Lean manufacturing as a tool for optimisation of the South African fast moving consumer goods industry

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DECLARATION

I Tumelo Owen Matinga, hereby declare that the existing dissertation'' **Lean manufacturing as a tool for optimisation of the South African fast moving consumer goods industry''** is my own work. It is being submitted for the degree of Masters of Operation Management at the University of Johannesburg. It has never been submitted in other university before for any award or presentation. All the sources utilised in this study have been acknowledged. Secondary data has been acknowledged in the reference and citations and comments from other works have been made known.

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List of Abbreviations

- JIT – Just in Time
- FMCG – Fast Moving Consumer Goods
- LM – Lean Manufacturing
- TPS – Toyota Production System
- SMED – Single Minute Exchange of Die
- SMME's – Small Medium Enterprises
- FCM – Fundamental Calculation Modelling
- SLA – Service Level Agreement
- ANP – Analytic Network Procedure
- CPG – Consumer Packaged Goods
- NPD – New Product Development
- WIP – Work In Process
- GM – Green Manufacturing
- GSCM – Green Supply Chain Management
- RB – Reckitt Benckiser
- MNC – Multi National Corporate
- SSA – Sub-Saharan Africa
- VECM – Vector-error correction management
- GDP – Gross Domestic Product
- NNBS – Nigeria National Bureau Statistics
- NAFDAC – Nation-wide Agency for Drugs and Food Administration and Control
- SON – Standard Organisation of Nigeria
- BRICS – Braxil, Russia, India, China and The Republic of South Africa
- PLBs – Private Label Brands
- ISIC – The International Standard industrial Classification
- ANC – African National Congress
- MTEF – The Medium Term Expenditure Framework
- KMO - Kaiser-Meyer- Olkin
- MIS - Mean Item Score
- MTEF - Medium Term Expenditure Framework (MTEF)

Abstract

Over the past decades, the South African Fast Moving Consumer Goods sector has been facing various challenges than in other developing countries. the reason to this crisis has been largely attributed to failure of implementing the policy which need to be applied but it is not being implemented properly to minimise corruption in the sector and to improve Lean Manufacturing (LM) in the sector, to alleviate corruption, to create more productivity by utilising minimum resources and trying to minimise waste in the industry while will minimise all kinds of pollution and practice all the principles of lean and create more employment. To this end, the overall research aim of this study was the implementation of Lean manufacturing as a tool for optimisation of the South African fast moving consumer goods industry. To achieve this goal, this study made use of two-fold research approaches, firstly the study critically scrutinized a set of existing studies developed on lean phenomena in various organisational sectors over the past decades. This process led to the identification of gap within the existing literature. Secondly, this study employed a single methodology quantitative research to address the identified flaw as mentioned in the above lines. The research findings demonstrated that Lack of top management commitment; Obsoleted process control techniques; Lack of resources; Poor worker participation; Poor project selection; Not enough training provided; Not enough knowledge; Poor supplier involvement; Internal resistance; Variability in raw material supply and quality; High variation of composition, goods, processing techniques and recipes; Variety of product structure; Short throughput time for batches are the main barriers preventing the implementation of Lean manufacturing in the South African Fast Moving Consumers Goods. In light of the above findings, a conclusion was drawn up in this study. Noting that decision makers should start with the implementation of Lean in the Fast Moving Consumers Goods in order to address the current productivity short fall that the sector is facing with.

CHAPTER 1: INTRODUCTION

This chapter explains the background and a brief summary of Lean manufacturing which explains what the thesis debates about and what the thesis covers, after this chapter Lean Manufactured will be explained in full and give you a full understanding Lean Manufacturing and its components.

1.1 **Background**

Short history summary of Lean Thinking

The first place and country that lean thinking came from is from the work-stores of the Japanese motor manufacturers and, to be precise the innovations that took place at Toyota Vehicle Organization. These new ways of manufacturing brought good results from scarce resources and in very hard local market competition in the Japanese market for vehicles, which involved the just-in-time (JIT) production systems, the Kanban method of pull production, in consideration of the workers and high level of worker skills on solving problems and helps with automation to minimize human errors.

Lean thinking operations in a manner to design a approached which is more focused on getting rid of waste and from too much tactical product processes at Toyota(the Toyota “seven wastes”) and represented another model to money intense bulk production(with huge bulk bags, sizes and unseen wastes). The European and American manufacturing and production sector has taken interest in the TPS to maximise production while reducing waste.

Lean manufacturing is a managing style started by Toyota automotive company that was named Toyota production system (TPS) in the 1990’s. Toyota production System is well-known for its attention for detail on reduction of the authentic Toyota seven type’s wastes to better the overall client value [3, 5]. Lean tools that help in the elimination and identification of waste, that is why the waste is removed the quality, improves, while the time of production and fees are reduced. The list of these kind tools would involve Single Minute Exchange of Die (SMED), Total productive maintenance, Value stream mapping, Elimination of time, Poka-yoke (error proofing), kanban (Pull systems), and the list is non-exhaustive. Another approach to lean production and manufacturing is done and mostly promoted by Toyota which is named the Toyota business way, which emphases on the improvement of the flow of work, therefore progressively eliminating

waste through the system. Techniques and tools utilised to improve flow include production levelling, Pull production (Kaban Method), and the Hejikuna Box [6].

As expressed by Bryman and Chime (2011), the reason with the writing study is to get information about what is as of now thought about the picked point. Besides, the writing study gives a base to approve the exploration inquiries and how to gather and break down the data. As per Gillham (2010), it is imperative to first get an outline of the exploration point keeping in mind the end goal to get an appreciative and after some period go further into the particular region of intrigue. (Andersen,1994) proceeds by underscoring that the learning concerning the theme ought to first be wide at which point more profound examination about the subject can be made. Along these lines, first broad and unfastens sources ought to be surveyed and in this manner more particular sources be utilized. The ace proposal began with a wide hunt to procure a wide premise of information in lean assembling.

1.2 Problem Statement

The Fast Moving Consumer Goods sector has been facing various challenges in South Africa and other developing countries. the FMCG sector has policy which need to be applied but it is not being implemented properly to minimise corruption in the sector and to improve Lean Manufacturing (LM) in the sector, to alleviate corruption and to minimise waste in the FMCG manufacturing sector, to create more productivity by utlilising minimum resources and trying to minimise waste in the industry while will minimise all kinds of pollution and practice all the principles of lean and create more employment.

Despite the fact that there have been many studies regarding the implementation of lean manufacturing in manufacturing sector. However, literatures have demonstrated that their few studies that were conducted on the Fast Moving Consumer Goods. Thus, the overall aim of this study is to address this gap by proposing lean manufacturing as a competitive advantage tool for the Fast Moving Consumer Goods industry.

1.3 Research goal

The overall goal of this study is to assist decision makers in the South African consumer goods to address the issues affecting the performance and productivity of the Fast Moving Consumer Goods industry through the implementation of lean manufacturing as a competitive advantage tool.

1.4 Research objectives

- **RO1:** Analysing to what extent lean manufacturing as a competitive advantage tool has been employed from a holistic perspective in FMCG
- **RO2:** Exploring the Implementation of Lean Manufacturing in the FMCG sector
- **RO3:** Investigating whether FMCG sectors in developed countries are growing faster than developing countries
- **RO4:** Determining the barriers preventing the implementation of Lean Manufacturing in the South African Fast Moving Consumers Goods.
- **RO5:** Determining the benefit related to the implementation of Lean Manufacturing in the South African Fast Moving Consumers Goods.

1.5 Research Questions

Resulting to the intentions mentioned above, the subsequent investigation queries are articulated: The Overall study question is: What is required for Lean to be implemented successfully in the Packaged Consumer Goods sector? The exact research questions are

- **RQ1:** To what extent can Lean manufacturing be used in the FMCG sector as a competitive advantage?
- **RQ2:** What is required to make Lean manufacturing work in the FMCG sector?
- **RQ3:** Can Lean manufacturing help the FMCG companies reduce waste?
- **RQ4:** What are the barriers preventing the implementation of Lean Manufacturing in the South African Fast Moving Consumers Goods?
- **RQ5:** What are the benefit related to the implementation of Lean Manufacturing in the South African Fast Moving Consumers Goods?

1.6 Significance of Study

The study is essential, as we will be able to discover whether Lean manufacturing in the Fast Moving Consumer Goods industry can be successfully implemented and utilized, Professionals and researchers In the FMCG snacking industry need to take a look into the automotive industry and see how lean manufacturing has worked for the automotive industry, The FMCG industry will establish that lean will reduce waste and improve quality, improved visual management, cost savings in form of employee reduction, increased efficiency, improved employee morale amongst other things. . Once lean manufacturing strategy is in place senior members and company influencers can know how and illustrate the benefits of lean to the organisation.

1.7 Conclusion

This chapter is focused on giving data relating to lean Manufacturing in the, international, Africa and most important in the South African FMCG sector. Additional this section introduced the research objective, problem statement, significance of the study and the research question. At the final part of the chapter the overview the thesis work. The Following chapter talks about the theoretical framework and look at the lean as a whole.

CHAPTER TWO
THEORETICAL FRAMEWORK

To position this study in the current body of knowledge regarding the application of lean manufacturing, the overall goal of this chapter was to thoroughly assess existing studies, which were developed on lean manufacturing in different business organisations, during the last decades. This led in gap identification in the current literature. To be able to determine the methodology and points of focus of this study, a critical assessment of 21 best journal articles were conducted on lean manufacturing in various industries in order to highlight the gaps and accurately identify the point of interest of this research. The studies assessed were generated by the ISI Web of Science database provided by the University of Johannesburg Library. The critical assessment of existing literature reviews on lean manufacturing was done for the years 1997-2017. The search only focused on peer reviews and articles published in English, falling under certain subject areas. The result was approximately 600 documents that were studied critically by means of titles and abstracts to create additional boundaries and eliminate unrelated entries (screening phase). Throughout this stage, groups of inclusion and segregation standards were established. Each journal article was individually evaluated, with particular emphasis on articles that focused on lean implementation. It should be pointed out that studies that did not meet these requirements were not taken in account. This stage generated 222 articles focusing on lean, mainly in automotive, aerospace and construction industries. These studies were categorised based on a particular set of standards, for instance, in this paper the studies that were assessed were selected according to citation. Table 2.1 below shows the 21 papers studied on lean that were critically reviewed over the past two decades.

Table 2.1: critical appraisal of previous studies

AUTHORS	**Goods Manufacturers**			**Methodology**		**Company size**		**Country**
	FMCG	Online	E&A	Qualitative	Quantitative	SME	Large	
Ashish Agarwal et al (2005)	X	X	X		X		X	India
SebastianTheißen et al (2013)	X			X			X	Germany
K. Pauwels (2006)	X		X	X		X		United States
Christopher Simms & Paul Trott (2010)	X		X	X			X	United Kingdom
Thierry Vanelslander et al (2013)	X	X	X	X		X	X	Belgium
Amanda Sterling et al (2013)	X		X	X			X	New Zealand
Cindy Rautenbach & Sebastiaan Rothmann (2017)	X	X	X		X	X		South Africa
Jatinder J. Singh et al (2012)	X				X		X	Not Specified
Assilah Agigi et al. (2016)	X			X				South Africa

M. G. Ierapetritou and C. A. Floudas (1998)	X			X				United States
B. Bilgen H.O. Günther (2009)	X		X	X		X		Germany
Bas Groothedde et al (2005)	X			X				Netherlands
J.A Keizer et al. (2002)	X		X	X			X	Netherlands
Mcdonald, S et al (2009)	X	X	X	X			X	
David Pearson et al (2010)	X					X		Australia
M. Webster et al (2006)	X	X			X			United Kindgom
Koen Pauwels et al (2006)	X					X		United Kingdom
Shuba Srinivasan et al (2015)	X	X	X		X	X		United States
Lefa Teng (2007)								Canada
Franziska Volckner et al (2010)	X				X	X		Germany
Chris Baumann et al (2014)	X			X			X	Not specified

Ashish Agarwal et al (2005) did a study within the development of a commercial time that accepts transformation_ as one of its main characteristics, for a manufacturer to have success and existence is becoming more and very hard to guarantee. The prominence is on flexibility to transform in the cooperate surroundings and on speaking about the marketplace and consumer needs proactively. Variations in the commercial space due to different needs of the consumers hint uncertainty in the decision-making constraints. Tractability is required in the logistics to counter the improbability in the decision-making constraints. A supply chain adjusts to the ups and downs when it is flexible and nimble in its natural form. A framework is shown in this article, which summarises the marketplace frailness, process integration, data driver and tractability procedures of supply chain enactment. The study looks to discover the connection among lead-time, quality, cost, lean processes, Service level Agreement (SLA) and agility of a circumstance supply chain in fast moving consumer goods sector. This study finishes off with the explanation of the agenda, which investigates the influence of market captivating benchmarks and market qualifying benchmarks on the three types of supply chains: lean, agile and leagile.

The author did the research for all the manufacturing sectors, the online e-commerce, FMCG sector and the electronics sector, his research indicates that for the study to take place, a quantitative research had to be done, where questions were asked, surveys and questionnaires, the authors however failed to see the gap in the SME sector to see how lean can be used in the small business environment.

SebastianTheißen et al (2013) did a study and observed the purpose of this document is to bring a new decision-making methodology that permits manufacturing organisation to appraise which contractor is the best suited partner for the application of a joint CO2 reduction management method. The decision made is an issue that is developed for the fast moving consumer goods (FMCGs) sector that is at the moment ranking amongst the ten biggest CO2 producing industries in the world. In this study, the assessment and collection for the best suited contractor is accomplished utilising the analytic network procedure (ANP), a decision-making strategy that permits consultants to fix difficult decision-making arrangements. The important assistances of the current study exist in the amalgamation of literature and case based consequent decision benchmark, designed at improving judgment legitimacy, with specific importance on working as a team setting, which is extremely applicable in the current framework as the focal companies often fall short the required abilities for sustainability, at the same moment, are in charge of sustainability in the supply chain. The practical implementation of the ANP model at a main Fast

Moving Consumer Goods firm brings and presents healthy results verified through a sensitivity exploration.

The research conducted was only able to review the Fast Moving Consumer Goods industry, and was done in the large companies, the qualitative research was done, the authors failed to have conducted, questionnaires, surveys etc, the other should have seen how the other manufacturing industries can be assisted with lean and also should have looked at the small companies too with fewer employees

K. Pauwels (2006) stated in a study, while either competitor and retailer decisions donates to long term promotion efficiency, their separate influence still has to get assessed. For 75 brands in 25 groups, the writer discovers that the long-term retailer's pass-through of promotions is 65 percent, acquiescent a long-run wholesale promotion flexibility of 1.78 earlier competition reply. But, challengers can moderately offer the wholesale price reduced by 15 percent, which loses promotional flexibility by 10 percent. The variety of retail stores and competition reply across the investigated cases is very extensive, and is affected by group and brand features. As to the previous, huge groups yield solid retailer answer, while focused groups yield solid competitor answer. As to the concluding, slighter known brands face a fourfold shortcoming when being associated to well-known brands: they receive minor retail pass-through, minor retail backing, and minor benefits from competitor brand's promotions, while their promotions produces higher benefits to competing retailer. Fascinatingly, the mid-1990s move from off-invoice stipends towards scan-back deals only partly recovers their promotional effectiveness compared to that of leading brands.

The author did a good research, but looking at the research conducted, the author mostly focused on the wholesale and retail segment and the study was only focused on the small-medium enterprise, which is not a big part of this industry, gaps have been left cause the research was only done on the qualitative methodology.

Christopher Simms & Paul Trott (2010) conducted a study, in the study Packaging was identified that it plays a vital part in goods and services success, especially in the Consumer Packaged goods also known as the FMCG industry and can shake customers buying decisions making at the point of buying or at the teller. But, fairly tiny has been studied regarding packaging in the

FMCG industry literature. The drive of this article is to provide a theoretical framework with which to examine how packaging donates to marketing overall and new product development (NPD) in specific. The study appraisals the literature and progresses a unique framework that can be used to assess more fully the needs of all groups that are appropriate to the development of packaging, including members of the distribution channel. This framework aims to provide new insight into the creation of new product opportunities through packaging development in a more systematic way than has been evidenced in the past.

The author did a study and the study was mostly focused in the automotive and electronic sector, and also the author did look at the FMCG sector, however the author failed to look at the online sector, and the study was conducted in the qualitative method, and this was conducted for the large companies, the author failed to look at the SME and also didn't do a study for all off the sectors as well.

Cindy Rautenbach & Sebastiaan Rothmann (2017) conducted a study and the purposes of this research were to inspect backgrounds of thriving occurring in the workplace A cross sectional analysis plan was utilised with a stratified unsystematic taster of 779 workers in a FMCGs organisations in South Africa (Women = 40 4%, Africans = 33 4%) The members answered to the Flourishing at Work Scale - Short Form, Job Demands Resources Scale, one subscale of the Analysis Work Home Contact – Nijmegen, and Genuine Headship Questionnaire The results displayed that progression, undesirable work home contact (inverse), and genuine management foreseen booming at work, work balance, employment doubt, and payment did not foresee workplace thriving or weakening this research endorses the importance of the Job Demands Resources model for understanding prosperous in the workplace

The research done was conducted for all the three sectors, online, FMCG and automotive and electronic, the research however was only done for the large companies, it failed to talk about lean in the small and traditional trade sector, the author could have also looked at those aspects and could have also done it in the quantitative methodology as well.

Thierry Vanelslander et al (2013) said in this research the main efforts on the supply chain of the e-commerce sales of grocery stuffs. Further especially, it looks to figure out the circulation of supply chain costs throughout the logistics from the order harvesting at the contractor up to the delivery to the customers front door. Firstly, the three most usually utilised the supply-chain for the e-commerce sales commonly known as online sales of grocery items are offered. Then, the article defines the overall methodology utilised to implement the cost evaluation, including

activities, resources and factors. lastly, the model context is clarified and located in a more high-level view on online retailing. Later, the outcomes of the investigation are shown in the formula of a cost supper over various procedures in the supply-chain, including storage, picking, transport, storage and last-kilometer delivery. It is found that last-kilometer costs naturally characterise a huge share in total supply costs, but that delivery specific issues play a huge part.

Amanda Sterling et al (2013) this research is aimed to inspect an implementation of lean production and manufacturing in Consumer packaged goods production, evaluating how it has impacted workers education and performance. We discovery chief difference in these results. Where direct leaders have surrendered noteworthy control, and employees have had the mandatory levels of literateness, more influential methods of book learning have happened, and the results are equally favourable. Yet, insightful learning has yet to possess control where manufacture pressures are huge, direct supervisors are not permitting and employee's shortcoming of self-efficacy since they have a low literateness. Improved results rely on larger funds in the development and continuing support of senior direct supervisor and in literateness expansion. The Research displays how the ability motivation opportunity agenda can be utilised to categorise appropriate theory and show a way on the systemic nature of workplace organisation learning.

The author in this research study, looked on how lean is being implemented and applied in the Fast Moving Consumer Goods and in the automotive and the electronics industry, the methodology used in this research is the qualitative which was more focused on the why, no questions or questionnaires were one and this research was only done for large firms, so meaning small firms were not included for this research and issues could not be resolved in that space.

Jatinder J. Singh et al (2012) conducted a study about the current growth in moral consumerism has noticed an increased numbers of commercial brands project a socially responsible and ethical image. Then does it mean having a commercial brand that is seen to be moral have any influential outcomes when different interests for brand products? This research analyses the bond between the apparent . A theoretical framework with hypothesized relationships is developed and tested in order to answer the research question. Data have been collected for 45 product categories in the fast moving consumer goods sector using a panel of 4,027 Spanish consumers. The proposed relationships are tested using structural equations modelling. The results suggest there is a positive relationship between perceived ethicality of a brand and both brand trust and brand affect. Brand affect also positively influences brand trust. Further, brand trust and brand affect both show

a positive relation with brand loyalty. The managerial and academic implications of the results are discussed

This research was only focused on the Fast Moving Consumer goods sector and the researcher didn't manage to look at the other sectors which form part of the Goods manufacturer industry, the study was conducted in a qualitative method, the author used secondary data to conduct the study, the issue here the author could not gather primary data to close the gaps that previous others failed, other also did not specify in which country was the research done, it was also done in a large organisation and shortfall was also realised in the SME sized companies.

Assilah Agigi et al. (2016) mentioned that in current time's multinational and difficult commercial setting, companies have become more defenceless to logistics disturbances, coming from within and outside of the supply-chain. Logistics flexibility reduces the influence of a disturbance through proposal methods, which permits the supply-chain to reply suitably to unsettling trials.

South African grocery producers are tackled with divergent threats. While supply-chain threat management research have given organisations with certain course of action to alleviate threats, supply-chains are still defenceless to unpredicted threats. Research on supply-chain flexibility in the South African point of view is limited. The perception of logistics flexibility gives companies with tactics that are constructed into the supply-chain that permits companies to answer and recuperate speedily from disturbances. Furthermore, supply-chain flexibility tactics help in coming less weak to the disruptions that might occur.

Author focused on the flexibility Lean can bring in the logistics of the Fast Moving Consumer Goods market and furthermore the author failed to specify whether if the research was conducted for a large firm or for a Small-Medium enterprise and the study was based secondary data which was collected from previous studies, author should have also done quantitative to develop brand new findings.

Ierapetritou and Floudas (1998) mentioned in a study that Majority of manufacturing networks, get included bulk and non-stop procedures. On the foundation of the identical ideologies, this article covers the projected preparation to define non-stop procedures. Two manufacturing case studies from FMCGS manufacturing are shown to demonstrate the competence of the suggested invention to define manufacturing mills with both bulk and non-stop procedures, to combine clean-up necessities, and to deliberate storage necessities and boundaries. It is validated that the anticipated approach outperforms all beforehand proposed non-stop time simulations for the short term arranging of non-stop procedures.

The researcher did touch briefly on all the goods manufacturer but mainly spent most of the research in the FMCG to validate whether lean can work in this sector, the research was conducted for the small-medium firms and big companies were not part of the of the research conducted.

B. Bilgen H.O. Günther (2009) said In the Fast Moving Consumer Goods sector there is a non-stop tendency towards an amplified merchandise multiplicity and shorter replacement cycle periods. Therefore, producers pursue an improved coordination of manufacture and delivery actions. In this article, a supposed block arrangement method is shown which finds recurring manufacture patterns based on the description of setup relations. For the distribution of final products from the plants to delivery centres two conveyance modes are well-thought-out, full truck-load and less than truck-load. The recommended mixed integer linear optimisation model minimises entire manufacturing and transport charges. Arithmetic outcomes validate the real-world applicability of the recommended wedge preparation method. In precise, an unbending and an elastic wedge preparation method are linked which vary by their degree of elasticity in the forecast of the manufacturing loads.

