounter challenges of inadequate hands or employee to perform the stock checks and related reverse logistics activities. The activities is a cumbersome process as dispensing of the drugs to patients needs to continue undisrupted while the stock check operation is on-going. The high work-load give a large room for error as it is entirely a manual operation.
The What Perspective of Reverse Logistics
CRQ allow drugs to be returned by patients. For example, patients that are on the ward (in-patient), are allowed to return left over drugs to the pharmacy through the nurses in charge of that ward. Out-patients, do not normally return drugs back but should in case they do for any good reason, the pharmacy is in position to accept back the drugs to mitigate the risk of the drug being reused by the patient, and being given to friends or relatives. The respondent however mentioned that out-ward patients rarely return drugs.
The state of drugs normally returned by patients are reusable drugs, short-dated drugs as well as expired drugs. Oral tablets that are already been dispense are not re-usable, while injectable are sometime reusable if not expired. CRQ purchases drugs from suppliers and sometimes compound formulations/AI into syrups. CRQ also return drugs back to its suppliers based on RCA. CRQ contract letter states that drugs that are less than 2 years shelf-life should not be accepted from suppliers. Hence, only short-dated, damage, defective, expired drugs are returned to the suppliers.
Reusable drugs returned by patients are reuse where possible, unusable ones are return to supplier based on RCA or destroy internally. The PRL activities helps to prevent loss of revenue and to clean the inventory from expired or defective drugs. It also helps to avoid waste and unnecessary waste. The key challenges faced by CRQ is that most suppliers feels reluctant to accept the expired drug back.
The Why Perspective of Reverse Logistics (Receiver)
Companies receiving from Customers and Suppliers Receiving from Companies
Customers return drugs back to CRQ because they are no more needed, or left-overs from patients. The left-overs are returned by nurses. CRQ accept drugs back from customers to

prevent drug abuse, usage of expired drug and to prevent the patient from giving the drugs to someone else. Suppliers accept drugs returned by CRQ due to the RCA.
The Why Not Perspective of Reverse Logistics (Receiver)
Companies receiving from Customers and Suppliers Receiving from Companies
The key challenges faced by CRQ is that most suppliers feels reluctant to accept the expired drug back.
The Why Perspective of Reverse Logistics (Sender)
Customers to Companies, and Companies to its Suppliers
Customers return drugs back to CRQ because they are no more needed, or left-overs from patients. The left-overs are returned by nurses. CRQ return to its suppliers due to the RCA with the suppliers, to eliminate compromised or expired drugs from the inventory and to prevent loss of revenue. CRQ purchases drugs from suppliers and sometimes compound formulations/AI into syrups. CRQ return drugs back to its suppliers based on RCA. CRQ's contract letter states that drugs that are less than 2 years shelf-life should not be accepted from suppliers. Hence, only short-dated, damage, defective, expired drugs are returned to the suppliers.
The How Perspective of Reverse Logistics
There procedures in place at CRQ for the collection, sorting, storing and processing of returned drugs by the company. The satellite pharmacies makes requisition for drug from the pharmacy main store. On quarterly basis, every units is mandated to conduct stock-check for expired and short-dated stock. This is done in the presence of and the supervision of external auditors. The satellite units generate a list of drugs that have expired and submit them to the pharmacy main store providing all details of the drugs: name, strength, quantity, value, manufacture date, expiring date, batch number etc. The main store collate all the returned drugs centrally. The satellite pharmacies also generate a list of stock that are likely to expire within the next quarter (short-dated drugs).
This operation helps to give the person in charge of main store redirect the short-dated drugs to satellite pharmacies unit that will consume the drug before expiration. This method is used to maximise usage and prevent the drugs from expiring before use. For drugs that have RCA of return, the main store will contact the suppliers to arrange collection and exchange of the drugs providing the suppliers all required details of the drugs. For drugs that expired on stock, collected, separated and stored somewhere separate, and destroyed by incineration every two years in the presence of THE RA. According to the respondent, the destruction activities are not always done every two years due to various change of management, managerial commitment and priorities.
According to the respondent, there are better ways of performing these activities such as the use of ERP system and CRQ is currently test-running a software to improve the process. There is no structured time to determine how long CRQ keeps the returned drugs before processing. It depends on the RCA and time-frame agreed with individual suppliers. Some suppliers advises usage of their drugs until expiration. Some advises usage until one or three months to expiration, and some will give a specific time frame. This is due to the nature of the drugs and the business strategy.
The Who Perspective of Reverse Logistics