The author showed in this study that lean can be implemented in the Fast Moving Consumer Goods and in the electronics and automotive which can maximise the delivery of the final products by using minimum resources, data was collected using the secondary, research was also focused for the German small businesses sector.

Bas Groothedde et al (2005) mentioned Collective centre networks can offer a solution to the need to reduction supply chain charges and reserve the supply chain service-levels by uneven consolidated streams to types that are much better suitable for managing huge volumes (freight rail, barge, seaside shipping),so that economies of scale can be attained. This requirement has been taken up by the inclination of globalisation of sectors, lesser cargo sizes, elevated frequencies, and the disintegration of streams. Through partnership that requires harmonisation among costly but quick and supple means of transportation and the cheap, but sluggish and obstinate means can be combined in an intermodal hub network. This article displays the logic ahead of these co-operative hub links, grounded on the collected works on the proposal of lots and lots hub links. The resultant in the methodology is clarified by having a showcase that shows the outcomes of the proposal and application of co-operative hub network for the distribution of FMCGS using a mixture of monitoring and local barges. This notion, initially suggested by Vermunt, A.J.M., (1999). Multilognet, the intellectual multimodal supply chain network, an significant bulge in the global supply chain net, Vermunt Logistiek Advies v.o.f., working paper (in

Dutch)], won the European Intermodal Award of the European Intermodal Association in 2003, and after extensive research was launched in The Netherlands as a marketable model by a supply chain service-provider, Vos-Logistics and barge operator Riverhopper in January 2004.

The author did a study in the Netherlands the study was only conducted for the Fast Moving Consumer Goods, the study was only conducted for on small firm, which is doesn't contribute much to the industry, so we cannot tell whether the research can reap any benefits. The author didn't manage to do enough questionnaires to get the real knowledge from the big market leaders to identify how lean is working for the other big organisations.

CHAPTER THREE

LEAN MANUFACTURING

This chapter seeks to cover literature related to lean manufacturing as a competitive advantage tool in the FMCGs. It is separated into four sections. The first section focuses giving the full description of lean manufacturing as a whole. The section that comes second shows how Lean procurement can be implemented in the FMCG sector to collaborate with lean manufacturing. The third sections looks at the Toyota production lean manufacturing system

3.1 Lean Manufacturing

(Green and Dick 2001).Lean manufacturing, similar tools and techniques have now become very well-known over the past 20 years, since they can produce outstanding results and improvement in every department of a manufacturing system. Especially senior directors and manager have tried to improvement productivity and to get rid of wastes through lean manufacturing methods. In aspects of cost, Just-in-time (JIT) and continuous improvements are now getting more attention. Meaning organisations using lean manufacturing have made means to produce their products at a low cost, pioneer quality and JIT distribution. The idea of lean/lean manufacturing was developed by Toyota, the Japanese automobile that has been doing well in the world competition for years. In 1998 Ohno a Toyota employee brought a concerpt known as Toyota Production System (TPS) which was created in the organisation to overcome a hard period since World War 2. In sight of difficult economic disaster, TPS was created to endure with little resources. Due to major shortages, human workers, material and finances, TPS was mandatory to choose the waste reduction rules in the company to achieve strategic goals. Lean manufacturing utilises techniques such as kaizen, one-piece chart, innovative manufacturing, synchronous manufacturing, stock control managing, standardised work, workplace organisation and scrap decrease to reduce production waste as stated by(Russell and Taylor 1999). There be existent of a plethora of various techniques and tools created for various reasons and waste removal or decrease

Applying lean manufacturing techniques and tools in a wrong way my bring in unwanted waste of resources such people, money and time. It might also yield bad performances from employees who don't understand lean practices, for example a small production company having a hard time with JIT deliveries because of a bottleneck in the operations due to manual labour. There are plenty varioust types of manufacturing issues in each section of a manufacturing company.

Manufacturing issues can be caused several types: employees, quality, equipment, etc. Casti (1998) illustrated that every manufacturing problem occurs at a certain hierarchical level (table 1), the bottom being raw materials, the top being values.

Table 3.1: Manufacturing System taxonomy (Casti; 1987).

	Hierarchical	**Functional Level**	**Conceptual Level**
IX	Values		
VIII	World industry		Efficiency
VII	Manufactured goods		Flexibility
VI	Industry	Design	Complexity
V	Local industry	Production	Vulnerability
IV	Finished product	Marketing	Reliability
III	Components		Uncertainty
II	Parts		Self organisation
I	Materials		performance

From the literature presented in Chapter 2, it was observed that LM practices were hard to implement in companies such as FMCGs due to existing barriers, like lack of commitment from managers, minimum expertise training schemes and money difficulties. However a research case conducted by Vidyadhar et al.(2016) about lean assessment in South African Small-medium enterprise (SME) exposed that a powerful super vision obligation and detailed lean preparation programs for workers that are necessary for lean manufacturing (LM) application.

Rose et al. (2010) settled that supervision obligation is the greatest vital among critical success factors for Lean Manufacturing application in Small Medium Enterprises. In the current study, seven important Lean Manufacturing factors are designated from comprehensive non-fiction evaluation and grounded on professionals' sentiments. The list of LM factors thru momentary narrative is untaken in Table one.

Table 3.2: influences for lean manufacturing implementation in SMEs (Porter, 1985)

Items	1	2	3	4	5	6	7	8
Management leadership and commitment	X	X	X	X	X	X	X	X
Training and education	X	X		X	X	X		X
Employee involvement	X			X	X	X		X

Customers management involvement		X				X		X
Supplier management involvement		X			X			X
Quality management		X		X				X
Effective communication					X		X	X
Organisational culture		X				X		
Empowerment of employees						X	X	
Continuous Improvement				X	X			
Human resources management							X	
Effective communication						X		

Jones and Womack in their novel (1999) 'The mechanism that altered the globe in 1999 when the Lean idea got acknowledgment in the West. The term 'Lean' was characterised by John Krafcik, in 1988 when he discharged his piece 'Triumph of the Lean Creation Framework'. Womack, Jones and Roos' taken a gander at the assembling, large scale manufacturing was changed to Lean generation and called Lean Assembling. Jones et al. (1999) saw that large scale manufacturing had gotten a lot of 'squander' with a bit 'client esteem'. Hines et al. (2004) demonstrated that 'client esteem' is made through expelling squanders and upgrading administration highlights without including additionally cost. Dahlgaard (2006) contended that Lean is a thought regarding 'accomplishing more with less' utilizing the ideal succession with an insignificant handover/human mediation (where conceivable). In this way it enhances the stream of procedures in the most temperate way. Womack and Jones (1996) delineated a guide for how Lean could be executed and cautioned that it can take up to quite a long while for feasible accomplishment to be come to.

Category	Tool	Description	References
Process improvement tools	*Value Stream Mapping Techniques*	After identifying value from the customer's perspective, the next step is to identify the value stream for each product	Hines & Rich (1997)
	Kaizen	This refers to continuous improvement events: One of the most basic yet powerful tools of lean. Once a problem is identified, staff from various functions and levels work together in order to find solutions to the problem	Chen, Li & Shady (2010)
	Kaikaku	Unlike Kaizen, these events involve major changes in the workplace including factory layout and machine rightsizing. They are typically carried out at the onset of any lean project	Womack & Jones (1996)
Visualisation tools	*Poka Yoke*	Failure prevention by designing machines in an 'error proof' way	Pettersen (2009)
	5S	A visualisation tool based on the conviction that organizing the workplace is essential to ensuring a smooth workflow. It is based on 5 Japanese words starting with the letter 's' which were later translated to equivalent English words: Seiri (Sort), Seiton (Set in Order), Seiso (Shine), Seiketsu (Standardise) and Shitsuke (Sustain).	Ravikumar, Marimuthu & Chandramohan (2009)

Figure 3.1: LEAN PROCESS IMPROVEMENT TOOLS (Andrade, 2015)

3.2 LEAN PRINCIPLES

In the paragraphs below, the five lean principles will be discussed and explained and how it can be applicable to the FMCG industry

Lean principle 1: Value

The credentials of value and what value can do for customers is the beginning of relationship between organisation and customers. Without having a clear understanding of what value can do for customers, making a transaction or having a relationship cannot take place, Womack and Jones (1996) said that value is produced for a specific products/services that has certain abilities with a certain price at certain time. In the framework of the FMCG industry, this means that delivering the products to the stores in good time to satisfy consumer needs and to reduce c cost and delivery time at required location.

Lean principle 2: Value stream

The value stream mapping combines a gatherings of all the activities that help you manage the flow of products, starting from raw materials until you reach the end products as stated by

(Mahmood, 2015) VSM goal is to find out and remove waste In the manufacturing line to give consumers the best quality in the quickest promising timeframe (Andrade et al., 2015). Which helps the manufacturers and customers to have a long lasting relationship and reduces waste?

Flow

This principle helps by taking care of products that are manufactured in bulk or batches, to minimise time in the manufacturing machine queues. The plan is to have good flow of production and to retain less on stock management yet still to be able to satisfy customer needs and wants. This assists by being able to meet the high and difficult demands requested by customers and have continuous delivery without bottlenecks in the procedure (Bilgen H.O. Günther, 2009; Bas Groothedde et al; 2005).

Pull

When the manufacturing process has a flow, products and goods that can take years to design can now be done In weeks or months, orders that take a long time to be done are now completed in just a few hours depending on the complexity of the product, products that required physical labour time is reduced when done by machines to hours or weeks (Keizer et al, 2002; Mcdonald, et al, 2009). This skill to project, plan and to know anything customers really want, and with pull you will know exactly when customers want the product, which means the company can easily make the customers really want the company to produce, and the organisation won't need to make unwanted products (Keizer et al, 2002; Mcdonald, et al, 2009). Pull in the most common term means that no single person can upstream procdss should make a products or services up -until the consumer downwards ask for it. Meaning do not make anything until it is demanded by customers, then with lean manufacturing products can be quickly made when needed by customers (Keizer et al, 2002; Mcdonald, et al, 2009).

Perfection

Lean professionals always want to want their work to be perfect at all times. The hard work put in to reach perfection require continuous improvement all the time to address the core matters that are causing the issue in quality of the products and in production waste. The persistent search for perfection is what motivates user of lean thinking to dig deeper, measure more and to frequently change to have a competitive advantage or other competitors (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015). These wastes are recorded underneath with their explanations and diagram inside the FMCG services:

Table 3.3: Seven wastes of lean In FMCG (Liker, 2009)

Type of wastes	Description
1. Overproduction	Producing too much or too soon, resulting in poor flow of information or goods and excess inventory.
2. Defects	Frequent errors in paperwork, product quality problems, or poor delivery performance.
3. Unnecessary inventory	Excessive storage and delay of information or products, resulting in excessive cost and poor customer service.
4. Inappropriate processing	Going about work processes using the wrong set of tools, procedures or systems. Often when a simpler approach may be more effective
5. Excessive transportation	Excessive movement of people. Information or goods resulting in wasted time, effort and cost.
6. Waiting	Long periods of inactivity for people , information or goodsm resulting in poor flow and long lead times.
7. Unnecessary Motion	Poor workplace organisation, resulting in poor ergonomics, e.g excessive bending or stretching and frequently lost items.

Stated by Liker (2009) that some activities that will not contribute significance value to a good or product, yet are still important for the course and work done every day, we call these actions the unavoidably non-value adding activites, these are deeds that will be recognized and minimised, but canmpt be complelety eradicated. These activities can be that make workers feel more in important and can like improve the efficiency of the workers, however doesn't add value straight-forword to the good or service. It can be steps that are important for the prodduction procedure, yet still not add value to the direct product.

3.3.1 Lean Procurement

is the trademarked strategy that can help you dramatically reduce what you spend in time and money on the large categories of products such as the wide range of low value high velocity business supplies (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).

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Lean means the elimination of waste and that is exactly what the Lean Procurement strategy does to the procurement process. It utilizes innovative web technology and web solutions to streamline your procurement process, reduce spending and provide measurable accountability. And common sense solutions (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).

The Lean Procurement strategy uses a Lean team approach to optimize the total end-to-end procurement process; eradicating wasted actions and make order processes efficient. Numerous departments feel the relief (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).

3.3.2 Supports Supply Chain Optimization

The Lean Procurement strategy supports your journey to Supply Chain Optimization by implementing a collaborative solution between your procurement team and your suppliers. Trademarked since 2005, the strategy optimizes your procurement process by consolidating your suppliers base, streamlining the procurement process and elevating accountability of all buyers, online. Multiple departments collaborate and share the same objectives. Your procurement team will be guided to focus on helping management optimize their supply chain (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).

3.3.3 Lean Procurement will minimise expenditure on materials by 25%

The Lean Procurement strategy can bring down expenditure on business materials by 25% or further. It pays attentions on two things: a streamlined procurement process with inventive online expenditure budgets for each procurement buyer and a fee effective product solution (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).

3.3.4 Your procurement team will collaborate

Your Lean Procurement team will understand the necessity of streamlining the procurement process by collaborating with other departments and expert suppliers. Innovative suppliers must have expertise in Lean principles (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015). Your team will understand the value of consolidating the supplier base with the experts in their fields. Understanding how to openly collaborate with suppliers for solutions and how to share data and measurable statistics becomes a common strategy.

Multiple departments working together to achieve management's objective becomes the team's objective.

3.3.5 Lean Procurement provides controls and accountability

Online live performance reports help keep procurement officers accountable and under budget. Scheduled executive business review meetings keep the team on track. Your procurement employees will be trained to be Lean Procurement specialists. The team will work within your management guidelines to create and implement a new and streamlined process that will not only reduce spending and save time but also hold the participants responsible with measurable statistics (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).

3.3.6 Implementation of a new future state

Your Lean Procurement team will be trained to understand Lean principles, Value Stream Mapping and how to implement a new improved future procurement process. New ecommerce solutions with online performance reports save time are vital. Outsourcing to suppliers with expertise offers expanded value (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).

3.3.7 Lean Procurement can save hundreds of wasted hours

The issue with procurement for example, business materials is that they are usually over stocked and too much time is wasted on this low value high velocity groups of goods. And there is minimum control. In most situation, there are a lot of vendors, too many invoices, little or no spending controls and very little accountability (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015). Every year, companies waste thousands of man-hours with the inefficient procurement of thousands of these low value, yet necessary business supplies. However, it doesn't have to be that way. Lean Procurement significantly streamlines the process.

3.3.8 The 80/20 rule

The 80/20 principle applies to this group. 80% of procurement time is spent on 20% of low value procurement. More time should be spent on more valuable procurement such as: raw materials, transportation etc. Too much time is wasted on ordering low value supplies, receiving multiple small deliveries and paying too many small invoices (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015). The Lean Procurement strategy has helped hundreds of organizations unlock the power of Lean Manufacturing principles in the

procurement process for the category of business supplies. Whether you are a large multi-facility or small business, the Lean Procurement strategy can help you streamline the ordering process, reduce what you spend and achieve measurable accountability. Most suppliers want you :to buy more. Lean Procurement helps you spend less

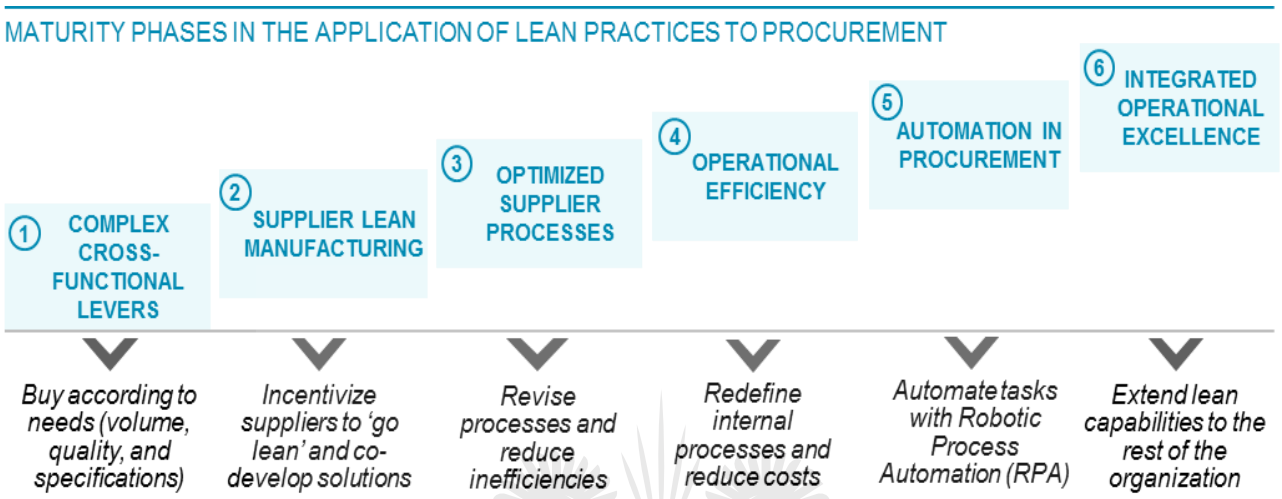

Figure 3.2: The Application of Lean Practices in Procurement (Womack and Jones, 2012)

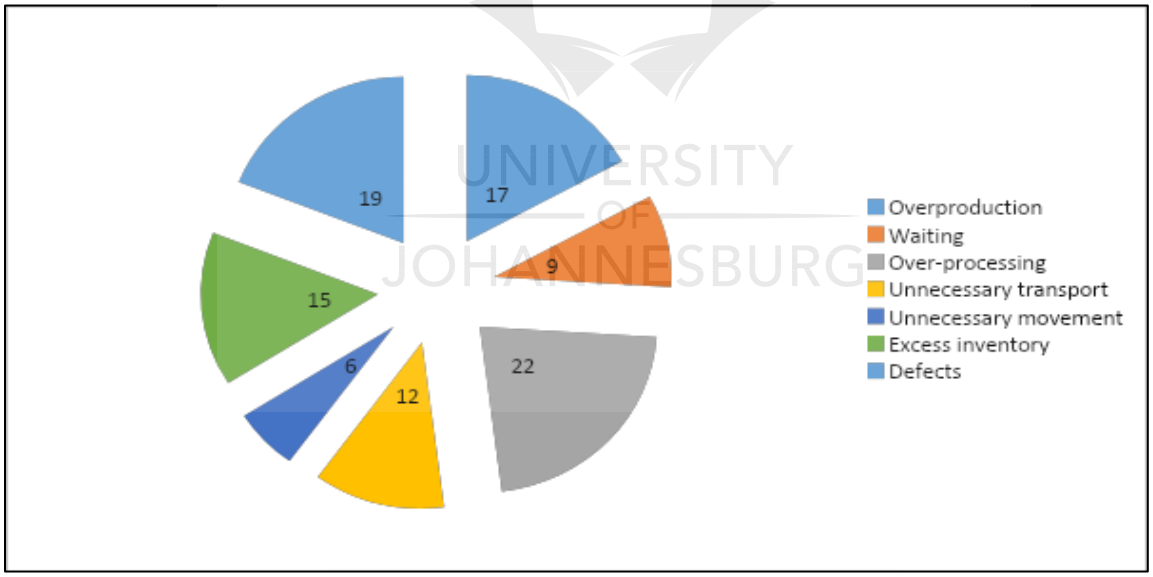

Figure 3.3 Contribution % of each waste in the FMCG sector (Whitaker, R.2005)

Insufficiencies in the design process and facilities outlines were the issues are mostly come with frequent quoted by contributors for wastes. These, on the other hand were mostly connected with two types of Muda: unrequired transportation and unrequired movement for example the first and third esteemed types pf Muda. A closer glimpse the reasons for waste, on the other hand, show

that reliability of natural commodities providers and suppliers was the reason quoted by the biggest number of contributors (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015). Generally the top five reason that waste is stated by the participants as illustrated in the table below.

Table 3.4: Most Causes for Waste in FMCG (Wacam. 1987)

Top Five Causes of Waste	Number of Participants	Number of Operations
Reliability of raw materials suppliers	11	3
Low reliability/flexibility of production lines	9	3
Poor planning/forcast accuracy	9	3
Nature of business /market dynamics	8	3
Facility layout and restricted boundries which could be avoided	7	3

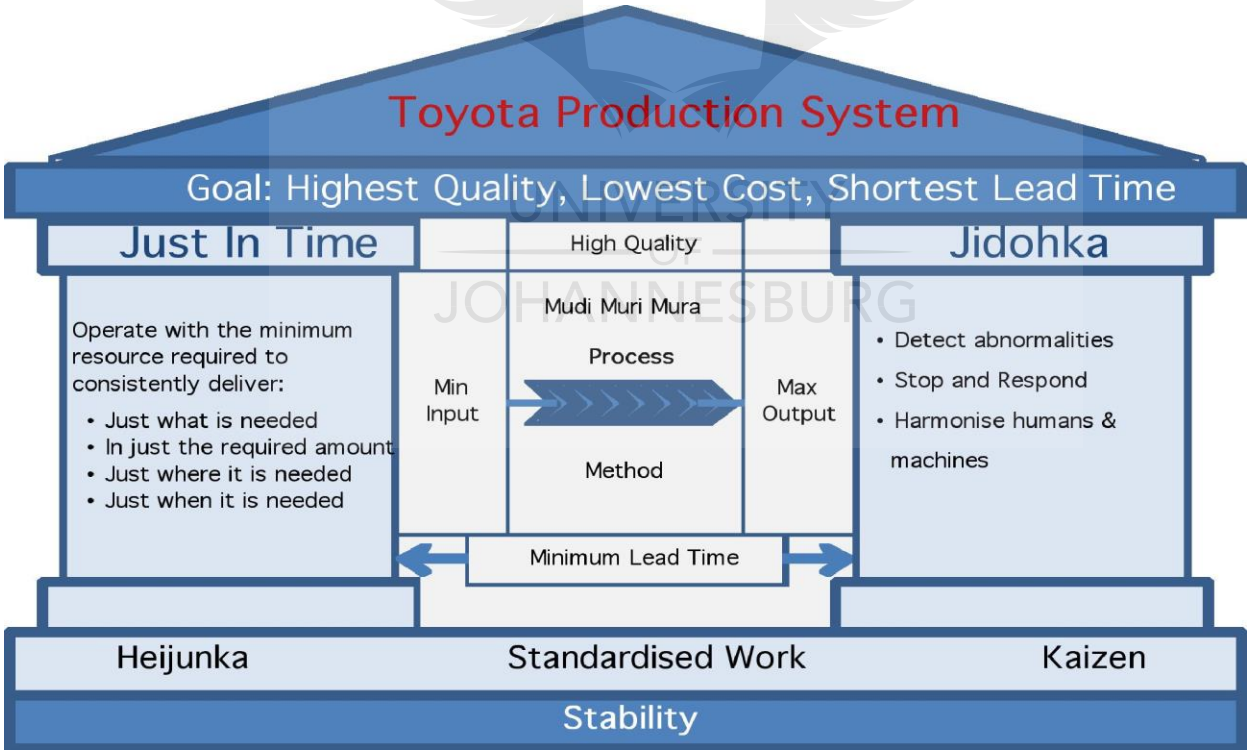

FIGURE 3.4: TOYOTA PRODUCTION LEAN MANUFACTURING SYSTEM (Womack, 1996)

The objectives of the association are accomplished via taking kaizen, which is the word in Japan for persistent. The idea of kaizen respects taking nonstop enhancements in the association, implying that it is constantly conceivable to enhance items, procedures and strategies, while utilizing less recourses (Bergman and Klefsjö, 2010). Stewart (2012) implies that institutionalization is the establishment for the total creation framework. Deprived of institutionalization in an association, it resembles building a house upon the sand; every day, the sand move and can obliterate any upgrades that have been made. Therefore, the establishment of the house must be solid and relentless. 13 Jidoka is an idea of working with the interface amongst man and machine. The idea sources from never giving a deformity a chance to go to the following station by liberating individuals from machines, which means robotization with human knowledge. Along these lines, quality is incorporated with the entire creation process (Stewart, 2012). On the off chance that a quality issue happens the issue ought to be balanced promptly (Nicholas, 2010). Liker (2009) implies that it is extra viable and not as much of exorbitant to keep issues from happening than to fixing superiority issues a short time later. Additionally, Just-intime is an idea that alludes to getting the correct item to the correct opportune place at the correct ideal period in the correct correct superiority and amount request to accomplish the ideal effort process (Slack et. al., 2010).

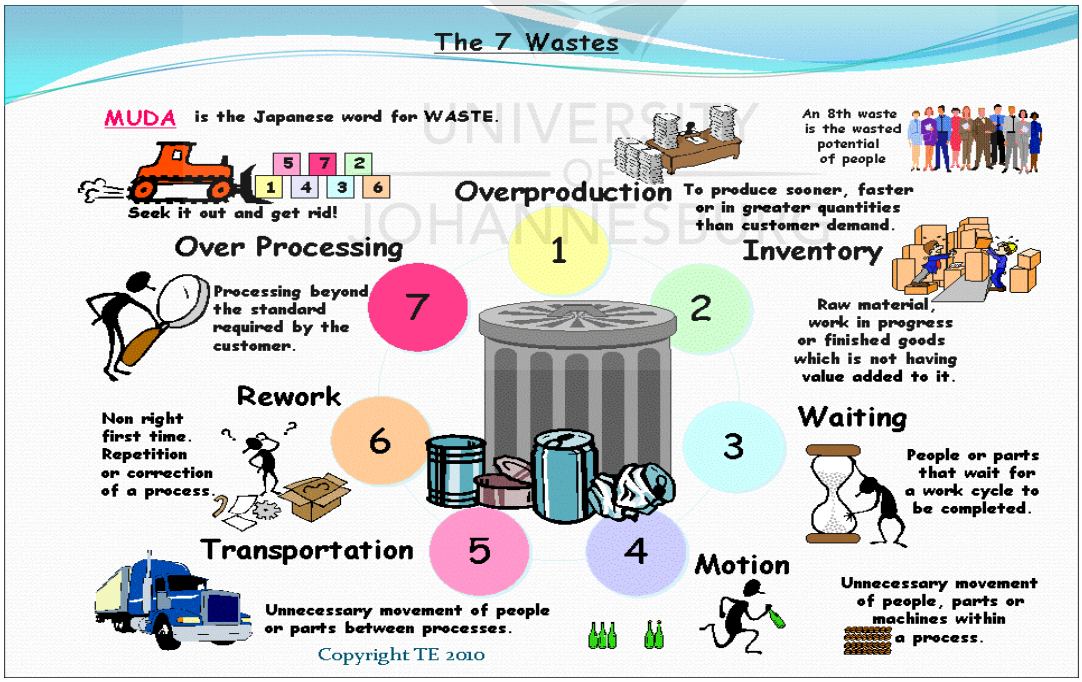

Figure 3.5: Seven Types of Waste (Womack & Jones, 2003)

3.4 Lean tools and techniques

Lian & Van Laneghem (2002) used a imitation tool to verify a few effects of lean production; changing processing structure, redesigning production design and pulling the production from downstream, minimizing the time to wait, decreasing the work in process (WIP) stock on hand, adding value and removing bottlenecks, imitation tools can assist in the value chain analysis, e.g. to assess the effectiveness of the different patterns of the lean process before the real implementation takes places (Venkat & Wakeland, 2006). By utilising imitation, it is feasible to measure improvement in performance, which can be realised the implementation of Lean tools (Andrade etal., 2015). McDonald et al. (2002) brainstormed that imitation must be put in the Lean toolset. Womack & Jones (2003) described Lean as a very exact tool of inter-relationship practices techniques, and behaviours came from a precise reference design.

Procedure Improvement tools

The two tools value stream mapping and Kaizen were the most adequate tools with getting a 100% approval rate, and value stream mapping getting an acceptance rate of 90%. By difference, Kai-Kaku (that includes one-period serious adjustments as opposed to nonstop minor adjustments in Kaizen), was not established to be a resourceful tool by 60% of its members (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015). On the other hand there were important dissimilarities among the various operations. Since the tool got 100% approval by the Snacks Operations partakers, it was absolutely discharged by the Baked Foods partakers (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015). This got clarified by one of the operations partakers as being owing "*the nature of our products and the methods it is produced. They are static production lanes".* Correspondingly 70% of the Drinks Organisation's partakers were of the thought that the tool wasn't useful to the company's operations.

3.4.1 .Green Manufacturing

The quick reduction of raw commodities, increasing energy ultimatum, growing consumer consciousness regarding ecologically conscious yields and the requirement for compliance with environmentally friendly legislature through expansion of green procedures headed to the progression of a green manufacturing pattern. Green Manufacturing model assists to reduce the environmental effect of manufacturing procedures and warrants enhancement in contamination

control, minimisation in usage of raw commodities, green label appearance. A analysis of 198 South Africa Small-Medium Enterprises prepared by Sangwan, C2011) has travelled the qualitative and quantative benefits of Green Manufacturing. (Agan et al. 2013) informed that application of Green Manufacturing in Small Medium Enterprise can improve market stake, Green segment image and competitive advantage,. Additionally, Simpson et al,(2004) and (Pal, 2002) have proposed that Small Medium Enterprises' manager should not look at Green Manufacturing as financially strenuous, but as a best solution manufacturing attitude. Luthra et al. (2013) discussed green supply chain management (GSCM) procedure with bad adoption of the practice in majority of South African manufacturing sectors and a proposed ranking of GSCM tactics to make sure economic and environmental performance development. Additional, Govindan et al, (2015) assessed the important drivers of Green Manufacturing application by gauging 120 leading South Africa organisations, nevertheless research says that these drivers could flop in case of South Africa Small Medium Enterprises since they do not know the minimum requirements of GM. Furthermore, some academics have requested for genuine efforts to embrace Green Manufacturing in South Africa environment as the present status is not very substantial (Singh et al., 2015), furthermore (Rehman and Shrivastava, 2013) mentioned that the above conversation leads to the assumption that Green Manufacturing application outcomes in general performance enhancement but strong efforts are needed to encourage SMEs to adopt GM strategies. Mittal et al. (2012) studied drivers of environmentally conscious manufacturing in the context of developing countries like India and Germany which revealed that current as well as future legislation and green brand value are the amongst highly ranked motivators. Ghazilla et al. (2015) concluded that green brand image and competitiveness are the most vital GM drivers in SMEs. Based on a detailed study within nine developing countries including India, Luken and Van Rompaey (2008) reported that high production cost and environmental policies as the most important drivers of environmentally sound technology adoption. Further, Mittal and Sangwan (2015) found that competitiveness, incentives and organizational resources are top ranked drivers among thirteen GM drivers chosen for the study. At this point, Table 2 shows nine crucial drivers for successful Green Manufacturing application which are nominated through detailed review of literature and specialists' sentiments

Table 3.4.1: Driving factors for successful Green Manufacturing in FMCG Industry (and Sangwan, 2015)

1	Administration Instructions & regulation
2	Eco-friendly concerns & convention
3	Societal & Green obligation
4	Green bond image , world-wide marketing & Competitiveness
5	The social order or community Stress
6	Monetary benefits or charge avoidance benefits
7	Customers and consumer alertness, pressure & provision
8	Supplier willingness & difficulties
9	Investors & shareholder Pressure
10	Employees Motivation , health & Safety
11	Scarcity of Resources, Higher waste generation & Waste disposal problem
12	Awareness and Organizational capabilities
13	Demand for environmentally friendly products
14	Ecological and Global climate pressure

With the circumstances in the market today with high competition, meeting customer demands of providing exactly what the customer wants and when they want it challenges most companies. Further, the product should obtain a high quality and a reasonable price (Bergman & Klefsjö, 2010). Customer demands are essential to be met in order to keep a competitive advantage. For this reason, more flexible and fast processes are required in order to decrease delivery time and increase quality (Slack & Lewis, 2011). During the 1950s, the Japanese car manufacturer Toyota started to focus on flexible and fast production systems, which has become the foundation for the philosophy of what we today call Lean Manufacturing (Liker, 2009). The focus of Lean Manufacturing is to eliminate non-value added activities and create a consistent flow by working with continuous improvements (Slack et. al., 2010). 3.1.1 The foundations of Lean Manufacturing The foundations of Lean Manufacturing can be symbolized as a building, held up by the two pillars; Built-in Quality (Jidoka) and Just-in-time (JIT), see figure 3.1 (Nicholas, 2010). The roof represents the goals of the organization of having highest quality, lowest costs and shortest lead-

time, whilst the foundation is represented by standardization and the importance of having stable and reliable processes (Liker, 2009).

P1: Philosophies

Principle 1 – Base managing choices on extended term philosophies, even at the cost of temporary fiscal aims.

- ✓ Attain a logical sense of determination that surpasses all kind of temporary choice making Work, raise and support the entire company toward the similar resolution that is greater than generating cash. Comprehend the background of the company and put effort to carry it to the next level. The ethical assignment is the foundation for all the remaining principles (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).
- ✓ Create value for the consumers, civilisation and the economy – it is the starting point. Assess every occupation in the company in terms of its capabilities to achieve this value(David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).
- ✓ Be accountable. Go all-out to choose its own future. Act within self-sufficiency and trust in own abilities. Accept responsible for own conduct and maintain and improve the skills that enable the organisation to produce added value. (Nicholas, 2010)

P2: Processes

Principle 2 – Create non-stop process stream to bring complications to the apparent.

- ✓ Reform work procedures to realise high value-added, unceasing flow. Endeavour to cut back to zero the volume of time that any work scheme is sitting indolent or waiting for someone to work on it.
- ✓ Harvest current to handover quantifiable data quickly as well as to relation processes and people together so that problems surface right away.
- ✓ Make flow evident throughout the organisational culture which is the key to a true continuous improvement process and to develop people.

Principle 3 – Use appeal systems to evade overproduction.

- ✓ Minimise work-in-process and warehousing of inventory by stocking small amounts of each product and frequently restocking based on what the customer actually takes away (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).

- ✓ Be responsive to the day-to-day shifts in customer demand rather than relying on computer schedules and systems to track wasteful inventory(David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015)..
- ✓ Provide down the lane consumer in the manufacture process with what they need, when they need it, and in the amount they want it. Material replenishment initiated by consumption is the basic principle of just-in-time(David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).
- ✓ Minimise work-in-process and warehousing of inventory by stocking small amounts of each product and frequently restocking based on what the customer actually takes away(David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).
- ✓ Be responsive to the day-to-day shifts in customer demand rather than relying on computer schedules and systems to track wasteful inventory(David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).

Principle 4 – Balance out the capacity (work like a tortoise, not the hare)

- ✓ Eliminating waste is just on-third of the calculation for building lean success. Eradicating overload to individuals and equipment and eradicating roughness in the creation timetable are just as important – yet generally not understood at organisations attempting to implement lean (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).
- ✓ Work to level out the workload of all engineering and service procedures as an substitute to the stop/start approach of working on projects in batches that is typical at most organisations(David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015)..

Principle 5 – Build a culture of stopping to fix problems, to get quality right the first time.

- ✓ Quality for the customer drives the organisation's value proposition.
- ✓ Use all the modern quality assurance methods available.
- ✓ Build into equipment the capability of detecting problems and stopping itself. Develop a visual system to alert team or project leaders that a machine or process needs assistance.
- ✓ Build into the organisation's support systems the ability to quickly solve problems and put in place countermeasures.
- ✓ Build into the organisation's culture the philosophy of stopping or slowing down to get quality right the first time and to enhance productivity in the long run (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).

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Principle 6 – Standardised tasks are the foundation for continuous improvement and employee empowerment.

Use stable, repeatable methods to maintain the predictability, regular timing and regular output of processes - The foundation for flow and pull. Capture the accumulated learning about a process up to a point in time by standardising today's best practice. Allow creative and individual expression to improve upon the standard; then incorporate the improvement into the new standard so that when a person moves on the learning can be transferred to the next person (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).

Principle 7 – Use visual control so no problems are hidden.

Use simple visual indicators to help people determine immediately whether they are in a standard condition or deviating from it. Avoid using a computer screen when it moves the worker's focus away from the workplace. Design simple visual systems at the place where the work is done, to support flow and pull. Reduce reports to one piece of paper whenever possible, even for the most important financial decisions (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).

Principle 8 – Use only reliable, thoroughly tested technology that serves the people and the processes.

Use technology to support people, not to replace people. Often it is best to work out a process manually before adding technology to support the process. New technology is often unreliable and difficult to standardise and therefore endangers flow. A proven process that works generally

takes precedence over new and untested technology. Conduct actual tests before adopting new technology in business processes, manufacturing systems, or products. Reject or modify technologies that conflict with the organisation's culture or that might disrupt stability, reliability, and predictability. Nevertheless, encourage the people to consider new technologies when looking into new approaches to work. Quickly implement a thoroughly considered technology if it has been proven in trials and it can improve flow of the processes (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).

P3: People and Partners.

Principle 9 – Grow leaders who thoroughly understand the work, live the lean philosophy, and teach the lean philosophy to others.

•Grow leaders from within, rather than buying them from outside the organisation.
•Do not view the leader's job as simply accomplishing tasks and having good people skills. Leaders must be role models of the organisation's philosophy and way of doing business.
•A good leader must understand the daily work in great detail so he can be the best teacher of the organisation's philosophy.

Principle 10 – Develop exceptional people and teams who follow the organisation's philosophy

•Create a strong, stable culture in which organisational values and beliefs are widely shared and lived out over a period of many years.
•Train exceptional individuals and teams to work within the corporate philosophy to achieve exceptional results. Work very hard to reinforce the culture continually.
•Use cross-functional teams to improve quality and productivity and enhance flow by solving difficult technical problems. Empowerment occurs when people use the organisation's tools to improve the organisation.
•Make an ongoing effort to teach individuals how to work together as teams toward common goals. Teamwork is something that has to be learned.

Principle 11 – Respect the organisation's extended network of partners and suppliers by challenging them and helping them improve.

•Have respect for partners and suppliers, and treat them as an extension of the organisation.
•Challenge outside business partners to grow and develop. It shows that the organisation value them. Set challenging targets and assists the partners in achieving them.

P4: Problem Solving

Principle 12 – Go and see for yourself to thoroughly understand the situation.

•Solve problems and improve processes by going to the source and personally observing and verifying data rather than theorising on the basis of what other people or the computer screen tells.
•Think and speak based on personally verified data.
•Even high-level managers and executives should go and see things for themselves, so they will have more than a superficial understanding of the situation.

Principle 13 – Make decisions slowly by consensus, thoroughly considering all options; implement decisions rapidly.

•Don't pick only way and go down that single trail until all replacements have been thoroughly considered. Once a decision has been made, move quickly but cautiously down the path.
•Nemawashi is the process of discussing problems and potential solutions with all of those affected, to collect their ideas and get agreement on a path forward. This consensus seeking process, though time-consuming, helps broaden the search for solutions, and once a decision is made, the stage is set for rapid implementation.

Principle 14 – Become a learning organisation through relentless reflection (hansei) and continuous improvement (Kaizen).

•Once the organisation has established a stable process, use continuous improvement tools to determine the root cause of inefficiencies and apply effective countermeasures.

•Design processes that require almost no inventory. This will make wasted time and resources visible for all to see. Once waste is exposed, have employees use a continuous improvement process to eliminate it.
•Protect the organisational knowledge base by developing stable personnel, slow promotion, and very careful succession systems.
•Use hansei (reflection) at key milestones and after a project has been finished to identify all the shortcomings of the project. Develop countermeasures to avoid the same mistake again.
•Learn by standardising the best practices, rather than reinventing the wheel with each new project and each new manager.

3.6 Benefits of implementing Lean Production

Lean comes with various benefits which was demonstrated in non-process industries (figure below explains)

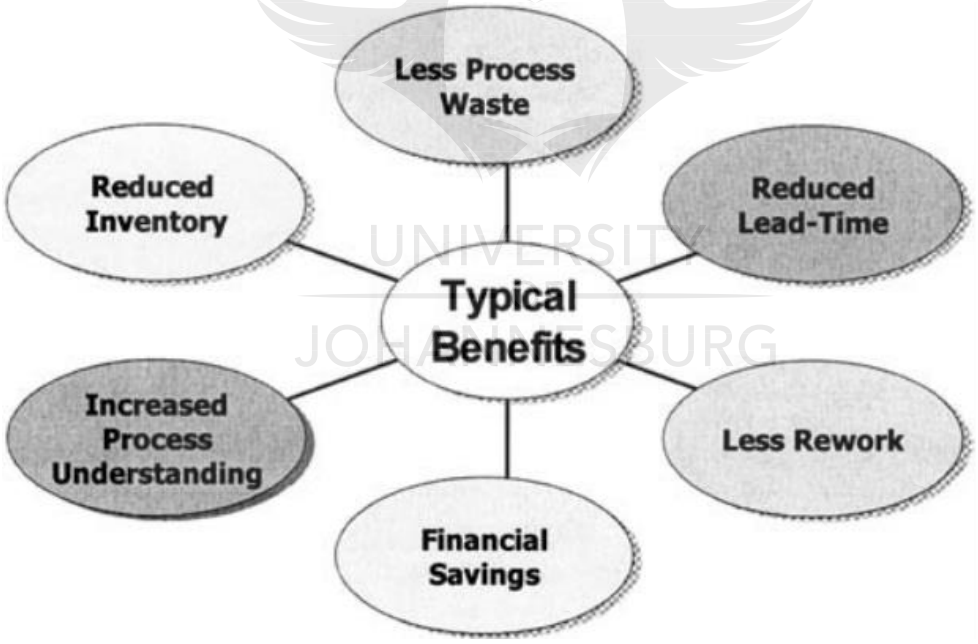

Figure 3.6: the benefits of lean in the FMCG sector (Melton, 2003)

- Minimized waiting period for customers;
- Minimized stock for the manufacturers;

- Enhanced information management;

How lean application can assistance the FMCG SECTOR

With the non-stop increment in prices raw materials and package material, and the Fast Moving Consumer Goods organisation having to compete in a very high competitive market to always produce good products, affordable. Profits are unswervingly challenged unless orgnisations apply initiatives to minimise costs (Awniv & Shabaan, 2014). Costs are reduced by using lean can be attained by improved quality (i.e. minimum imperfections), minimum stock-on-hand, excellent customer service, reduced order cycle intervals, enhanced production and supply chain flexibility, enhanced operational enactment, reduced product development period, and work environment safety and sanitation.

Lean production has grown and lean thinking and has been useful to all characteristics of supply chain. At hand they are a lot of good acknowledged examples of the presentation lean thinking, to business procedures like project management (Melton, 2003); design, production etc. Lean can be connected to all parts of the procurement and has to be if the most sufficient benefits inside the business are to be reasonably figured it out. The two most concerning issues with the utilization of lean business procedures are the seen absence of substantial advantages and the view that numerous business procedures are already very productive. Both suppositions can be tested (Melton, 2004):

They are a lot of noticeable benefits that come with lean business procedures. A lean business procedures will be quicker to give a reply to a request for the business procedure will be quicker, and a lot of business procedures are associated to organisational supply chains, this can then give enough financial benefits to an organisation (David Pearson et al, 2010; Webster et al, 2006; Koen Pauwels et al, 2006; Shuba Srinivasan et al, 2015).

The observation that an organisations procedure is already good enough is usual not the true view. Functionally, a lot of organisation procedures may be seen as being good enough, but the application of Lean Thinking makes sure we are to evaluate the entire supply chain in which the organisation procedure is found, and most of the time the discloses bottlenecks and pockets of the incompetence.

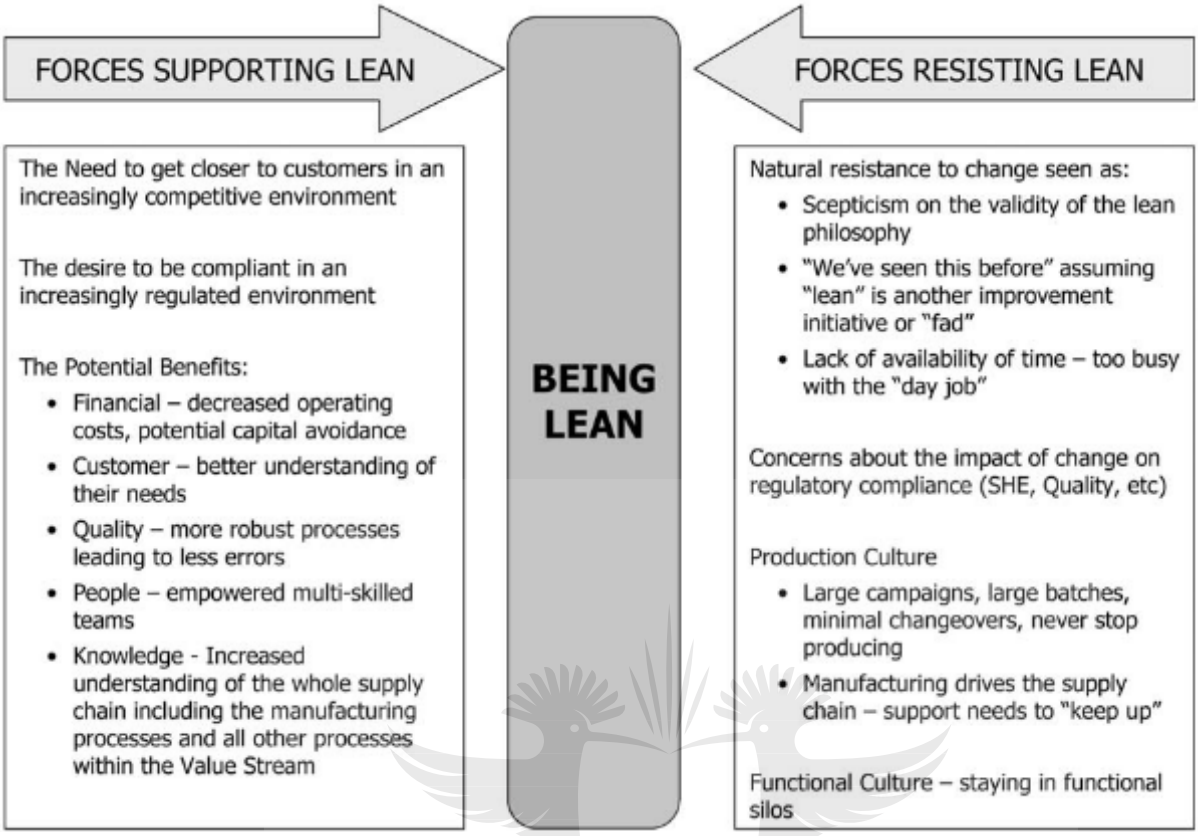

Figure 3.7: powers conflicting and motivating a change to Lean (PICME, 2004).