CRQ's customers are patients (end-consumers) while the company's suppliers are manufacturers, wholesalers, importers. The supply chain stakeholder that returns drugs to the company are patients. The stakeholder responsible for collecting, sorting, storing, reporting and disposing the returned drugs are the pharmacy main store, satellite pharmacies, the suppliers and the RA.
The stakeholder that influences the way CRQ manages returned drugs are the patients because they don't like to see that their drugs is about to expire. Internal management policy also influences the return handling strategy because management will like to see as minimum expired drugs as possible. The suppliers have influence on the reveres logistics operation via the RCA to return drugs that meet certain criteria. The RA also have influence but their level of regulatory/legislative influence is low due to low level of enforcement. The actors/employees within CRQ responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the returned, short-dated and expired drugs are the pharmacists, the pharmacy staffs, procurement team, store and inventory manager, logistics manager etc.
The Where Perspective of Reverse Logistics
The stakeholders involved in the PRL operation are located in the same state and vicinity. Location of stakeholders have no impact on the collection, storage, and processing strategy of returned drugs as the suppliers comes themselves to collect the drugs. The PRL activities and disposal operation are done in-house.
The When Perspective of Reverse Logistics
There is no structured time to determine how long the company keep the returned drugs before processing. It depends on the RCA and time-frame agreed with individual suppliers. Some suppliers advises usage of their drugs until expiration. Some advises usage until one or three months to expiration, and some will give a specific time frame. This is due to the nature of the drugs and the business strategy.
Improvement of Reverse Logistics Practices
According to the respondent, CRQ can improve its PRL practices by investing in the implementation of ERP system to facilitate the stock management process, maximising stock usage capability.

19. **Case Research R (CRR):** Regulatory Authority

Case Profile
CRR is a regulatory parastatal of the FMoH responsible for regulating all drug products and substances, chemicals, bottled water and packaged food in Nigeria. The agency inspects the manufacturing premises to ensure that the facilities are satisfactory for production of the

specific products. The agency is also responsible together with the Pharmacists' Council of Nigeria (PCN) for the harmonization of Good Manufacturing Practice (GMP) inspections of manufacturing facilities as well as of human resource development planning. The organisation's functions is to take measures for the early destruction as or early disposal of drugs that have been seized, confiscated and or substandard.
Importance of PRL
According to CRR respondent, PRL is a very important practice as the efficiency and the effectiveness of drug disposal process/operation depends heavily on the effectiveness of the implementation of PRL practices and programs employed by pharmaceutical companies.
Knowledge of RG
All stakeholders involve in the business of regulated products (Manufacturers, wholesalers, retailers, importers, hospital, NGOs) are all mandated to remove expired drugs from their saleable inventory and shelf and store them at a save designated area in their facility. The RA have procedure in place for the collection, sorting, storing and processing of the submitted drugs. For every processes carried out, there are different SOPs implemented. Every manufacturers is required to have an SOP for expired/damaged drug destruction. The RA normally provide the procedure wholesalers, retailers, importers, hospital, NGOs need to follow for drug submission.
According to the respondent from CRR, the pharmacy profession and its practice in Nigeria, is guided by a National Drug Policy (NDP). The NDP is a policy manual that is subject to review every 3 years. The main goal of the policy is to make available at all times to the Nigerian public adequate supplies of drugs that are effective, affordable, safe and good quality. For rational use of these drugs and also to increase and or stimulate production of essential medicines.