CHAPTER FOUR

FAST MOVING CONSUMER GOODS ON GLOBAL ASPECT

In this chapter the aim is to establish a research study that is applicable to this study, we will be looking at the Fast Moving Consumer Goods(FMCG) industry in global perspective, this will indicate how the industry is doing and how implementing LM in the FMCG industry can help in productive. In this chapter we get to be informed about the organisations and merchants of FMCG can move in a sustainable direction. We use these brands for our daily use in our lives. The consumer goods industry is one of the most dominate in the global economy.

4.1 FAST MOVING CONSUMER GOODS

FMCG(Fast Moving Consumer Goods), also known by the name of Consumer Packaged Goods (CPG) talks to the merchant products that are utilised very fast, most of the goods are used within a short time mostly in just a couple days. For Instance non-durable products such as cold drink, baked packaged goods and other goofs like canned foods, fruits and vegetables and dairy goods, as stated by bala et *al.* (2010:29) products in the FMCG sector are grouped as products that sell fast have a short shelf life span, this can be because of immense customer demand or it could be that the consumer packaged goods get spoiled very quickly, normally FMCG products make little profit per product but because they are bought In huge quantities and sell fast profits come in large.

Shal (2011) notices CPG as goods that are usually sold at prices with minimum turnover when it comes to the retail sector, but normally FMCG products are purchased in huge numbers in wholesale. BRG (2014) said that CPG or FMCG is term utilised to define most bought, minimum involvement, minimum pricing, convenient customer products, for example, hygiene products, ready to eat meals, soft drinks and other products. Food and Safety Promotion Board (2005) they said they have other descriptions pointing at FMCG from different viewpoints. CPG are often daily have low-pricing and minimum risk goods that need minimum thinking when buying. E.g. of FMCG normally include a vast range of regularly bought buyer products like, hair care products, hygiene products, deodorant and many products that are not packaged non-durable goods like, plates, plastic products and globes/bulbs. FMCG sector includes a lot of other segments like medications, customer electronics, cold drinks even though these products are not put in the same category.

4.2 THE FAST MOVING CONSUMER GOODS INDUSTRY

The FMCG business sector has lately has been growing and emerging districts in the whole world economy. As said by Kumar (2011) the Fast Moving Consumer Goods sector is a fast, vigorous sector with a broad variety of products. Mondelez International (2007:5) one of the leading organisations verified by affirming that 150 million occasions a day, in about 155 nations, the individuals utilise our products for snacking during lunch and tea break in their everyday life. Bala *et al.* (2010;28) thinks the same that by confirming that the Fast Moving Consumer Goods sector is the globe's biggest, high-velocity sector making and selling well know products used on a daily basis by customers.

Leszczyc *et al*. (2007:17) claim that the Fast Moving Consumer Goods sector has attested in a big growth rate in the emerging nations and a well-adjusted for an exponential progress, in the well shown countries. at the same time as fast development, CPG have been labelled by increasing appearance and competition is progressively novel plans of retailing. FMCG sector can be the one that works only with the marketing, distribution of CPG. Farfan (2011:4) struggles say that the FMCG Sector is a group of countries that involves people and company working with distribution of the finished goods to the end user. In the last 10 years, the Sector has gone through a lot of adjustments, which have brought about in the strength and appearance of local and world-wide commercial influence.

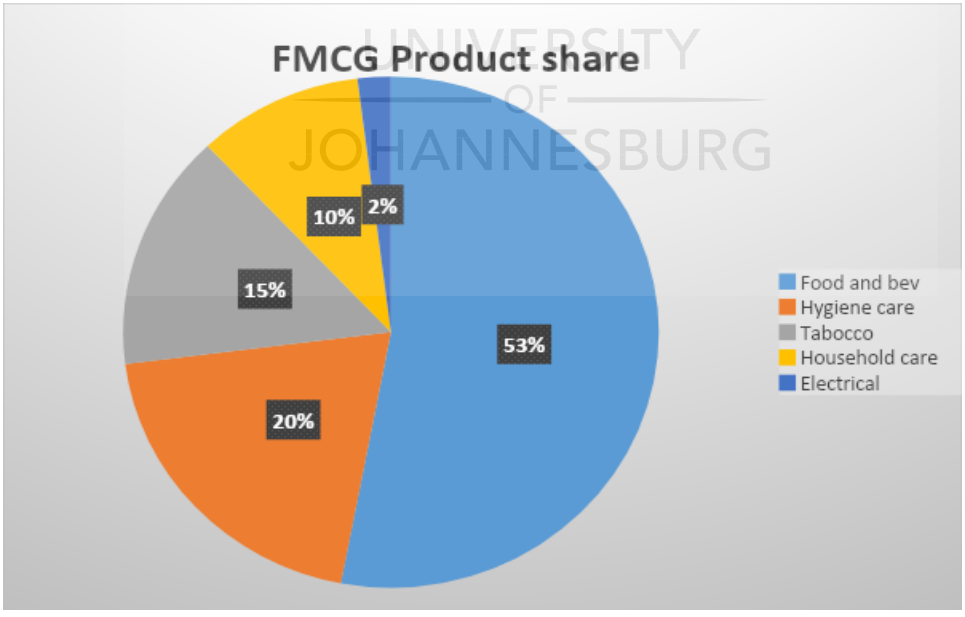

Figure 4.1: The FMCG Market Share Structure (KPMG. 2011)

Figure 4.2 Overview of the FMCG sector (IEOM Society International, 2018)

4.4 The FMCG INDUSTRY STRUCTURE

The FMCG sector is made up of different segments and plays a very important role in today's economy, for instance if you look at the food sector in Germany it has over 6000 enterprises offering various foods, hiring over 500000 employees, making margins of 170 billion Euros in 2012.

The processed food sector as stated by Van Donk (2001) demonstrated a clear overview of the features applicable for the production plans, which he developed from the other five packaging procedure in the manufacturing firms. Cooper et *al.* (2001) described FMCG as goods sold for daily use in huge numbers; practical to such like canned foods, convenient foods, and soaps and oral care products etc

The Fast Moving Consumer Goods sector consists of a lot of different products. Possibly most vital illustrations are:

- Food (example, poultry, snacking foods, fruits, ready to eat meal)
- Drinks (example, cold drinks, spring water, alcoholic drinks and concentrate juice)
- Tobacco products (example, shisha pipe, fags, cigars)

- Paper products (example newsprint, machine printing paper, hard paper)

FMCG are mostly bought on a moderate customer decision seriously influenced by marketing and campaigns done by producers (Mbuyazi, 2012:15)

The FMCG market place can be separated into for main groups, that is toiletries, diet, family products and health groups (Nayyab, et al.,2011 804). Some of the major features of FMCG can be briefed up as follows (Tiwari, 2012: 168):

- Regularly bought by the users.
- Minimum customer participation with slight or no product participation, products with immense brand trustworthiness are excluded from this law.
- Minimum pricing strategy by the advertiser.
- Great capacity aim expected.
- Minimum turnover contributions to the advertised product hamper contribution.
- Extraordinary supply setup.
- Huge inventory turnover.

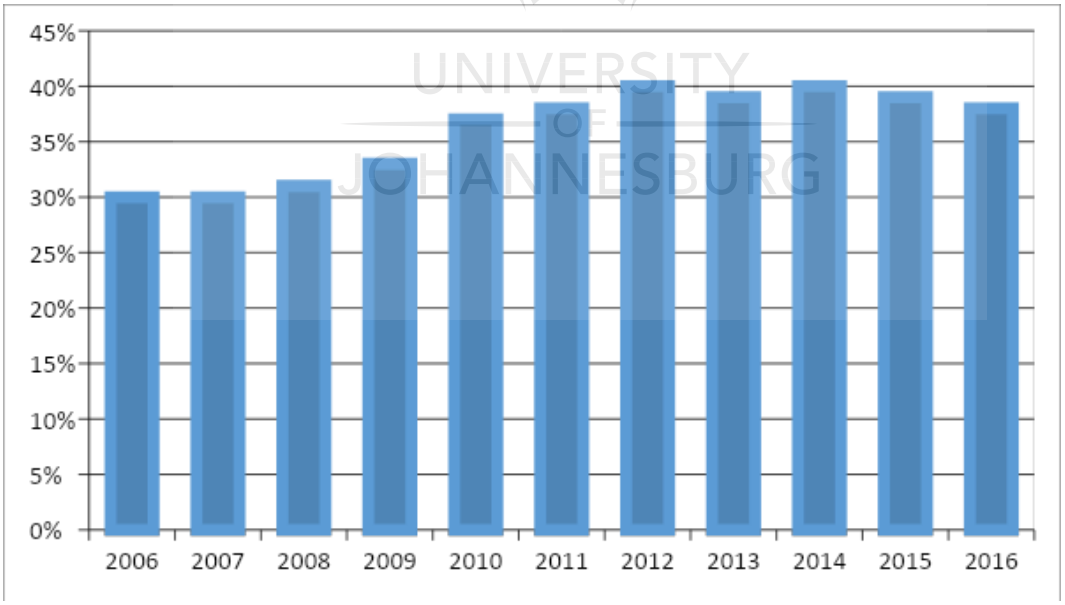

Figure 4.3: household FMCG spending in United Kingdom (Statista, 2017)

4.5 Policy Objectives for the FMCG sector

This section is directed to provide an idea on the competitive condition that is dominating in the FMCG wholesale business sector in the United Kingdom, we take a good look at the structure of the FMCG sector and how it is being changed in current times by the modern retail outlook. The learning is more directed on the exploration of the competitive subtleties (similar organisation competition, price and non-pricing regulations, blockades of market access, policy condition and so forth). Inside the industry and learns learnings for the competitive policy. Because the CPG retail industry usually deals closely with manufacturers (FMCGs manufacturing sector), among further services (very crucially the retail market) and the consumers of the FMCG (Motels and fast food outlets)

The governing background has evolved to build an atmosphere to allows new companies to enter the market, and an effective operation and progress of existing ones. United Kingdom has policies tools to advances the investment in different markets, provinces and actions. The Decree council minsters of investment bonuses (No 2002/4367, June 10 2002).

Even though the amount of sheer connected to the manufacturers, retailers and wholesalers are an SME these conclusions assume that retailers and manufacturers like to favour the organisations they are associated with. This type of work can cause worries for the rivalry policy if some of the perpendicular-related organisations have a strong position in the marketplace, nevertheless, in the illustration, it looks like the medium sized organisations, not the big companies, have a more intense tendency to create favourable relationship with the associated organisations, meaning the relationship between the manufacturer and retailers is not, at least for the moment, likely to twist competition laws and conditions in the FMCG industry.

4.5.1 Concerns with the Competition policy

The behaviour of the companies in the FMCG and manufacturing industry has gotten a significant attention due to its primary impact on customers. They were about twenty three complaints on the retail sector produced to the Competition Authority in the time frame of 1998-2003. A lot of the complaints are concerned with down cost selling and discriminatory behaviours (Vaishnani., 2011).

The common feature of beneath-cost selling criticisms is the claim that supermarket their merchandises at unreasonably low prices that can force SMEs to leave the market. As stated by the Competition policy, beneath-cost selling or unreasonably low pricing may be believed to be a

violation of the policy only if the happenings are involved has a strong place In the applicable marketplace (Vaishnani., 2011). The policy describes strong place as “any place appreciated in a definite marketplace by any one or more small businesses by virtue of those FMCG, The Competition Panel declined all the complaints involving the beneath-cost selling as it not being part of space that is being argued which talks about the strong place of any supermarket in the applicable Marketplace is doubtful the reason being that the small application ratios in the industry, minimum barriers of entry and vibrant industry conditions (Vaishnani., 2011)..

4.6 THE IMPORTANCE OF FAST MOVING CONSUMER GOODS INDUSTRY

The Fast Moving Consumer Goods sector covers a good covers a widespread of the goods are used every day. As stated by Beck (2002) the word FMCGs industry is used to describe products that are easily bought and don’t require much thought process.

4.7 INDIAN CASE

The most known fast moving consumer goods firms in India, RB (Reckitt Benckiser), Unilever, P&G, Coca-Cola company, Mondelez International, Pepsi and PepsiCO to mention a few

The FMCGs industry in India is the fourth biggest sector in the economy with the whole marketplace size, it has a surplus 20.1 billion United States dollar. It has a powerful Multi National Corporate (MNC) existence and is characterised by a good developed supplying network, strong competition amongst the organised and unorganised divisions and little operating cost. Accessibility of essential commodities, affordable employment costs (Vaishnani., 2011).

4.7.1 Investment in India

The market in India has great potential to attract foreign organisations, but the native consumers and the competition have increased in numbers. For foreign organisations, operating in India can be naïve wrecking (Vaishnani., 2011). The consumers are demanding and it is hard to pretend customer behaviour and the local competition can be astonishingly very hard, most of the time because of the past colonisers, India does not allow other countries to easy trade within their borders (Vaishnani., 2011). The Indian policy has a had a hard time in the past two decades to entice foreign investors into the country, the government outright rejected its socialist past and allowed foreign countries to invest, the plan was to recruit foreign firms to help evolve India into a great Asian market, affordable workers, an environment English is the primary, and a huge new medico people and a democratic government would establish a wave of good outcome (Vaishnani., 2011).

Table 4.1 The 10 Largest FMCG India (Vaishnani., 2011).

Serial Number	Organisations
1.	Unilever Ltd
2.	ITC (Indian Tobacco company)
3.	Nestle India
4.	GCMMF (AMUF)
5.	Dabur India
6.	Asian Paints (India)
7.	Mondelez India
8.	Britannia Industries
9.	Procter & Gamble Hygiene and Health Care
10.	Marico Industries

Table 4.2 The Indian Fast Moving Consumer Goods Industry in recent years (Vaishnani Haresh B., 2011)

Companies	**Parameters**	**2008-2009(value in Crore)**	**2007-2008(value in Crore**	**%Change**	**Elasticity**
Britannia	Advertising and sales promotions	211,18	179,78	17,47	1,17
	Net Sales	3,112,21	2,584,10	20,44	1,17
Marico Ltd.	Advertising and sales promotions	169,56	180,47	-6,05	3,73
	Net Sales	1,917,17	1,564,74	22,52	
ITC	Advertising and sales promotions	502,30	377,54	33,05	0,00
	Net Sales	23,143,53	21,355,94	8,37	0,25
Dabur	Advertising and sales promotions	284,93	248,10	14,85	1,01
	Net Sales	2,396,16	2,083,40	15,01	0,98
HUL	Advertising and sales promotions	2,130,16	1,440,22	47,96	1,31
	Net Sales	21,649,51	14,715,10	47,12	0,87

4.5 Findings

The FMCG industry in the United Kingdom and in India, have been growing since the world-wide, yet in the UK and India the Fast Moving Consumer Goods industry grew to make profits of over US$30 billion United States of American dollar in 2015, it makes close to three times more profit it made in 2001, which just over US$11 billion United States of America, it has also been witnessed that the FMCGs sector doesn't usually getting affected badly even in hard economic times, this was established in the 2008 global recession, it should that people would rather sacrifice luxury goods, just to be able to purchase FMCG products the reason being is that FMCGs are affordable in most cases and convenient most of the times (Vaishnani., 2011).. This industry however has intense competition with multiple firms almost manufacturing similar products, the FMCG sector mostly strives on consumer and brand loyalty and that's how big organisations like Unilever, Mondelez, Nestle, Coca-Cola etc. grow and survive and carry on being market leaders (Vaishnani., 2011)..

4.6 Conclusion

The fast moving consumer goods sector in Asia is one of the biggest fast moving consumer goods sector in the world which has the biggest selling volumes, and due the population in the Asian continent, with the Asia market growing, in the next decade it shows it will be the biggest Fast Moving Consumer Goods sector and with investments from foreign investors and technology, the Asian market will have the largest gross profits bigger than the United Kingdom and the Unites states of America.

4.7 Lesson Learnt

The FMCG market in the United Kingdom is a well-established industry and doing well it makes good margins, the technology and economy In the UK allows the FMCG sector to grow easily and the high employment rate helps the fast moving consumer goods, even in recession people still rather buy FMCG products because of the affordability and convenience and in India one of the biggest population in Asia and in the world, FMCG sector does well in the international market as it is the fourth biggest industry in Indian and still growing

CHAPTER FIVE

FAST MOVING CONSUMER GOODS ON AFRICAN CONTINENT ASPECT

5.1 Introduction

The FMCG companies have products that are bought very quickly and excludes the experiencing of huge costs (Wasamba, 2008). The Fast Moving consumer Goods is furthermore described as a vital or a non-vital products that are bought regularly (Mandrinos, 2014) Taymaz, Celen, Erdogan (2006), though, describe the FMCG as trivial-gauge customer products that remain being purchased at a supermarket, manufacturing point of sell, or Hyper stores. A crucial feature about the Fast Moving Consumer good is that a lot of the turnover made from the supply to end-user of the FMCGs merchandises are marginal, the truth about the goods sold in huge numbers result in a lot of turnover produced cumulatively on those goods. (Wasonga, 2012) there is a variety of goods that are categorised as Consumer Packaged Goods (CPGs). Which involve detergants,,toiletries, grooming products, beauty products, shower gels, processed foods, packaged goods just to mention a few from the FMCG space.

5.2 Overview of the African FMCG Sector

The Fast Moving Consumer Goods industry in Africa has a important possibility to grow bigger. Poverty heights in (SSA) sub-Saharan Africa are currently very high, with necessities and foods taking over the people's resources, because of this the food category of the Fast Moving Consumer Goods has a huge marketplace to provide service to, however infiltration rates in supplementary classes still have enough space to grow (Mandrinos, 2014). In the agenda, we firstly travel around the magnitude of the FMCGs space in Africa in accumulation to the central factors of progression in the industry. Consequently becomes the attention to the customers of Africa's market and the highlights assured personalities and expenditure arrangements appropriate directly to the CPG sector (Taymaz, et al; 2006). The agenda also looks a important tactics for the Fast Moving Consumer Goods retail achievement in Africa and accomplishes by finding out the FMCG growth mess in the continent of Africa.

The Fast Moving Consumer Goods firms usually function in a low-income locations, as the outcome, the presence of a huge marketplace is critical to the achievement of the those organisations, now a huge market place points out to a province with huge populace with just enough buying influence (Taymaz, et al; 2006). Luckily FMCG merchandises generally come in customer fairs at small themes and as an outcome buying influence has to at least be at an understandable small price

For the bulk of the CPG products groups to be pronounced like it can't be affordable, with that being mentioned salary level should influence the regularity of family houses that buys FMCG products, when looking at the market what influences the buying choice in association to the switch-off among quality and cost (Taymaz, et al; 2006).

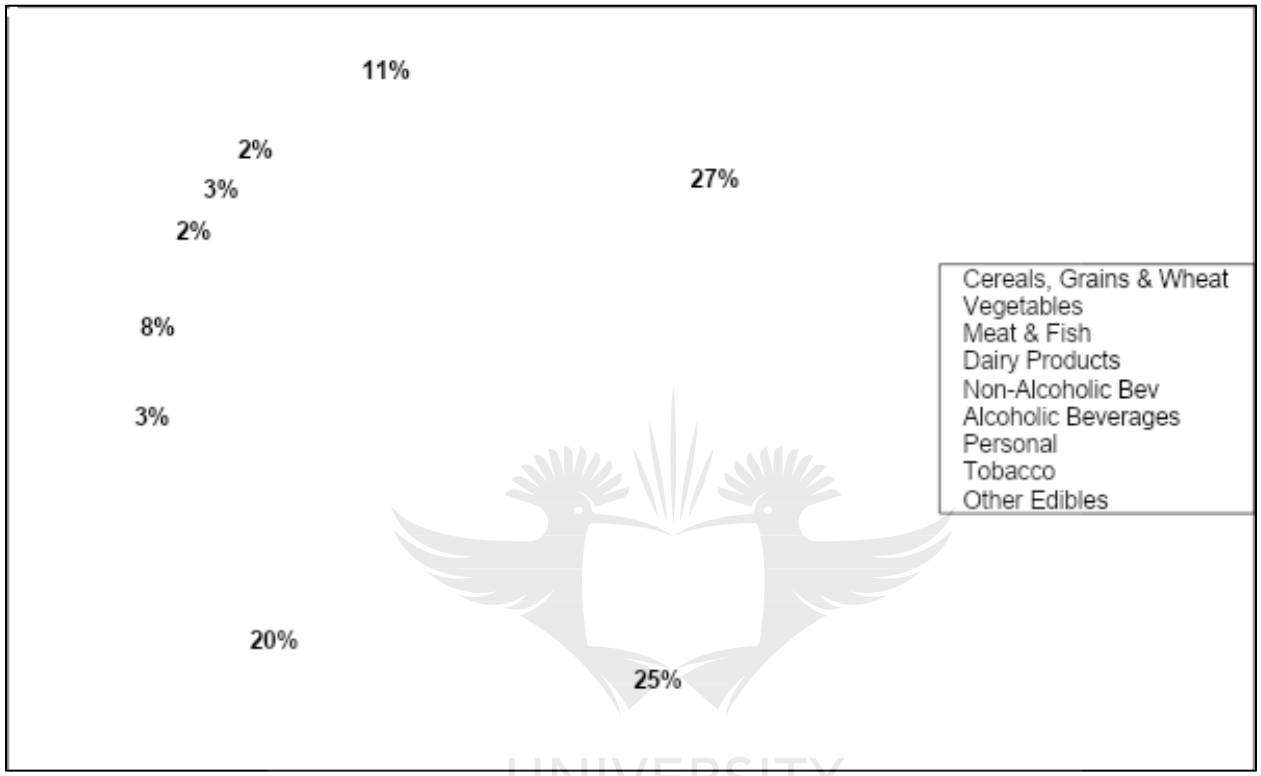

Figure 5.1 Average Total Percentage Spend in the African FMCG Sector (Taymaz, et al; 2006)

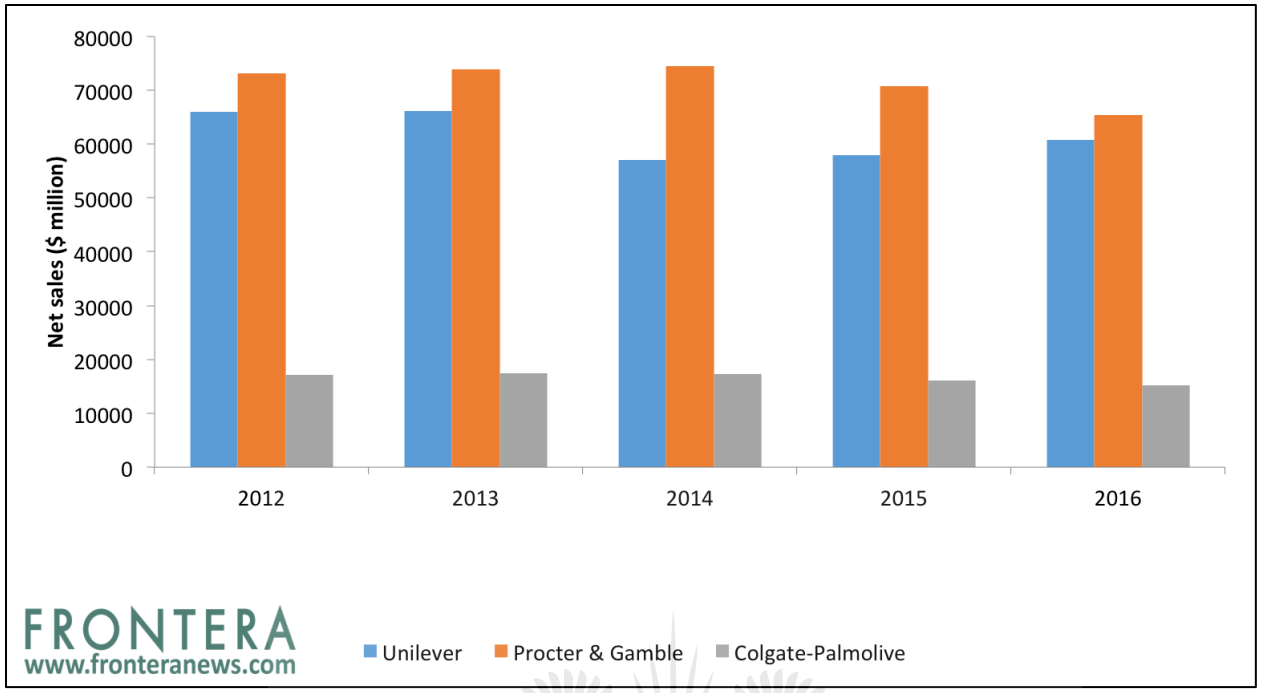

Figure 5.2. Annual profits of The Biggest FMCG Firms In Africa (Mandrinos, 2014)

5.2. The impact of the FMCG on the African economic growth

According to Persaran and Shin (2002) The aim of this particular section is to assess the long-haul causation concerning the fiscal advancement and economic progression, knowing the unsettled endings on the natural surroundings of causation in the period-learnings, this research relates to the latest long-run important exhibiting and other utilisation of weld quiz to test (VECM) Vector-error correction.

Utilisation of multivariate vector auto-regression to test the affiliation amongst fiscal growth and economic growth Gries et al (2009)

Over of the Republic of Nigeria

The climate in Nigeria varies on very much, at the centre it has a tropical feel, equatorial in the North and unfertile to the South, Nigeria is surrounded to the Northern by Republic of Chad and Niger, Benin is by the West, to the South by the Atlantic Ocean and to the East it is near Cameroon Dublin Green et al. (1999), Space occupation of Nigeria is 923 768 kilometres squared. The population of 186 million people as stated by the 2016 census numbers (NPC, 2016), Nigeria has natural resources and minerals such a fossil oils, metal minerals amongst the others.

Figure 5.3: Nigeria Map overview for FMCG logistics (NPC, 2016)

5.3.2. Nigeria and Kenya's Economy

Nigeria is rich in oil, long shambled caused by political instabilities, fraud, leak of facilities and infrastructures, and bad macri-economic supervision, is responsibility for some changes under a new changed mind administration. Nigeria's previous soldierly leaders didn't manage to differentiate the economy away from it depending too much on funds concentrated oil industry, that gives 20% of the Gross Domestic Product (GDP) and for imported exchanged remunerations is at 95% and 65% more or less on budgeted incomes (Dublin Green et al, 1999).

The fundamental agricultural industry is unsuccessful to maintain the speed of growth of the population, Nigeria has the biggest population on the continent. And it now imports more food then it exports, at once it was a big exporter. The year 2000 Nigeria got a debt restructuring contract with Club of Paris of US$ 1 billion United States of America for the economic improvements (NPC, 2016).

According to (Federal Ministry of Finance, 2006) Abuja in November 2005 won A Paris Club endorsement for a debt ease off contract that cleared up about US$ 18 billion of debit and they only had to pay US$ 12 billion - the total deal equivalent to US$ 30 billion of Nigeria whole US$37 billion debit, grounded on oil increases export demand and big world-wide oil price (NPC, 2016).

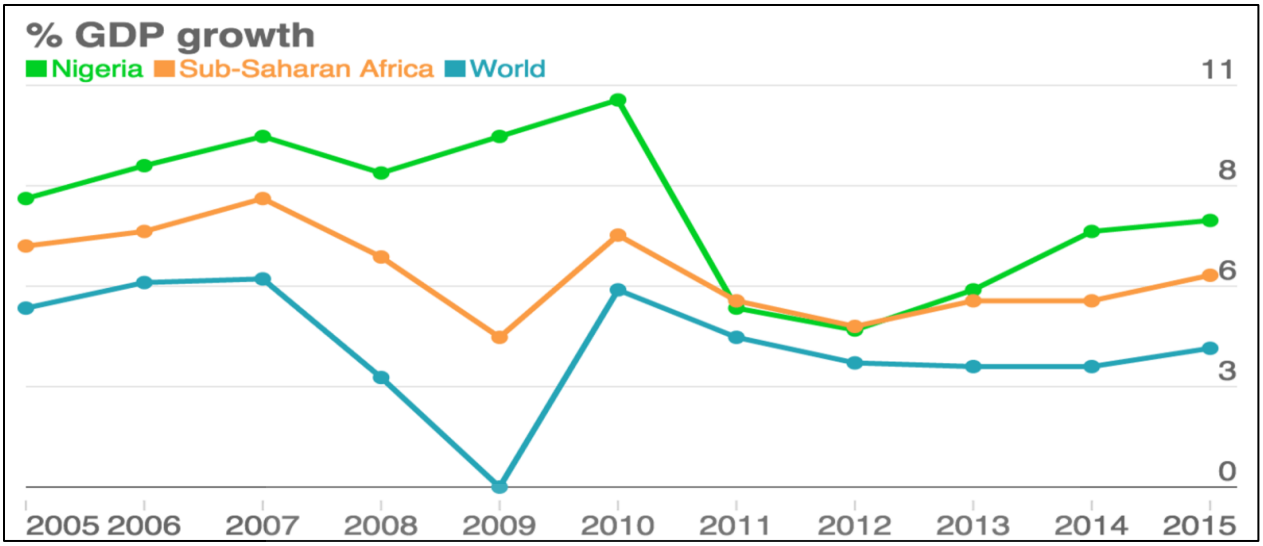

Figure 5.3: of Nigerian GDP growth (BMI, 2012; Barloworld Logistics)

5.6 Nigerian FMCG Industry and Market

According to (BMI, 2012; Barloworld Logistics) Nigeria as an expanding population and it is continuous economic growing pattern, not merely the position at a huge potential for customer bazaar for FMCG, nonetheless also produces it is enough market in the subdistrict of the west side of Africa. With such a huge residents, Nigeria gives a big market for alcoholic beverages and other alcoholic similar beverages. Bestowing to the Nigeria National Bureau of Statistics (NNBS) (2012), the republic has a populace of above 160 million residents and is undergoing quick economic growth. (Femi, 2012) A lot of the global multi-national organisations in FMCG just like, Brand house, Distill and SABMiller etc. have begun putting in investments in the market of Nigeria

The Fast Moving Consumer Goods sector is worth billions of American dollars. The Beer sector on its own was worth over US$2.7 billion in 2009 as stated by Marcela, Regional and Uche Nzeke (2011), According to Marcela et al. Nigerian winery sector continues to flourishing at growing rate as an outcome on a rise in the medium class individuals, rising populace and steady shift to wine from beer, wine is usually seen to be a healthy choice in terms of alcohol (Femi, 2012).

Table 5.2: Types of FMCG products, Industries and all the distributors (Femi, 2012)

FMCG Industries	**Foods and Beverages**	**Personal care**	**Household care**
Example of Products	Canned beverages, breakfast products, staple alcohol, energy drinks etc	Skin products, cosmetics, oral care and medications.	Laundry products, Applicance and furniture
FMCG Industries	Mondelez, Nestle, Distell, Pioneer foods etc	Coca cola, cadbury, Hunters, Savanna, pepsi and SAB Miller breweries etc	Colgate-palmolive, P&G, Samsung, JVC and LG
Distributors	Game Store, Cambridge, Checkers, Spar, Usave, Boxer stores and Pick n Pay	Game, Checkers and Shoprite, Pick n Pay, OK Furniture, House and Home, Ariya Stores, amongst Others	Game Store, House and home, Checkers and Shoprite, Pick n Pay, Makro, Hi-Fi Corp amongst others.

5.6.1Challenges of the FMCG sector in Nigeria

Despite the large possibilities around for development and growth of the FMCG sector in Nigeria, the industry in Nigeria, the segment still runs into numerous problems. The consumer goods (FMCGs) segments are one of the biggest industries in Nigeria, irrespective of the benefits to the growth of Nigeria's economy, its full impact is still seen to be below the required prospects. The FMCG industry in Nigeria had run it numerous obstacles in the previous three years and there has be there not enough developments in the industry and it still faces challenges till this day (Femi, 2012). The obstacles occur because of unfavourable macro-economic reasons the government have to reduce the strength of the currency, overdue recruitment of ministers to govern the matters of the country, overdue payments to employees' wages and declining prices of oil (The Lagos Business Institution, 2016). The main influences credited to its small involvement might be as an outcome of the various issues experienced by the fast moving consumer goods organisations (The Lagos Business Institution, 2016), these issues can be characterised as the two following influences:

- **External Influences:** factors contain insufficient and ineffective infrastructures and facilities, Eco social, economic, political factors, suppliers and consumers, competition market structures and market trends (Femi, 2012).
- **Internal Influences:** factors contain issues in the supply chain and sales, transportation and network distribution. Sales advertisements, promotions, fraud, payroll, not enough trained skilled employees etc (Femi, 2012).

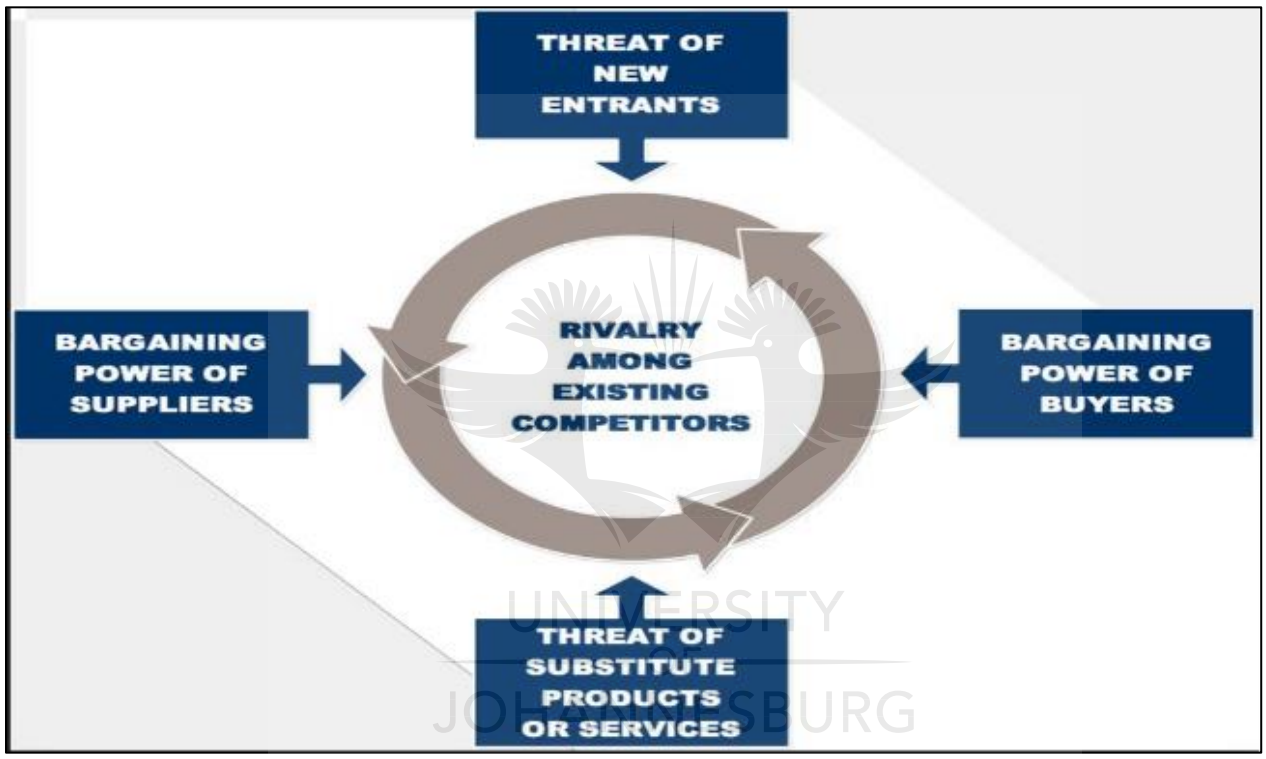

Figure 5.4: Porters five forces (Porters, 1985)

As it can be seen from the Figure 5.4 above, competition in the sector being supervised by five different pieces of forces, utilising the Porters five force to clarify the in-house factors that impacts the differences in the Fast Moving Consumer Goods sector, i.e. amongst the producers and the intercessors .

5.5.2.1Entry Barriers

There are various forms of barricades to have it difficult to enter the FMCG industry. Other barricades can be the lump sum capital needed for land occupation, buying power for equipment, professionally skilled workers to run the organisation and to follow the government rules that are

protocoled for the FMCG section the nation-wide agency for drugs and food administration and control (NAFDAC) and standard organisations of Nigeria (SON). Nevertheless, there has been a rise to enter the small sectors in undeveloped regions (Femi, 2012).

5.5.2 The bargaining Strength of Sellers

The agriculture segment gives most of its commodities to be utilised in the fast moving consumer. A study of the agricultural segment has revealed that there isn't a recognised priced structure, in line for the nominal rules In the industry. Therefore the purchasers of the industry must have the correct decree pricing that they are comfortable with. On top of that, propagation of dissimilar providers in the agricultural industry rises rivalry between sellers and discards a monopoly situation (Femi, 2012).

5.5.3The Bargaining Strength of Purchasers

The purchasers in the FMCG industry involve suppliers such as wholesalers and retailers and each purchaser or consumer. The different brands of Fast Moving Consumer Goods in a certain jurisdiction power of the negotiation power of purchasers. The Proliferation for the various brands gives very minimum charges to customers. Therefore, keeping consumers is not much for FMCG organisations. The main players in the CPG segment are always looking for tactics to hold consumers. These tactics can involve low pricing of goods, enhanced marketing and advertising (The Lagos Business Institution, 2016).

5.5.4Threat of Substitutes

The main groups in the fast moving consumer goods segment involves, drinks, hygiene products and household care. Fast Moving Consumer goods are vital for everyday life for people. Products like oral care, body shower gel, beverages, beauty products among other products are part of this FMCG group (The Lagos Business Institution, 2016). The Substitute for the mentioned products are also found in agriculture. These substitutes can be fruit juice for fruits, chewing gum for mouth wash just to mention a few examples.

5.5.5The Amount of Competition

The finding of the potential growth in Nigeria for the FMCG market has an outcome in the finding of fast moving consumer goods firms in the nation. Recently over 100 CPG sectors have stood and have been founded in Nigeria (The Lagos Business Institution, 2016).

5.6 Conclusion

The Fast moving consumer Goods sector in Africa, specifically the in Nigeria is a growing economy and one of the biggest economy in Africa, and it is in fact the biggest economy in Africa,

it is however faced by high level of corruption and bad leadership. However the Fast Moving Consumer Goods sector in Nigeria is a big industry and it makes billions of America Dollar, the FMCG in Nigeria has grown over sixty-six percent (66%) in the last decade and with the five forces of the Porters model strategy it can help the economy of Nigeria. FMCG in Nigeria is mostly practiced in traditional trade, as soon as the modern trade become more viable than traditional trade then economy of Nigeria will be the biggest economy of Africa and the consumer goods industry will be the biggest in the African continent.

5.7 Findings

The Nigerian Fast Moving Consumer Goods market has a very huge potential to be Africans biggest consumer goods sector, with it having one of the biggest economies in Africa and having the biggest population on the continent, Nigerian people have a lot of spending power. Only concern in Nigeria is that the country faces huge corruption from its leaders and people in power are using the monies irregular which is cause problems for the gross domestic product of the nation. If the officials can fix this issue Nigeria will be the most thriving economy in Africa and out doing the South African economy.

5.7 Lessons learnt

Africa has large vast of natural resources, I have learnt that the African continent is a growing continent, Nigeria is the second largest contributor in the African continent to the Fast Moving consumer Goods industry in Africa, we learnt that Government need to keep things clean and try to minimize corruption, we learnt that Lean Manufacturing in Nigeria and Kenya is being well implemented, as cocoa powder gets used well and production is maximised.

CHAPTER SIX

FAST MOVING CONSUMER GOODS ON SOUTH AFRICAN ASPECT

6.1 Introduction

The fast-moving consumer goods (FMCG) sector represents one of the largest industries worldwide. Also labelled the consumer packaged goods (CPG) sector, it is mainly characterised by companies that supply low-cost products that are in constant high demand. Products that are classified under the FMCG banner include food, beverages, personal hygiene and household cleaning utensils. The term “fast-moving” stems from the fact that FMCG products usually have a short shelf life and are non-durable (Benek, 2010).

From a retailing perspective, FMCG is often cited as a low margin – high volume game. Seeing as profit margins are usually rather slim, firms operating in the FMCG sector mostly employ a strategy focused on driving top line sales. Within categories, FMCG products are often near-identical, and for this reason price competition between retailers can be intense (Calderon & Serven, 2008; Deutsche Welle, 2011). To boost profitability, companies use marketing and other techniques to establish loyalty to the product, which enables them to charge higher prices. That said, managing input costs also remain vitally important, as small margin gains still have a significant impact on the bottom line due to the large volumes. Another important characteristic of the FMCG sector is that it generally does well in an economic downturn, with consumers rather cutting back on luxury products. Well known FMCG multinationals include Coca-Cola, Unilever, Procter & Gamble and Johnson & Johnson (Calderon & Serven, 2008; Deutsche Welle, 2011).

The FMCG sector in Africa has significant scope to expand. Poverty levels in especially sub-Saharan Africa (SSA) are still quite high, with food and other necessities dominating consumer budgets. For this reason, the food sub-sector of FMCG has a very large market to cater for, while penetration rates in the other categories still have significant room to expand. In this report, we first explore the size of the FMCG market in Africa in addition to the main drivers of growth in the sector. We subsequently turn our focus to the African consumer and highlight certain traits and spending patterns applicable specifically to the FMCG market. The report also considers key strategies for FMCG retail success in Africa and concludes by identifying FMCG growth spots on the continent (Benek, 2010).

6.2 Overview of the South African Fast Moving Consumer Goods industry

South African has joined the membership of BRICS (Brazil, Russia, India, China and The Republic of South Africa) conglomerate. Just as its companion associates, The Republic of South Africa has pockets that are capable of wealth creation and major cities with one of the best infrastructure, so far most of the population is believed to be fairly poor (BBC, 2014). This is replicated in the highest Gini Index, replicating unequal margins of earnings and therefore a bid difference between poor and rich (World Bank, 2014a). so far, this stands in line with distinction to other up and coming markets in Sub-Saharan Africa, just like, Zambia, Zimbabwe, Angola and Malawi, where the infrastructure is relentlessly poor and admission to facilities and niceties, for example, airports, shopping complexes, hospitals, even in big municipal locations, stay infrequent (Calderon & Serven, 2008; Deutsche Welle, 2011).

When you go in first world countries it is hard pressed customers sections that embodies the most enticing market section for private brand traders, in the Republic of South Africa it is the wealthy few people that have contact to such labels (Nielsen, 2006). Even though a lot of low earning customers do have contact with supermarkets that sell exclusive brands, transporting these products back to the locations also known as townships can end up being very costly and be problematic. For e.g. domestic helpers will need to pay for a number of seats in a taxi to carry these products, because of having to carry more than two shopping bags. In aspects of the exclusive brand adoption in The Republic of South Africa, the comparative success of various products sections is portrayed in Table 1.1. Commodities comprise the biggest section, accompanied by dry groceries and non-durables products. These three sections command the majority shares of the market – roughly two thirds of exclusive brand sales. As can be seen, these sections have stayed relatively steady over the appraisal time from 2008 to 2010 (Nielsen, 2011).