One of CRR's objectives is to strengthen the administrative, legislative and regulatory control and storage of these drugs. A target of the NDP, is to furthermore ensure proper disposal of expired, deteriorated and substandard drugs in both public and private sectors by the year 2008, by 60%. According to the NDP storage implementation guidelines, it stated that the central medical stores or stores in public/private sectors health facilities drugs should be properly managed to ensure they do not expire or deteriorate on the shelf. However if they do expire and or deteriorate, they shall be officially destroyed within six (6) months.
Factors Hindering Compliancy
According to the respondent from CRR, logistics issues on the part of the clients is a major factor hindering companies from submitting expired and damaged drugs to the organisation. Many pharmacists are not aware of the RG on how to handle expired and damaged drugs. Inefficient enforcement of the guideline on the part of CRR is another factor hindering clients from implementing PRL or submitting expired drug or proper disposition. CRR also encounters challenges in conducting the destruction exercise.
Some client especially small-scale businesses complained about the unaffordability of fee charged for destruction service. CRR do not consider the destruction fee as expensive, and sees clients that attribute the fee as the reason for their non-compliancy as those that have not genuinely inquire about the official guidelines for handling expired product.
PRL Facilitator
PRL Impact on Business Operations

The impact of PRL practices is the enforcement and implementation of the RG designed to guide pharmaceutical companies (public and private) in the removal of expired, deteriorated and substandard drugs from circulation, and ensure proper disposal within six (6) months. The key challenges faced by the organisation is the destruction of the product itself.
The What Perspective of PRL
CRR do not manufacture nor supply drugs to any company. Hence, companies do not return product back to the organisation because the drugs were not purchased from the organisation. CRR is a regulatory authority; hence, drugs submitted by clients for several purposes e.g. laboratory analysis, confiscation, destruction, registration. Drugs submitted for destruction and confiscation are mostly expired and substandard products.
The Why Perspective of PRL (Receiver)
Companies Receiving from Customers and Suppliers Receiving from Companies
Clients submit drugs to CRR for regulatory reasons such as laboratory analysis, registration purposes, confiscation of expired and defected products, and product recall purposes. The drugs are received for the same reason for submission; for regulatory purposes laboratory analysis, registration purposes, confiscation, recall purpose, expired product, defected products.
The Why Perspective of PRL (Sender)
Customers to Companies, and Companies to its Suppliers
Clients submit drugs to CRR for laboratory analysis, registration purposes, confiscation purposes, and recall purposes.
The Why Not Perspective of PRL (Sender)

Customers to Companies, and Companies to its Suppliers
Some client especially small-scale businesses complained about the unaffordability of fee charged for destruction service. This is a factor considered by some pharmaceutical companies as reason for not submitting their expired drugs to the regulatory body. CRR do not consider the destruction fee as expensive, and sees clients that attribute the fee as the reason for their non-compliancy as those that have not genuinely inquire about the official guidelines for handling expired product.
The How Perspective of PRL
All stakeholders involve in the business of regulated products are mandated to remove expired drugs from their saleable inventory, and store them at a save designated area in their facility. CRR have procedure in place for the collection, sorting, storing and processing of the submitted drugs. All processes carried out have their individual SOPs implemented. Every manufacturers are also required to have an SOP for handling expired and damaged drugs.
CRR normally provide the procedure wholesalers, retailers, importers, hospital, NGOs need to follow for drug submission. Once companies are ready to submit expired product for destruction, they will first notify the organisation expressing their interest by submitting an official letter of application, addressed to the Director General. CRR will remit the application letter to relevant office for that assignment which will then implement appropriate procedure for receiving the drug. The application letter must have meet some other criteria such as name of product of the product, quantity, value, expire date, financial implication, cost as well as all necessary information about the product. This information will be verified to confirm what will be physically delivered to the organisation. Charge for service is - Less than 50 cartons cost 20K, between 50 and 100 is 40K.