Table 6.1 Customer Expenditure on Exclusive brands (Statsa, 2008 – 2010)

Year	2008	2009	2010
Staples	29.2	29.2	26
Dry Groceries	17.5	17.7	19.7
Perishables	18.4	18.7	18.5
Beverages	12.6	12.5	13.6
HouseHold	9	9	10.3
Toiletry	10.1	9.9	10
Other	3.2	3	2.1
Total	**100**	**100**	**100**

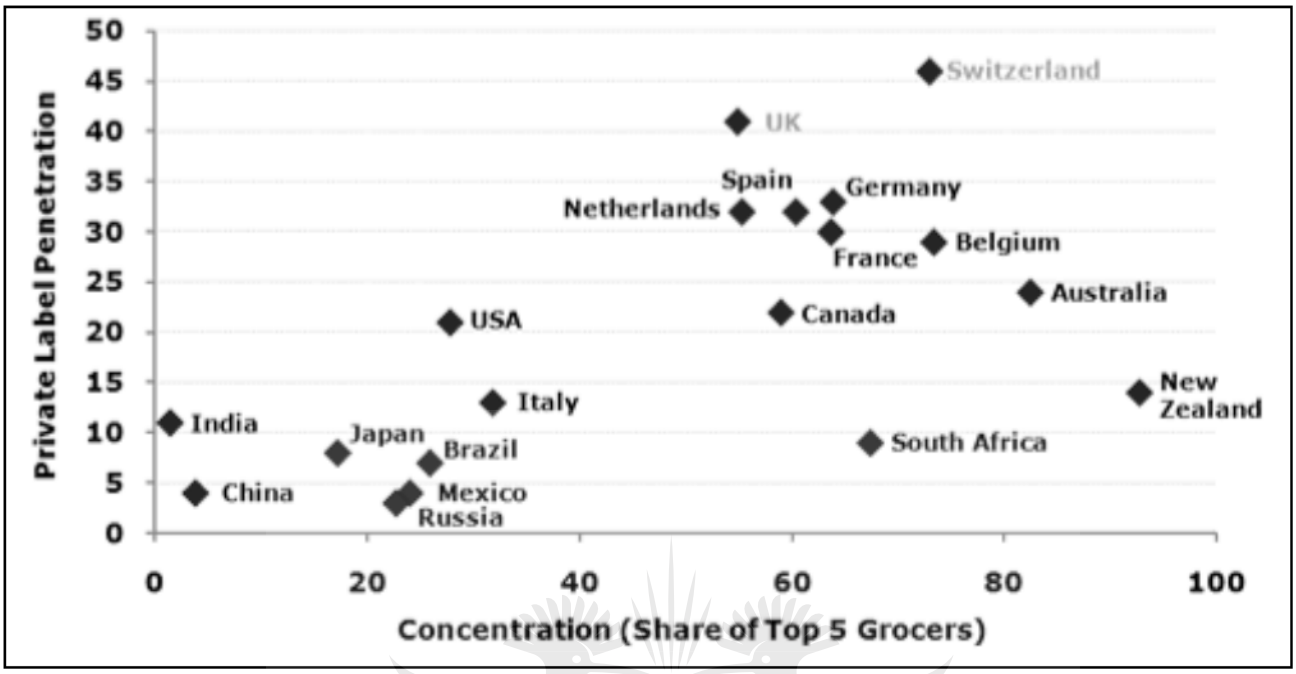

Figure 6.1: Exclusive Brands Diffusion against Attentiveness (Beneke,2010).

The Republic of South Africa's reduced performance might be clarified by a practise of investing mainly in affordable prices, cheap quality exclusive brand products (Beneke,2010). This might also be clarified by general accessible influence whereby lower earning individuals usually don't have undeviating contact to Shopping centres where Private Label Brands (PLBs) always available (Benek, 2010). This points these customers to do their grocery at spaza shops in the township, which are owned by the locals, the small scale informal merchants that are found all over in the rural townships of South Africa. (klemz et al, 2006) stated that these spaza's also known tuckshops to the consumers, prices are usually different because of location, as they don't have the benefits from the large economies of scale. In The Republic of South Africa, it has been projected to happen through the informal markets (Blottnitz, 2007), as a result representing a lost chance for private brands.

6.2 The FMCG Industry structure

The Consumer Packaged Goods (CPG) Situations are quickly becoming increasingly more challenging in it comes to innovation (Etienne 2013). As said by Bulletin online (2013), a forecast of 1,080,000 Fast Moving Consumer Goods in the SMMEs were working their organisation in

South Africa in 2003, all of which were moving hard to achieve organisational sustainability. Fast Moving Consumer Goods products depict to the retail products that are usually replaced or fully used over a shorter period of within a year or, months, weeks, or just even in a few days (Smith 2010: 1). Fast Moving Consumer Good have a short shelf life, it could be due to the rising sales capacity or due to the merchandise will get sub-standard in a short period of time (Bisschoff and Moolla 2012), the writer further elaborates that Fast Moving Consumer Goods are products utilised on a day to day basis purchased by retails clients, like hygiene products, and other household products.

Fast Moving Consumer Goods are very important characteristic of the production industry and for many decades they include of a big fraction manufactured products (Mustapha 2010: 29). Mustapha (2010: 29) elaborate even more that Consumer Packaged Goods (CPG), otherwise identified as Fast Moving Consumer Goods (FMCG), and are referred to the category of products that are frequently get rid of the quick and that the pricings of these goods are believed to be reasonably fewer than other kinds of goods. He posits, on the other hand, that manufacturing companies can grip these fewer prices and still attain progression only by being competitive and innovative. Mustapha (2010) categorises Consumer Packaged Goods (CPG) as goods that comprise of, toiletries, detergents, beauty products, hygiene products and semi-durable goods like glass products, pulp products, bulbs, plastic merchandise and alkaline products like batteries.

The International Standard Industrial Classification (ISIC) explains that services and goods will be recognised as Fast Moving Consumer Goods, when they are showed for trading reasons at any store, it doesn't have to be at a specific store. Hence, goods like consumables, tobacco and beverages. Medical products and pharmaceuticals can be retailed in certain stores. Fast Moving Consumer Goods can also be couriered to customers through postal deliver, online sales, and stalls (Margues and Puig, 2010). Tech and electronic products like cell phones, portable music players and smart devices are also placed in the Fast Moving Consumer Goods but they are usually put in a category known as the (FMCE) Fasting Moving Consumer Electronics. The prominence innovation and creativity in the tactic is a requisite in all kinds of CPG in the industry, especially cellphones and all types of smart portable devices which are seem to be linked with scientific differences (Mustapha, 2010). The writer further debates that individuals do not mind to substitute products in a short period of time, as they discover that these kinds of goods usually become outdated quickly or people tend not to like them for long.

	Company	2017 Score	2016 Rank	2016 Score
1.	Clover (FMCG)	80.3	1	78.1
2.	Coca-Cola (FMCG)	79.5	2	76.2
3.	Pick n Pay (Retail)	77.6	6	72.6
4.	Nestle (FMCG)	76.7	8	71.6
5.	First National Bank (Financial-Bank)	76.3	7	72.1
6.	Woolworths (Retail)	75.8	3	75.4
7.	Spar Group (Retail)	75.6	4	74.9
8.	Old Mutual (Financial-Diversified)	75.2	10	69.6
9.	Discovery (Financial-Diversified)	72.7	15	68.6
10.	The Foschini Group (Retail)	72.4	14	68.8

Excellent/Top Tier	80+
Strong/Robust	70-79
Average/Moderate	60-69
Weak/Vulnerable	50-59
Poor/Lowest tier	<40

Figure 6.2: leading FMCG Firms in South Africa (Kesper 2010)

6.3 The Importance of the FMCG sector in South Africa

They is no mistake that the Fast Moving Consumer Goods sectors plays a vital part in the South African economy. As mentioned by Kesper (2010), Small, Medium and Micro-sized Enterprises (SMMEs) are regarded as economic driving forces that would be developed to help in aspects of job creation, to boost the country's economy and alleviate poverty. The vivacity of FMCGS are placed in perception when prominence is put on the phenomenon that is in Cape Town only. Small, Medium Micro-sized enterprises are thought to be accountable for making up to 52% of Cape Town's entire business trades, which contributes up 40% of official national occupation (Hayes, 2001). That is the importance of SMMEs, for the most part apply to the development of their sustainability, in the economy of South Africa, situations can't be taken too lightly. Kesper (2000) gave a statement that majority of South African Consumer Packaged Goods, more seen in the retail sector, which are casually looked at as either at small enterprises (e.g. Smallish enterprises that have been around for a minimum of three years).

The South Africa consumer goods environment is considered by various underlying forces that hardens the level of competitors within the industry, accurately combating for the same customers. The Fast Moving Consumer Goods and the SMME industry plays a vital part in the development of the South African economy. It contributes the objectives of economic growth, South African empowerment, poverty alleviation and provision of employment in various methods (DTI, 2003). Fast Moving Consumer Goods in the manufacturing industry make very big contribution to the South African development of the economy. Mwarari (2013) has an additional

explanation saying that in the United States of America, for example. FMCGs are said to provide about 67% of employment openings and 61% industrialised sections productivity.

6.4 The Impact of the FMCG industry in the South African Economy

The Fast Moving Consumer Goods sector in South Africa is among the most vital contributors nation's Gross Domestic Product (GDP) and depicts the utmost reliability possible post to create employment openings and increase the country's national growth (Reggie and Boris 2012). This segment of the consumer goods pays about 36 percent of the South African work force (Econometrix 2002). On the other hand, in aspects of consumer goods, the South African market has stayed categorised as being unsuccessful and unproductive. That's why, to prosper and hold competitiveness in the marketplace, innovation and creativity is crucial to FMCGS (Jeniffer & Sylvie 2005). Oliver et al (2008) debate that organisational innovativeness promotes acceptance of change in the management structure, organisational process and strategic objectives. They suggest further that fruitful accomplishments of creative may require important productive resources or collaboration from organisation associates.

Production and manufacturing is regarded to be some of the important factors in expanding and improving fiscal growth and extension of South African (Mustapha 2010). Mustapha (2010) debated that the remarkably competitive sector and fast wavering sense of taste of the consumers and the reduced life spans of goods characterise enormous challenges facing modern manufacturing companies, claiming that the production around the globe is going through change owing to the creation of innovation abilities and improvement in the way of staying in touch which becomes very important for the manufacturing organisations to mostly focus on product design.

In the woke of freedom and democracy, ever since the African National Congress the (ANC) won the first free and fair election with the major share of votes at 62.6% (Van Den Berg, 2006). The Republic of South Africa has since been seen as a better place for all to live. The Nation has been changed in a lot of aspects, with much better access to, water, housing, sanitation and improved standards of education which is now open to everyone which was not the case before 1994 (Naidoo et *al*., 2008). Other great accomplishments involve 10% decrease in poverty statistics, an improved availability of schools and hospitals in underserved and rural locations, and more than 50 percent of all households in South Africa's getting social grants (Ngandu et *al.,* 2010). Also the Country's per capita margins grew very much to drive the economy of South Africa from the lower middle income to the elite income earners status. After democracy, the year income per individual averaged at roughly R23 300. By 2013 that portion increase by 400 percent to roughly R63 000 per annum, a compounded year increase of 8.9% per year. According to (Lings, 2014),

these stats contradict a changed real life situation. The Republic of South Africa is amongst the entire globe the most unequal countries with consistently huge unemployment rate for the last 24 years. This inequality shows other systemic and structural challenges in the South African political situation that defines the environment in South Africa wealth is not shared out and utilised evenly.

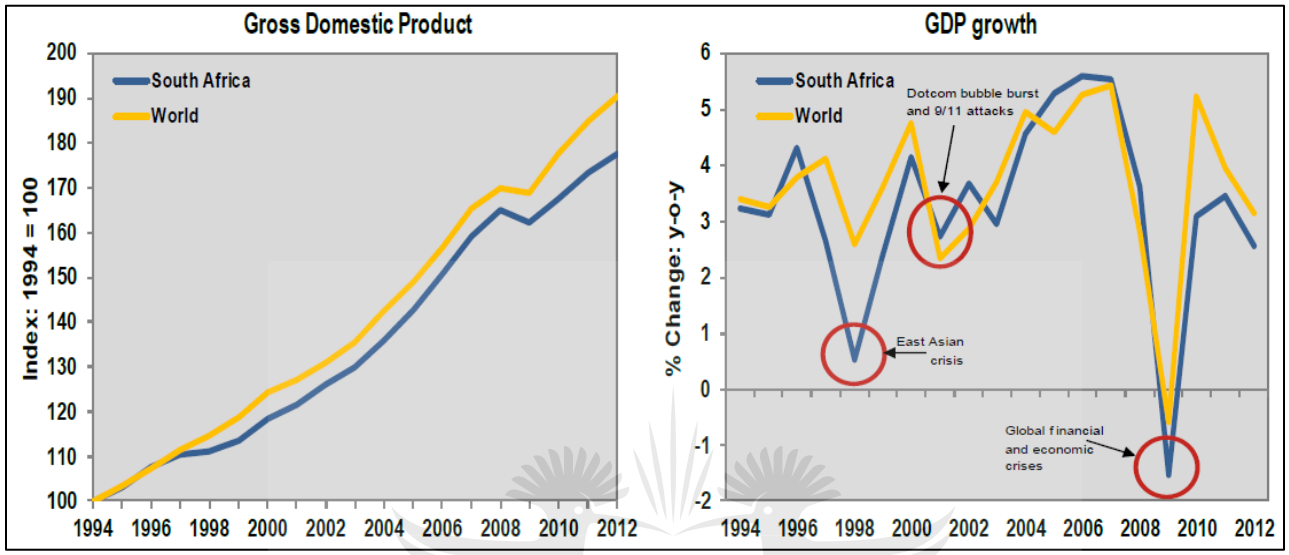

Figure 6.3 The GDP Growth since 1994 – 2012 (Lings,2014)

During this time under appraisal witness variable concerning external shocks as illustrated in the graph above, with the most noticeable being: the most spoken about East Asian problem. This time straddling the dot.com issue (2000); the 9/11 crisis in the United States of America (2001) and the successive corporate gossips in 2003 and 2003, and in recent times, the worldwide financial disaster which begun coming about in 2007, and got worse in 2008 and ended up affecting the whole world in the 2009 recession.

The economy of South Africa logged its quickest growth rates from the 1960s until 2007, with the real Gross Domestic Product (GDP) growth which usually averaged 5.3 percent per year. From a universal view, this time was seen to be a strong booming and bull-market commodities marketplace. , Nationally household intake expenditure and fixed investments action promotes economic growth substantially, and the exporting industry also contributing considerable incentive over these from 2005 all the way to 2007.

To keep things simple, the time piles showed in the following table have been selected to demonstrate that the growth is not in the same phases over the time being studied.

Table 6.2: The total South African average economic growth (Hausmann, 2003)

Average annual Growth Rates (percentage of Growth p.a)				
	1980-93	**1994-2000**	**2007-07**	**2008-12**
Gross Domestic Product (GPD)	1.4%	2.9%	4.4%	2.1%
Gross Fixed Capital Formation	-2.5%	4.5%	9.4%	3.3%
Capital Stock	1.9%	1.0%	2.3%	4.0%
Exports	2.7%	5.5%	4.0%	-2.0%
Imports	1.6%	6.7%	9.6%	2.8%
Employment	1.1%	0.5%	1.3%	-0.4

6.6 The South African Industrial Policy

From the study, it is very clear that there is a good debate regarding the stands of South Africa's business policies in the government's journey to try solve and minimise unemployment. Couple of interesting situations are given in this debated spoken by Rodrik and Hausmann (2003) and Monga and Lin (2011).

As stated by Rodrik (2006), positional reform can be understood as a procedure of self-discovery wherever creativity and innovative companies regulate what the nations competitive advantage is. They debate about the policy should support this kind of companies, because these kind of companies do bear more risk and cost than other companies who copy their work. (Lin and Monfa, 2011) further discovered that companies can find a nations comparative gain by comparing industry structures with those in countries that share similarity in the structure at the greater phases of development.

6.6.1 Inequality in South Africa Employment Market

South African inequality is at the heart at the heart of the employers workplace, in small salaries and the unemployment percentages at the maximum high (Nedlac,1998). Up to the 1970's inequality was firm and had a large on the South Africa Labour Market and this inequality in South Africa forces people to have little spending power, as over 27% of South African people are Unemployed. South Africa has still have a lot to do to address this matter of inequity as South Africa has one of the highest inequality levels which affects the growth of the country (Nedlac,1998).

6.6.2 Macro-economic Policy

The Medium Term Expenditure Framework (MTEF) is part of a vital part of the South African micro-economic policy. This sets of a national spend plan for three years in the national departments and reviews the spend projects of the national government. The Medium Term Expenditure wants to report better, improved responsibility of macro-economic management and auditing. (Vickers, 2002).

6.7 The Establishment of the Competition Policies in South Africa.

The origins of competition policy in South Africa lie with the Regulation of Monopolistic Conditions Act, 1955 (Act No. 24 of 1955). A review of the Act in the 1970s found that it had been unsuccessful in preventing a dramatic increase in oligopolies. As a result, the Maintenance and Promotion of Competition Act, 1979 (Act No.96 of 1979) was introduced and the Competition Board, tasked with administering the Act, was established (Monga and Lin; 2011).

The 1979 Act was amended in 1986 to give the Competition Board further powers, including the ability to act not only against new concentrations of economic power but also existing monopolies and oligopolies. Despite the amendments, however, it was widely recognized that technical flaws in the Act prevented the effective application of competition law on both substantive and logistical grounds (Monga and Lin, 2011).

The Competition Act is designed at discovering a rigorous context for resolving anti-competitive actions (e.g. the monopoly organisations) in the business marketplace. It gives for a less controlled, yet suitable workplace situation, which is believed critical by financier. The South African government promotes healthy competition in order to increase the productivity, development and adaptability of the economy to encourage worldwide competitiveness (Vickers, 2002).

6.8 Lessons learnt

The South African Fast Moving Consumer market is very competitive, it is an easy market to join as it does not have a lot of barriers of entrant, so a lot SMME’s do challenge the larger organisations but usually the SMME’s don’t strive long as big FMCGs companies like Mondelez, Nestle, Unilever etc. take up most of the South African market share and South African customers are always brand loyal and use trusted brands and products that are well known. Small medium enterprises need to find a niche and good affordable categories that the customers can buy into and help grow

6.10 Conclusion

South Africa has a good policy and good structure for its fast moving consumer goods industry, the rules and regulations are well developed which influences fair competition in the FMCG industry thus making the companies improve and lean manufacturing has become very important in South Africa and has results in positive returns.

CHAPTER 7

RESEARCH METHODOLOGY

This chapter summaries the research design, data gathering technique and sampling that was utilized and explains how the results from this research will be evaluated. Also, this chapter will cover the following: rationale of the study, research approach and design, the pros and cons of quantitative, research area, research setting, targeted area and respondents, research population, sample, data collection and instrument.

7.1 RATIONALE OF THE STUDY

The aim for doing this research was to speak about the issues affecting the South African Fast Moving Consumer Goods industry. The results of the study will optimistically influence the progress of Lean Manufacturing in FMCH sector especially in South Africa. In furthermore, the outcomes will provide a vivid overall understanding of lean manufacturing.

7.2 RESEARCH APPROACH AND DESIGN

Polit and Hungler (2013) and Moxham (2012) describe quantitative research as a way of analysing empirical ideas by examining the construction between variables. A variable is a component that can be copied or changed when tested (Wong, 2014). This study utilized a quantitative approach to find out, analyse and explain the issues affecting lean manufacturing in the South Africa FMCG industry. Furthermore, the competitive benefits of organisations with an established Lean manufacturing processes in South Africa were examined. The current study collected statistics through well organised questionnaire, which was overseen to the respondents by the researcher.

Yin (2013) states that they are three types of research design which can be utilized, that are descriptive, exploratory and explanatory. A descriptive research was selected in this study meanwhile it provides a rigorous explanation of the features, like, principles, skills, behaviour and data of a circumstance or group. This technique was chosen to meet the intentions of this study, which are used to determine the current situation of lean manufacturing in the South African FMCG sector, factors affecting the fast moving consumer goods industry to efficiently implement lean manufacturing for production plants additionally the competitive advantages of organisation with an established lean manufacturing processes.

What is Quantitative Research ?

Researchers who utilise quantitative research utilize new methods and quantitative methods to survey theoretical generalisations (Hoepfl, 1997), Denzin and Lincoln (1998) highlight the capacity and exploration of connections amongst variables.

A quantitative research approach allows the academic to examine challenges or thoughts that can be researched, furthermore to possibly producing theories that can be examined. Usually, quantitative studies see the universe as something which is made for observable, quantifiable statistics (Glesne & Peshkin, 1992)

Stevens (1946) mentions measurement as a duty of numbers to items or results in relation to guiding principle. As described, one may look at measurement as fundamental impartial and statistically relevant. In an easy explanation, measurement include Figures, objective or hard information. Quantitative academics try to break up and define spectacles into quantifiable or familiar classifications that can be useful to all types of topics or explain the bigger picture and similar circumstances (Winter, 2000). The techniques involve the "use of standardised measures so that the contrary to the perspective of people can fit into a limited number of predetermined response arrangements to which numbers are assigned" (Patton, 2001).

In order to do a quantitative study, an individual must develop a instrument to be managed in a consistent technique in conjunction with prearranged procedures. Though, it should be ensured that the measuring instrument regulates what it intend to analyse. In the all-inclusive sense, conveying a test or the validity of a tool is very vital. The importance of this evaluation is making sure reliability or repeatability of the result.

The challenges and benefits of the quantitative method, as described by (Crocker and Algina (1986),are mentioned as followed. The advantages of quantitative research are that they are a greater sample and amounts regularly create the conclusions from quantitative study generalizable. Numerical methods mean that the research is regularly well thought-out, dependable and appropriate for situations where systematic, consistent evaluations are need. The challenges of quantitative studies are that they don't always provide the correct idea on the complete complexity of human encounter, it can reveal to what degree but cannot always examine why or how and may give an incorrect imprint of reliability in a sample

7.2.2 Exploratory descriptive design

This research was looked into because it addressed the issues affecting lean manufacturing in the South African FMCG industry. Furthermore, it looks at the factors affecting lean manufacturing and the effects of these factors on the fast moving consumer goods. This was chosen in order to get deeper insight of fast moving consumer goods industry and the competitive benefits of organisations with established lean manufacturing processes. This research tried to recognise and define the current situation of production planning, the challenges facing production planning and the ways to mitigate the factors affecting production planning.

7.3 RESEARCH SITE

This research was conducted in Gauteng at FMCG plants Distell which are based in springs and Wadeville and also Mondelez based in Port Elizaberth PE and Woodmead. The research concentrated on professionals working at manufacturing fast moving consumer goods companies. These included operations managers, employees and other professionals involved in production. The region was selected because the researcher is familiar with the area and also, the big FMCG manufacturing firms are situated in this area.

Source: Rooms for Africa (2019)

The Gauteng and Eastern Cape Province of SA was chosen for this research as it is the country's business capital; also, young professionals starting or in the middle of their careers are moving in these every day especially in Gauteng, that's why Gauteng was selected for the current study respondents because of its diversity

7.4 RESEARCH SETTING

Data was collected from organisations which are based in springs and Wadeville and also Mondelez based in PE and Woodmead

7.5 TARGETED AREA AND RESPONDENTS

The Fast Moving consumer goods sector is an industry that consists of different procedures combined to make a product. Lean Manufacturing can be used in various industries such as Manufacturing, mining, beverages, food and automotive, and so on. The study was conducted in Gauteng And Eastern Cape, South Africa; the target production was supply chain and operations professionals that consist of operation managers, employees and other specialist who are involved in production planning. Questionnaires were emailed to the head offices and from there distributed to the sites.

7.6 SAMPLE

Wegner (1993) defines sampling as a method where an illustrative division is carefully chosen from a population to determine the features of the subset which is being investigated. Collins et al. (2000) bring to light two main principles to make sure that the select sample indicated the population. The first principle is to measure how complementary or no complementary the population is, the more comparable features the sample has and the superior the reflection of the population is. The second principle is the amount of accurateness regarding the definite population. It is vital that sampling comprises numerous elements of the population under study. Likewise, Fellows and Lui (1997) define two fundamental methods to sampling, which are random and non-random sampling.

(Fellows and Liu, 1997) mentioned that where there are indications of similarities or unbalanced arrangement of the population, then random sampling technique is a suitable option. The researcher studied the nature and features of the population thoroughly to achieve a true indication of the population which was being looked at during the study. The current study implemented a random sampling style with the purpose of investigative the specialists in the FMCG manufacturing environment. Professionals from various service providers and manufacturing businesses were chosen randomly. The investigator handed out the questionnaires to the professionals from different organisation

7.7 DATA COLLECTION INSTRUMENT

There are four different techniques commonly used to collect primary data: interviews, observation, schedules and questionnaires. Kothari (2005) and Seaman (1992) defined information gathering as a strategy utilized to collect data. A questionnaire was designated as a information gathering instrument for the study. A questionnaire was accepted in this study with closed ended questions, which presented the respondents with choices to select from when carrying out the questionnaires. This study adapted a closed-ended questionnaire since it is simpler to understand and analyse the data from respondents.

The questionnaire consisted of six sections, namely A, B, C, D, E and F.

- Section covers on biographic and Backgroup information, for example, gender, age, education or level of employment, amongst others.
- Section B sought to establish the current situation of Lean Manufacturing in FMCG industry in Gauteng and Eastern Cape province of South Africa.

- Section C investigates companies operational performance related to lean implementation
- Section D explores the barriers preventing lean manufacturing in the FMCG Sector
- Section E observed the Benefits related Lean Manufacturing and how it can be implementation
- Section F of examined the critical success factors of lean implementation

Out of the 100 copies of the questionnaire sent out, 75 and 25 were unuseable questionnaire were received back which represents an 85 per cent response rate. These shaped the foundation of this research as shown in the Table 6.1 below. This response rate was take into consideration as satisfactory for analysis based on the study by Moser and Kalton (1971) who indicate that the survey outcome may possibly be described as biased if the response rate is lower than 30 to 40 per cent.

Table 7.1: Questionnaire survey

Survey Responses	Respondents
Questionnaire which were distributed	100
Questionnaire which were obtained back	75
Useable questionnaire	25

Before analysing the data collected it was first screened. Frequency of analysis of the raw data was then done using the Statistical Package for Social Sciences (SPSS).

7.8 PERIOD OF DATA COLLECTION

The researcher gathered the data from August to October 2019.

7.9 MEAN ITEM SCORE (MIS)

This study used a five-point Likert scale to establish the view of respondents concerning the production plan, the current situation of food supply in the Gauteng province of South Africa and the competitive advantages of companies with an established production plan. The scales used for this study were:

- Strongly disagree (SD)
- Disagree (D)

- Neutral (N)
- Agree (A)
- Strongly agree (SA)

Another scale used was as follows:

- No effect (NE)
- Minor effect (ME)
- Neutral (N)
- Significant effect (SE)
- Major effect (ME)

This was grounded on how a respondent scores on a which shows how important a question was to the respondent. The scores of the respondent were shown using the equation which was based on the MIS index (five-point scale) given by all the respondents as a proportion of the sum of all maximum possible scores on the five-point scale. Below is the MIS index calculation for each item:

MIS = 1n1 + 2n2 + 3n3 + 4n4 + 5n5 …… Equation 1.0 ΣN

Where:

n1 = Number of respondents for 'Strongly disagree' or 'No effect';

n2 = Number of respondents for 'disagree' or ''Minor effect';

n3 = Number of respondents for 'neutral'; 73

n4 = Number of respondents for 'Agree' or 'Significant effect';

n5 = Number of respondents for 'strongly agree' or 'Major effect';

N = Total number of respondents.

7.10 DEVELOPMENT OF THE QUESTIONNAIRE

The questionnaires were based on the literature review. The supervisor at the University of Johannesburg checked and agreed with the questionnaire before it was sent. The questionnaires were typed in a simple English format (See Appendix 2: Questionnaire).

7.11 DELIMITATIONS OF THE STUDY

The research is limited to the validity and reliability of the questionnaire which is the data gathering instrument. The study is limited to the sample from the manufacturing sector where it was taken.

7.11.1 Data Collection Duration.

The data was collected from July to September 2019

7.12 Section A: Biographic and Background Information Analysis

This section shows the background information of the individual in terms of age,highest qualification, gender, department of work and which sector in FMCG.

7.12.1 Number of sample according to gender

The circulation of the sample according to the gender shows that 66.7 of the respondents were male and 32% were female and 1.3% were the unusable questionnaire

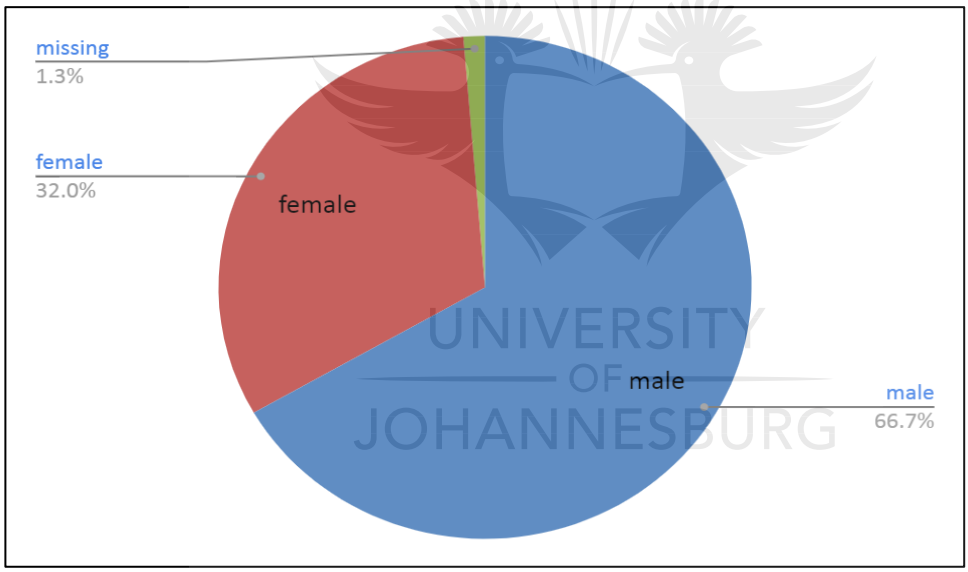

Figure 7.2: Demographics per gender of respondents

7.13. Number of sample according to age

The circulation of the sa,ple per age is shown in figure 7.2. This illustrates that ages between 18 to 24 were 4%, ages between 25 to 34 were 56% and ages between 35 to 49 were 37.3% and 2.7% age group was not indicated.

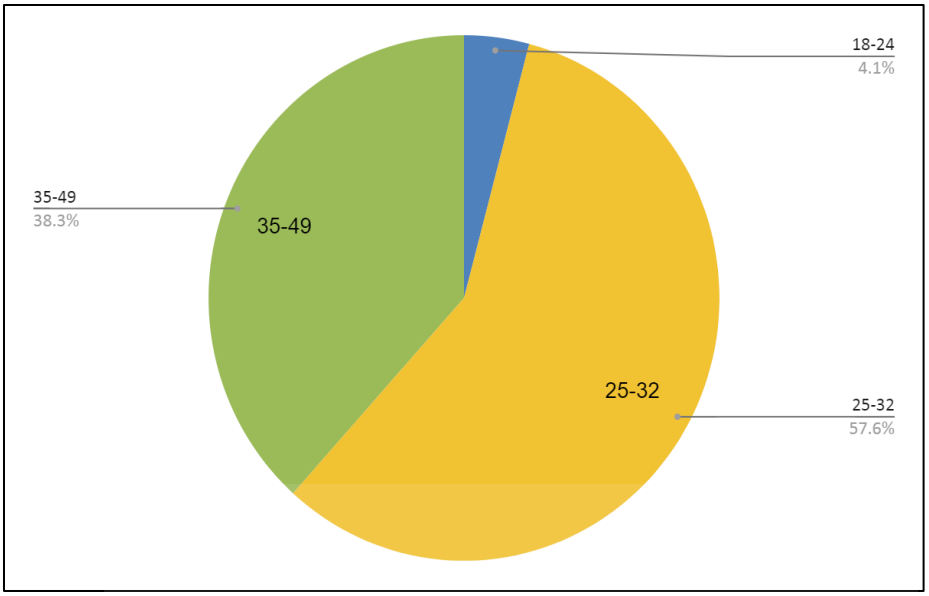

Figure 7.3: Age group of the respondents

7.13.1 Number of samples according to highest qualification

The circulation of the sample as per the highest qualification in figure 7.3. this illustrates that 21.3% of respondents had national diplomas, 38.7% had bachelors degree, 22.7% held an honours degree, 6.7% held a master's degree and 10.7% held other qualification.

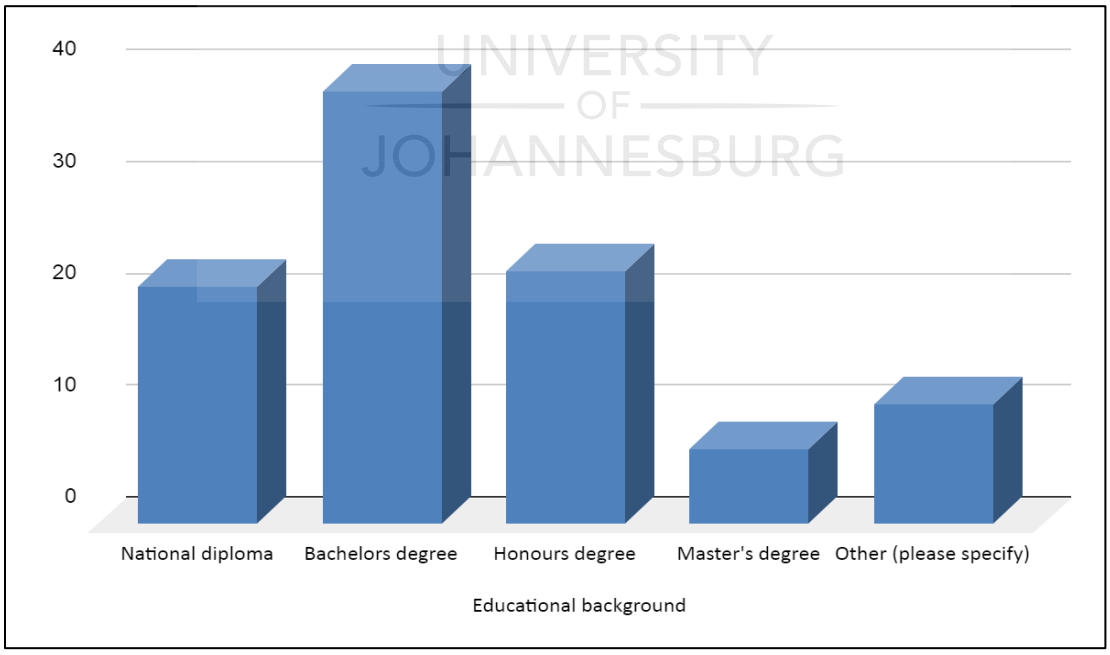

Figure 7.4: Respondents as per qualification level

7.13.2 Number of sample according to employment level

The circulation of the sample as per employment level is shown in figure 7.4. This illustrates that 38.9% are non-management employees, 20.8% percent are junior management employees, 27.8% are middle management employees and 12.5% are senior management

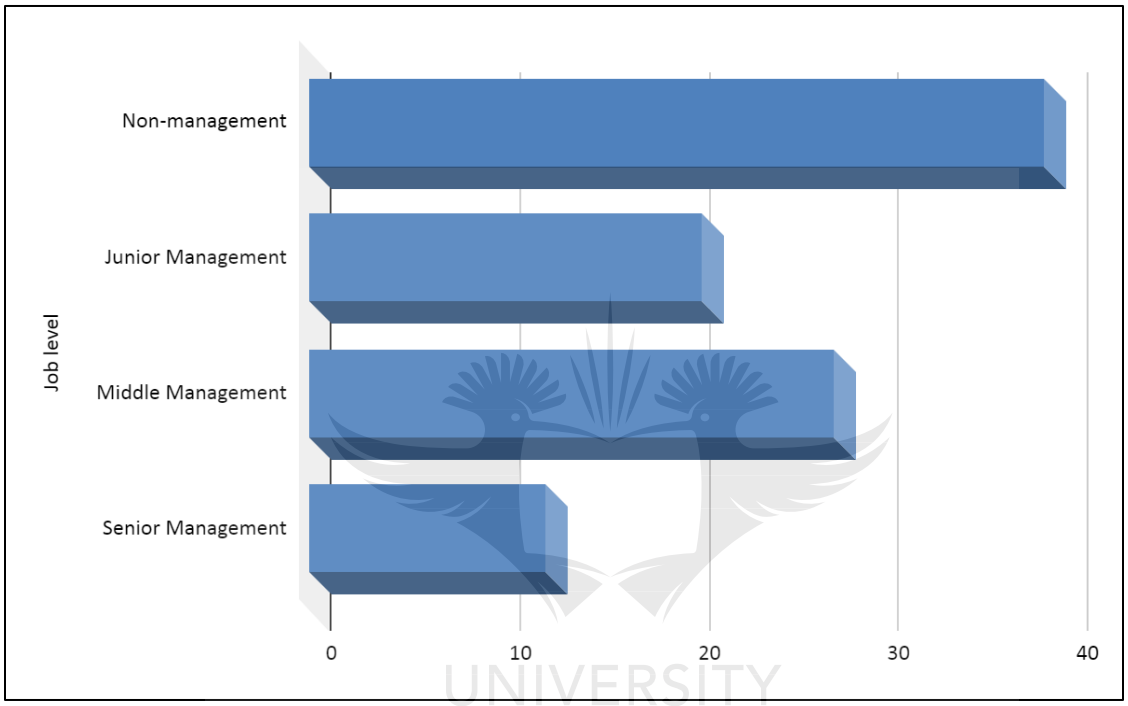

Figure 7.5: Employment levels according to Respondents

SECTION B

The results of Section B are presented in this section of the questionnaire which determines the approaches regarding the implementation of Lean Manufacturing the Fast Moving Consumer Goods sector. The mean item score of the questions, skewness in addition to the EFA of the results are presented. The descriptive results reveal the classification of all the factors from the uppermost to the bottommost with the table also showing the individual mean and standard deviation of the factors. EFA is regularly deployed in the beginning of research so as to collect facts about the interrelationships among a set of variables (Pallant, 2007). The EFA was undertaken using version 24.0 of the SPSS software. The necessary tests were performed to conclude the acceptability of the sample size for factor analysis to continue. Factor analysis (FA) is the most used statistical method (Jason et al., 2008) and is at most timed utilized in the

beginning phases of the study with the aim of collecting data about the link among a set of variables (Pallant, 2007). Pallant (2005) mentions that there is minor agreement when the sample size of factor analysis is discussed, although, he suggests a huge sample size. The Kaiser-Meyer-Olkin (KMO) quota sampling adequacy and Bartlett's test of sphericity were also utilized to test the factorability of the information gathered. Kaiser-Meyer-Olkin (KMO) quota of sampling has to be 0.6 or over whereas Bartlett's test of sphericity must be enough $p< 0.5$ for the factor analysis to be put into thought (Aghimien et al., 2018). To confirm appropriateness, the Cronbach's alpha values have be above 0.7 in order to be put into thou, although, values of more than 0.8 are more likable (Pallant,2007). The values mentioned above were used in the research. Factor analysis providers the analyser a well organised statistical technique to analyse the research obstacle. Factor analysis can be looked at as an exploratory tool that provides the researcher an organised statistical technique to analyse the research obstacle , it is useful in creating theories (Harman, 1992). The researcher can utilise the analysis to scrutinize the variables in detail, as it permits the structure of a construct to be analysed. These constructs are specific in nature and all of them belong to own set. (kelley 1950) mentions that the factor analysis and serve as an easy straightforward obstacle of description in a couple of dimensions of a proven group operating a proven manner. The kind of factor analysis in this study is confirmatory factor analysis, which is stated by Sharma(2007). Checks the extent to which the hypothesised is made of known factors and is aligned with the data. The main reason for factor analysis was to find a minimised set of factors that describes and summaries the aspects that comprise of the lean manufacturing in the South African FMCG sector. As mentioned by Sharma (2007). The yield of the analysis should be understandable and precise.

7.14. Descriptive Statistics

Simple or descriptive statistics assist summarise the data gathered in the following three ways

- Through Centrality or location (mode, mean, medium), which statisticians state this as the Measure of central tendency
- Through Dispersion the variance, range and the standard deviation – this is the spread of the data round the average.
- From side to side the measure of shape (skewness and Kurtosis) (Maree 2011:9-20).

71.4.1 Results from descriptive Analysis

The results of answers to different questions and skewness of the data are explained below:

Table 7.1 Distribution statistics on Deteriorate in quality of productions

	Mean	Std. Deviation	N
A8.1 Overproduction of the good	3.12	1.337	57
A8.2 Defects of products in the production process	3.49	1.212	57
A8.3 Holding of unrequired inventory	3.42	1.194	57
A8.4 Use of inappropriate Procedures	3.54	1.070	57
A8.5 Excessive transportation	3.25	1.090	57
A8.7 Unnecessary motion	3.23	1.118	57

The data in Table 7.1 reveals that respondents indicated that use of incorrect procedures had the highest effect with a mean of 3.54 the analysis indicates that the standard Deviation is 1.070; Defects of products in production processes scored second with a mean score of 3.49 and Standard deviation of 1.212; number three was Holding unnecessary inventory with a mean of 3.42 and standard deviation of 1.194;Excessive transportation was ranked fourth with a mean of 3.25 and standard deviation of 1.090; Unnecessary motion comes at number five with a mean of 3.23 and a standard deviation 1.118, the last on the list is Overproduction of goods with a mean of 3.12 and a standard deviation of 1.337.

Table 7.2: Distribution statistics on Lean Manufacturing Practices

	Mean	Std. Deviation	N
B6.2 Quality of feedback provided by consumers on delivery and quality is…	3.86	0.852	44
B6.4 The frequency the company contacts its suppliers is…	3.84	0.914	44
B6.5 The frequency our important suppliers deliver on just in time to our plant is…	3.75	1.184	44

B6.6 The measures the company takes to minimise the number of suppliers in all categories are…	4.05	0.834	44
B6.7 The company's utilisation of the pull production system is…	3.59	1.064	44
B6.8 The company's utilisation of the Kaban, squares, or containers of signs for the manufacturing control is…	3.66	1.010	44

The data in Table 7.2 reveals that respondents indicated that the measures the company takes to minimise the number of suppliers in all categories the highest effect with a mean of 4.05 the analysis indicates that the standard Deviation of 0.834; Quality of feedback provided by consumers on delivery and quality , scored second with a mean score of 3.86 and Standard deviations of 0.852 and number three was the frequency of our important suppliers deliver on Just In Time to our plant with a mean of 3.75 and standard deviation of 0.1.184; the company's utilisation of Kaban, squares, or containers of signs for the manufacturing control was ranked fourth with a mean of 3.66 and standard deviation of 1.010; The company's utilisation of the production system comes in last with a mean of 3.59 and a standard deviation 1.064,

Table 7.3: Distribution statistics on company operational performance related to Lean implementation.

	Mean	Std. Deviation	N
C1 The company achieved stock/inventory reduction	3.84	0.536	61
C2 The company experienced productivity improvement	3.95	0.693	61
C3 Cycle or lead time reduction was achieved	3.89	0.915	61
C4 Improved product quality was shown	3.89	0.877	61
C5 The company improved the on time delivery	3.77	0.990	61

C7 The company minimised our costs of manufacturing	3.86	0.846	65
C8 The company's margins have improved	3.75	0.771	65
C9 The company's sales have improved	3.80	0.712	65
C10 Customer complaints were reduced	3.88	0.910	65
C11 Employee complaints were reduced	3.78	1.023	65

The data in Table 7.3 discloses that respondents indicated that the company experienced productivity improvement had the highest effect with a mean of 3.95 the analysis indicates that the standard Deviation of 0.693; cycle or lead time reduction was achieved and improved product qaulity was shown, both scored second with a mean score of 3.89 and Standard deviations differ which are of 0.915 and 0.877 number three was Customer complaints were reduced with a mean of 3.88 and standard deviation of 0.910; the company minimised our cost of manufacturing was ranked fourth with a mean of 3.86 and standard deviation of 0.846; the company achieved stock/inventory comes at number five with a mean of 3.84 and a standard deviation 0.536, number six is the companys sales have improved on with a mean of 3.80 and a standard deviation of 0.712, in the 7th place is Employee complaints were reduced with a mean of 3.78 and a standard Deviation of 1.023. Furthermore in number eight we have that the company improved time on delivery with a mean of 3.77 and a standard deviation of 0.990 and in last place we have The company margins have improved with a mean of 3.75 and a Standard Deviation of 0.771.

Table 7.4: Distribution statistics on barriers preventing Lean implementation

	Mean	Std. Deviation	N
D1 Lack of top management commitment	3.53	0.672	66
D2 Obsoleted process control techniques	3.67	1.155	66
D3 Lack of resources	3.48	1.350	66
D4 Poor worker participation	3.82	0.975	66
D5 Poor project selection	3.52	1.099	66
D6 Not enough training provided	4.06	1.021	66
D7 Not enough knowledge	3.88	0.937	66

D8 Poor supplier involvement	3.88	1.170	66
D9 Internal resistance	3.97	1.123	66
D11 Variability in raw material supply and quality	3.05	1.258	66
D12 High variation of composition, goods, processing techniques and recipes	3.17	1.248	66
D13 Variety of product structure	3.02	1.060	66
D14 Short (e.g. between one to eight hours) throughput time for batches	3.08	1.194	66

The data in Table 7.4 divulges that participants designated that Not enough training provided had the highest effect with a mean of 4.06 and indicates that the standard Deviation of 1.021; Not enough knowledge and Poor supplier involvement, both scored second with a mean score of 3.88 and Standard deviations differ which are of 0.937 and 1.170 number three was poor worker participation with a mean of 3.82 and standard deviation of 0.975; Obsoleted process control techniques was ranked fourth with a mean of 3.67 and standard deviation of 1.155; Lack of top management commitment comes at number five with a mean of 3.53 and a standard deviation 0.672, number six is the Poor project selection with a mean of 3.52 and a standard deviation of 1.099, in the 7th place is High variation of composition, goods, processing techniques and recipes with a mean of 3.17 and a standard Deviation of 1.248.