CRR will confirm the date the expired drug should be forwarded to their facility. Upon delivery at organisation facility, the expired drugs will be quarantined into a designated 6 foot container together with expired drugs obtained from other companies. This strategy is implemented in order to consolidate all drug submitted by different client, to maximise the utilisation of the warehouse for process efficiency purposes, and to allow time to prepare or secure a government approved destruction site. Once the container is full (the presence of full container of expired drugs at the facility is hazardous), within a year, the drugs will be taken to a government authorised destruction site. The destruction option to be used is determined by the type of product to be destroyed e.g. open air destruction (open air burning), incineration and burying of the drugs. If the drugs is hazardous for open air burning to be done, incineration or auto cliff method will be employed.
In situation where companies have the capacity to perform the destruction and have requested for the required permission, the organisation gives companies the option to perform the destruction by themselves provided it is done in alignment with the guideline stipulated by the regulatory body. This often happens when CRR have limited capacity to store the expired drugs. Another reason some manufacturers do not usually send expired drug to the regulatory body is due to the absence of expire drug inventory in their facility. All drugs manufactured are always injected into the distribution channel and owned by other channels such as wholesalers, retailers, clinics, NGO etc. Hence expired and damaged drugs submitted to CRR do come from the aforementioned channel partners (supply chain stakeholders).
Expired and damaged drugs are also submitted for destruction is via the Association of Community Pharmacy of Nigeria (ACPN). This is when the organisation organises destruction for their members i.e. During the ACPN annual week, the technical team seizes the opportunity to gather expired product from all their members and invite the organisation official to witness the destruction. This indirectly reduces the volume of expired and damaged drug submitted directly to CRR by pharmaceutical companies. The ACPN collect expired drugs from all its members and store them in container quarantined. Once full, destruction procedure will

commence; a specific date will be selected in the year to conduct the destruction activities. This activity is anchored by the ACPN and supervised by CRR. The destruction method is also open air burning at a selected dump site.
The Who Perspective of PRL
CRR's clients are all companies such as manufacturers, importers, distributors, retailers and even individuals involve in the business of regulated products. CRR has the statutory power to destroy product, and do not outsource the activities to any other organisation. Clients also perform some destruction on their own but in the presence of designated representative from CRR.
The stakeholder that influences the way the CRR manages drug submission and destruction is the internal management and the clients (All stakeholders involve in the business of regulated products). The actors/employees within the organisation responsible for the day-to-day administration, collection, sorting, storage, re-sell, reporting and disposal of the submitted drugs are the warehouse staffs, logistics staffs, pharmacist, Quality staff etc.
The Where Perspective of PRL
The stakeholders involved in the PRL operation at CRR are located in-house. Hence, the location of stakeholders have no influence/impact on the collection, storage, and processing strategy of the submitted drugs.
The When Perspective of PRL
Improvement of PRL Practices

According to the respondent from CRR, it is better to submit expired drugs to the RA rather than causing environmental havoc. The impact of EDD drugs getting into wrong hands cannot be quantified. Many pharmacists don't have information of the RG on EDD drugs. Inefficient enforcement of the law on the part of the organisation is another factor hindering companies from implementing PRL for proper disposal.

APPENDIX THREE: PAPER REVIEW CHART

PAPER REVIEW CHART					
Objective	**Question**	**Answer**	**Action 1**	**Action 2**	**Action 3**
To address the multi-dimensionality of Reverse Logistics definitions	*Article's abstract contains words like Reverse Logistics or at least Returns, Return Management, Return Process, Recovery, and Take-back?*	YES / NO	**RETAIN** if "YES" **DISCARD** if "NO"	N/A	N/A
To identify conceptual development in Reverse Logistics and in relation to the pharmaceutical industry	*Is the article Empirically and Conceptually based?*	YES / NO	**RETAIN** if "YES" **DISCARD** if "NO"	N/A	N/A
To further ascertain the Applicability and Relevance to the Research Study	*Dose the article contains Reverse Logistics or Returns, and Pharmaceuticals (if possible) as a key phase throughout the paper (title, abstract and keywords)?*	YES / NO	**RETAIN** if "YES" **CHECK** for contextual relevance if "NO"	**RETAIN** as group C articles if there are contextual relevance to the research topic	**DISCARD** if there are no contextual relevance to the research topic
To further enforced alignment between retained articles and the review objectives	*The abstract and the whole paper contain both substantial context and satisfactory empirical content related to the research topic?*	YES / NO	**RETAIN** if "YES" **RE-CHECK** for relevant context or satisfactory empirical content related to the research topic if "NO"	**RETAIN** as group B articles if there are relevant context or satisfactory empirical content related to the research topic	**DISCARD** if there are no relevant context or satisfactory empirical content related to the research topic