Also in number eight we have Short (e.g Between one to eight hours) throughput time for batches with a mean of 3.08 and a standard deviation of 1.194 and in Nineth place we have Variability in raw material supply and quality with a mean of 3.05 and a Standard Deviation of 1.258 and in last place we have Variety of product structure with a mean of 3.02 and with a Standard Deviation 1.060.

Table 7.5: Distribution statistics on Benefits related to Lean implementation

	Mean	Std. Deviation	N
E1 Improvement of productivity	3.94	0.722	68
E2 The decrease in manufacturing costs	4.22	0.844	68
E3 Growth in market share	3.91	1.004	68
E4 Increase in profits	3.90	0.918	62

E5 Improved annual sales revenue	3.90	0.882	62
E6 Increase in growth rate in sales per unit	3.89	0.907	62
E7 Improved turnover	3.92	0.911	62
E9 Increase in growth rate in Rands	3.65	1.118	62
E10 Improved in return on investments (ROI)	3.79	1.133	62
E11 Increase in return on sales	3.77	1.151	62
E12 increase in return on assets	3.82	1.181	62

The data in Table 7.5 demonstrated that respondents indicated that The decrease in Manufacturing cost had the highest effect with a mean of 4.22 and indicates that the standard Deviation of 0.844; Improvement of productivity comes second with a mean score of 3.94 and Standard deviations of 0.722 number three was improved turnover with a mean of 3.92 and standard deviation of 0.911; Growth in market share was ranked fourth with a mean of 3.91 and standard deviation of 1.004; improved annual sales revenue and increase in profits both come at number five with a mean of 3.90 and a standard deviation that differ 0.918 and 0.882, number six is Increase in growth rate in sales per unit with a mean of 3.89 and a standard deviation of 0.907, in the 7th place is Increase in return on assets with a mean of 3.82 and a standard Deviation of 1.181. Furthermore in number eight we have Improved in return on investments (ROI) with a mean of 3.79 and a standard deviation of 1.133 and in Ninth place we have Increase in return on sales with a mean of 3.77 and a Standard Deviation of 1.151 and in last place we have Increase om Growth rate in Rands with a mean of 3.665 and with a Standard Deviation 1.118.

7.14.2 Reliability Analysis

In order to test the reliability, the internal consistency of the data collected on Lean implementation in the Fast moving consumer goods was measured by calculating the Cronbach's alpha coefficient on deteriorate in quality of productions; Lean manufacturing practices; Operational performance; Barriers preventing Lean implementation; and Benefits related to Lean implementation. Table 7.6 below presents the reliability analysis for Lean implementation in Fast moving consumer Goods.

Table 7.6: Values of Cronbach's Alpha

	Reliability Statistics		
Factors	**Cronbach's Alpha**	**Cronbach's Alpha Based on Standardized Items**	**N of Items**
Deteriorate in quality of productions	0.852	0.852	6
Lean manufacturing practices	0.828	0.828	6
Operational performance	0.886	0.896	10
Barriers preventing Lean implementation	0.897	0.898	13
Benefits related to Lean implementation	0.954	0.955	11

From Table 7.6 the Cronbach's alpha is as follows: deteriorate in quality of productions based on a 6-item scale is 0.852, Lean manufacturing practices based on a 6-item scale is 0.828, Operational performance based on a 10-item scale is 0.886, Barriers preventing Lean implementation based on a 13-item scales is 0.897 and Benefits related to Lean implementation based on a 11- item scales is 0.954. According to Tayokol and Dennick (2011), Cronbach's alpha of 0.7 to 0.9 is an acceptable value.

7.15 CONCLUSION

This chapter discussed, the research methodology used for this study, such as the data collection instruments, the research approach and design, the sample, population, the questionnaire and the delimitation of the study. The next chapter presents the data analysis and discussions and furthermore In this chapter it illustrated and analysed the outcomes of the information gathered from well-constructed questionnaires. The Chapter began off by illustrating the demographics of the respondents, then accompanied by the descriptive analysis, and factor analysis, the analysis

was based on 75 questionnaires with a 57% response rate. The analysis was conducted using tables, charts and graphs

CHAPTER EIGHT

Analysis of the Findings

The aspiration of this chapter is to analyse the outcomes from the research analysis which is aligned to the research questions, the findings are debated by pointing out the literature shown in the following chapters, 2,3,4, and 5. This is to reveal that the research questions have been answered from the data analysis shown in chapter 7. Findings are indicated in alliance to the research question and the crucial information as required

8.1 BACKGROUND DATA

In this section points out the respondents background data in relation to gender, academic background, age and professional background.

8.1.1 Background data results

The following data were gathered from the questionnaires. The descriptive analysis reveals that amongst all of the respondents , 66.7 percent of the respondents were male and 32 percent of the respondents were female. The age group of the respondents show that 4 percent of the respondents were aged between ages 18 to 24, 56 percent of the respondents were aged between 25 to 34, 37.3 percent of respondents were aged between 35 to 49 and 2.7 percent of the respondents chose not to indicate their ages

Furthermore the finds show that 38.9 percent of the respondents were non-management employees, 20.8 percent of the respondents are middle management employees and 12.5 percent of the respondents are senior management employees, when asked the educational background, findings showed that 21.3 percent of the respondents held national diplomas, 38.7 percent of the respondents held bachelor's degrees, 22.7 percent of the respondents held honours degrees, 6.7 percent of the respondents held masters degrees and 10.7 percent of the respondents held other qualifications.

8.2 RESEARCH QUESTION 1

8.2.1 Findings

Outcomes from the descriptive and from the factor analysis were utilized in responding to this research question

Descriptive analysis

From the descriptive analysis outcomes, it can be seen that 'Use of inappropriate Procedures' held the highest mean score of 3.54 and standard deviation of 1,070 whereby 'Defects of products in the production process' came out second with a mean score of 3.49 and a standard deviation of 1.212; 'Holding of unrequired inventory' was ranked number threw with a mean of 3.42 and a standard deviation of 1.194, while 'Excessive transportation' came in at fourth with a mean score of 3.25 and a standard deviation of 1.090, 'Unnecessary motion' was ranked in fifth place with a mean score of 3.25 and a standard deviation of 1.118.

In addition 'Overproduction of the good came in at sixth place with a mean score of 3.12 and standard deviation of 1.337.

8.2.2 Discussion

The South African FMCG and manufacturing industry usually have good lean manufacturing processes, however global standards of lean have now been implemented into the South African market as well, with government setting strict policies for the industry, studies show that not a lot of focus has been provided to the implements of lean principles in the Fast Moving Consumer Goods industries (FMCG). Only a hand full of research indicates application of lean in FMCG and in most cases it seem to focus on either the supplier's and customers end of the supply chain (Moyano-Fuentes & Sacristan-Diaz, 2012), the studies reveal that lean manufacturing in the FMCG is beneficial and has a lot of positive outcomes.

8.2.3 Implication of findings

The increase of volume in the FMCG sector, is an indication that the people are going for convinence products, because of the busy lifestyles of modern times, And we anticipate an

incease in health products from the FMCG sector as people are more focused in being health, due to stress, fast life and lean assists the manufacturing sector to keep up with the forever increase demand.

8.3 RESEARCH QUESTION 2

8.3.1 Findings

Outcomes from descriptive and fact analysis were utilized in responding to the research question.

Descriptive analysis

The measures the company takes to minimise the number of suppliers in all categories came first with a mean score of 4.05 and the standard deviation is at 0.834; Quality of feedback provided by consumers on delivery and quality was ranked second with a mean of 3.86 and standard deviation of 0.852; in third 'The frequency the company contacts its suppliers' with a mean score of 3.84 and a standard deviation of 0.914, 'The frequency our important suppliers deliver on just in time to our plan' was ranked fourth with a mean score of 3.75 and a standard deviation of 1.184; in fifth position 'The company's utilisation of the Kaban, squares, or containers of signs for the manufacturing control with a mean score of 3.66 and a standard deviation of 1.010.

Furthermore, ; The company's utilization of the pull production system' came in sixth place with a mean score of 3.59 and the standard deviation of 1.064

8.3.2 Discussion

Investment in equipment and technology is required to make implement of lean possible, companies need to invest highly to make lean manufacturing work, top management need to gets involved, employees need to be trained, and raw packaging of better quality. Furthermore, there have been problems such as lack of skill, training and high employee turnover. Companies need to make sure that the employees are aware of the obligations so as to guarantee appropriate processes (Iranmanesh, Zailani, Kanapathy & Tieman, 2015).

8.3.3 Implication of findings

Lean manufacturing requires huge money investments to make it work, this includes training the employees of all levels that work on the line, which means non-skilled, semi-skilled and skilled employees should all get training and skilled employees in senior positions in the FMCG industry should be encouraged to get lean six sigma belts. In the long run after organisations break even from the lean manufacturing investment and usually becomes more profitable and saves costs more efficiently.

CHAPTER NINE

Conclusion, Recommendations and Future Research Areas

Problem Statement: When LM is implement in the FMCG sectors as a tool to optimise production and a reduction in waste.

The research question helps in formulating some substance for the research problem area and also helps in assisting to solve the research problem for this study, the information gathered to address the research problems was received via a descriptive study analysis.

9.1 CONCLUSIONS

9.1.1 Conclusion for Research Objective one

The literature review revealed that they are a number of factors that add to the situation in the FMCG industry that has made lean manufacturing a tool to be used, with LM can reduce, manufacturing costs, use minimum raw material to produce, can minimise overhead cost amongst others.

Outcomes from the questionnaire revealed that without LM, production can be very expensive, wastage of raw material is high, quality is not optimum, time is not used optimally, without lean too much human intervention at the production lines which cause a lot of down time. With lean being used as a tool to improve production and quality of products. It shows that the research objective has been achieved

10.1.2 Conclusion for Research Objective two

Outcomes from that has never been published also known as primary data showed that there are a couple of factors the Fast Moving Consumer Goods industry, that meanly involves human labour costs, raw materials, machine maintenance and lean training. Human labour costs are included every of the features in manufacturing because it assists in the quality of products and humans are parts of every improvement achieved with lean. By improving employees skills with providing training, we release lean as a tool which offers optimum improvement in the manufacturing sector. Findings that were received from the questionnaire survey the respondents showed that, management involved in lean manufacturing in the organisations, employees at the floors, training facilities being provided, wastage in production, transportation, limited cost avoidance measures, high procurement costs. All these factors indicate that the research objective was achieved.

10.1.3 Conclusion for Research Objective Three

From the literature review, it was established that FMCG organisations are growing faster in the developing countries, countries such as South Africa, Nigeria and kenya amongst others, even though these countries still have difficulties with corruption and in a hard economic climate. Nonetheless it has been proven and showed that developing countries have more space for growth in the modern market, as countries most developing countries are still highly focused on traditional markets. From the questionnaire findings collected from the respondents, developing countries have more to offer, especially with the introduction of lean, profitability, growth in the market, reduction of waste has all been witnessed in the markets. Therefore, it can be deduced that the research objective was achieved.

10.1.4. Conclusion for Research Objective four

Findings from the literature review showed, that can outperform their competitors when using the Lean Manufacturing as a tool to optimise production, quality and reduce overhead costs, however Small Medium Enterprises have been questioned if the can afford to use and sustain Lean manufacturing in their organisations, the implementation of LM can be a costly process and time consuming. Employees need to be trained and involved, machinery need to be upgraded and investment in technology and goods and services, SMEs can afford to do lean, but should be patient to reap the benefits from lean. From the feedback from the questionnaire findings gathered from the respondents, it was determined that an abundance of, loyalty points, good promotional products and services, well organised transport and supply chain channels. therefore the shown research objective has been achieved. The literature showed that there are couple sources of acquiring information relating to lean as a tool to optimise the FMCG industry. The outcomes obtained from the literature were agreed with the findings of the present research. That is why, the results revealed in the current study add to the body of knowledge and give worthwhile information s that may increase what individuals know of the issues affecting the FMCG industry in Gauteng and Eastern Cape, South Africa. outcomes from the present study gave assurance research done by previous academics that the four objectives encourage lean as a tool to improve the FMCG industry in South Africa.

Furthermore, the study shows the techniques that can be utilised in the Fast moving consumer goods industry to efficiently use lean manufacturing. The present research. In addition indicated findings relating to the techniques that can have an effect on the factors influencing lean Manufacturing in the FMCG industry in Gauteng and Eastern Cape, South Africa. That is why , the study looks at some of the ways to address the factors influence the optimisation of as a tool to improve production in the FMCG industry. Findings from the empirical study shown that there are a couple of ways that an organisation can adopt in order to avoid the factors causes lean manufacturing issues . Lastly, the current study also looked at the competitive advantages organisation with LM. The findings showed that companies with an established lean manufacturing practices have competitors such as low built-up, low production expense, low expense in produces sold and low costs have been practiced comparatively enhanced performance. Hence, the South African Fast Moving Consumer goods industry can pursue the example of developed countries just like, the United Kingdom.

9.2 RECOMMENDATIONS

The research study has looked at the issues affecting lean manufacturing in the South African food FMCG industry. This was reached by recognising the important factors in FMCG and ways to improve them in order to reach optimal satisfaction, which then increases the business revenue. The procedure of lean manufacturing in the Fast Moving consumer Goods sector plays a vital role in meeting customer requirements and needs; in addition it helps in minimise the factors affecting Lean Manufacturing. As a result, the following recommendations are suggested in order to reach this goal:

- It is recommended that organise must apply re-engineering: this includes drasti measures or break-through developments to make the performance better of a organisation . It includes of the idea of clean-slate approach or starting from scratch in redesigning the business processes
-
- Similarly, it is recommended to carry out a master production schedule, itprovides a connection concerning predicting, order entry, manufacture scheduling and as well as an in-depth process of organising basic materials. Companies that use MPS helps maintain a constant and effective scheduling as well as controlling manufacturing processes.
- It is also recommended to implement sales and operations planning. Its key perseverance is dual: to maintain equilibrium between supply and demand and to build up connections amongst the organisation or tactical strategy and the functioning strategies of the firm.
- In addition, ERP is also an important concept which is a combination of activities throughout serviceable areas with enhanced task flow, regularity of numerous organisational rehearses and admission to actual-time that everything happens. However, putting into effect ERP systems can be a thought-provoking, may take time and costly task for any organisation since they are complicated.

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Appendix: COVER LETTER of the Questionnaire:

Dear sir/ Madam

The Faculty of Engineering and Built environment of University of Johannesburg is conducting research on lean manufacturing as a tool for competitive advantage in the South African Fast Moving consumer goods industry. To this end, we kindly request you to spare few minutes of your time to complete the following questionnaire. The questionnaire is anonymous (you do not have to provide your name) and the confidentiality of the information you provide will be protected (it will not be shared with others). Please provide honest answers and if there is a question you feel uncomfortable answering you may leave it blank..

The survey consists of four sections and should not take you longer than 20 minutes to complete. Please read carefully and indicate the extent to which you agree with the statement by marking the response option which best represents your view. The information you provide will remain strictly anonymous and confidential.

I thank you so much in advance for your cooperation in this matter. Should you require more information please feel free to contact us tumelomatinga@yahoo.com or 0843132315.

Thank you in expectance of your response

Yours sincerely

Tumelo Owen Matinga

Student no: 201042945

University of Johannesburg

APPENDIX 2: SAMPLE OF QUESTIONNAIRE

SECTION A: BIOGRAPHIC AND BACKGROUND INFORMATION

This section covers biographic and background information. Please mark your response with an X. Remember your response is anonymous.

A1. Gender

Male	Female

A2. Please indicate your age group

18-24	25-34	35-49	50-70	Other, specify

A3. Please state which of the following is the highest educational or professional qualification you have obtained (if still studying, select the highest qualification obtain to this point).

National diploma	
Bachelor degree	
Honours degree	
Master's degree	
PhD degree	

Other (please specify)	

A4. What is your job level in the company?

Non-management	
Junior Management	
Middle Management	
Senior Management	

A5. Which of the following sectors does the company you work for operate in? (Mark all applicable)

Retail sector	
Quality and operation sector	
Fast moving consumer goods	
Agricultural sector	
Wholesaler	
NGO	
Other (Please specify) MINING	

A6. Which industry (or industries) does the company you work for operate in? (Mark all applicable)

Processed foods sector	
Beverages sector	
Dry goods sector	
Cosmetics sector	

Snacking sector (candy, chocolate, gum etc.)	
Consumer electronics sector	
Office supplies	
Dry goods	
Prepared meals	
Other(mining)	

A7. In which department do you work or provide your speciality?

Procurement	
Customer services & logistics	
Corporate governance	
Finance	
Research, development and quality	
Marketing	
Human resources	
Help desk	
Machine operator	
Audit and taxation	

A8. To what extent is each of the following a cause of deterioration in quality of products in your organisation?

Cause	To no extent	A small extent	A moderate extent	A large extent	A very large extent
1. Overproduction of the good					
2. Defects of products in the production process					
3. Holding of unrequired inventory					
4. Use of inappropriate Procedures					
5. Excessive transportation					
6. Long waiting periods					
7. Unnecessary motion					

SECTION B. LEAN MANUFACTURING PRACTICES

Need to add in some basic questions here:

B1. Has your company implemented lean manufacturing practises?

Yes	No

B2. If yes B1, when was lean implemented?

2012

B3, If yes B1, how satisfied is the company with implementation?

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied

B4, If no B1, what is the likelihood the company will implement lean? Use Not at all likely, A little likely, moderately likely, Highly likely scale

Extremely unlikely	Unlikely	Likely	Extremely likely	Don't know

B5. To what extent do you agree with the following statements regarding the use of lean manufacturing practices when considering your company?

Please use the following scale: 1=Yes 2=No, 3=Don't know

NO		**Description**	**1**	**2**	**3**

1	Customers	We usually are in close contact with the customers			
2		Our consumers provide feedback on delivery and quality			
3		We continuously do customer satisfactions surveys			
	supplier related	We usually are in contact with our suppliers			
		Our important suppliers deliver on just in time to our plant			
		We take active measures to minimise the number of suppliers in all categories			
4	internally related	We utilise the pull production system			
5		We utilise the Kaban, squares, or containers of signs for the manufacturing control			
6		Production at the plant is pulled by the current demand of the next plant			
7		Goods are put into groups with similar processing requirements			
8		Goods are put into groups with similar routing requirements			
9		Goods categories tell our factory layout			
10		We are working on reducing the set up times in our plant			
11		We look closely to our manufacturing cycle time to reply speedily to customer requests			
12		Our workers practice setups to minimise required time			
13		Our processes on the plant floor are at the moment under statically process control			
14		We always utilise methods to identify process variations			
15		We utilise charts to bring to light defect rates on the plant floor			

19	Employee involvement	Plant floor workers undergo cross functional training			
20		Plant floor workers are very important to problem solving and brainstorming teams			
21		Plant floor workers lead process/product improvement moves			
23	Total productive Maintenance	We have preventive maintenance schedule in our plant			
24		We dedicate a time every day to schedule equipment repairs related activities			
25		We always post equipment maintenance records on the plant floor			

B6. Below is a set of attributes and activities of a company. Please rate how well your company does each activity or rates for the attribute.

	Very poor	Poor	Average	Good	Excellent	Not applicable
Closeness of contact between the company and customers is…						
Quality of feedback provided by consumers on delivery and quality is…						
The frequency the company does customer satisfactions surveys is…						
The frequency the company contacts its suppliers is…						
The frequency our important suppliers deliver on just in time to our plant is…						
The measures the company takes to minimise the number of suppliers in all categories are…						
The company's utilisation of the pull production system is…						

The company's utilisation of the Kaban, squares, or containers of signs for the manufacturing control is…						
The company's practise of production at the plant being pulled by the current demand of the next plant is…						
The company's practise of putting goods into groups with similar processing requirements is…						
The company's practise of putting goods in groups with similar routing requirements is…						

SECTION C. COMPANY OPERATIONAL PERFORMANCE RELATED TO LEAN IMPLEMENTATION

C1. Please indicate the operational performance realized due to implementation or without the implementation of lean manufacturing practices in your company

Please use the following scale: 1= strongly disagree, 2= moderately disagree, 3=neither agree nor disagree, 4= moderately agree, 5= strongly agree.

Improved operational performance realised		**1**	**2**	**3**	**4**	**5**
Operational Performance	The company achieved stock/inventory reduction					
	The company experienced productivity improvement					
	Cycle or lead time reduction was achieved					
	Improved product quality was shown					
	The company improved the on time delivery					
Other Benefits	The company minimised its scrap rate					
	The company minimised our costs of manufacturing					
	The company's margins have improved					
	The company's sales have improved					

	Customer complaints were reduced					
	Employee complaints were reduced					

SECTION D. BARRIERS PREVENTING LEAN IMPLEMENTATION

D1. Please indicate the extent to which each of the following was a barrier to the implementation of lean manufacturing practices:

Please use the following scale: 1= not a barrier, 2=slight barrier, 3=moderate barrier, 4= strong barrier, 5= very strong barrier.

Barriers of lean practices implementation	**1**	**2**	**3**	**4**	**5**
Lack of top management commitment					
Obsoleted process control techniques					
Lack of resources					
Poor worker participation					
Poor project selection					
Not enough training provided					
Not enough knowledge					
Poor supplier involvement					
Internal resistance					
Poor delegation from top management					
Variability in raw material supply and quality					
High variation of composition, goods, processing techniques and recipes					
Variety of product structure					
Short (e.g. between one to eight hours) throughput time for batches					
Extra-long set up times between all the products					
Lack of separation of packaging and processing for food quality assurance					
Lack of sequence dependent clean time for processing equipment					
Factories are too large with too many employees					

SECTION E. BENEFITS RELATED TO LEAN IMPLEMENTATION

E1. Implementation of lean manufacturing can have potential benefits. Based on your experience indicate the extent to which each of the following has been a benefit of the company implementing lean manufacturing practises:

Please use the following scale: 1= Not a benefit, 2= Small benefit, 3=Moderate benefit, 4= Strong benefit, 5= Extremely strong benefit.

No		**Extent has been a benefit**				
		1	**2**	**3**	**4**	**5**
1	Improvement of productivity					
2	The decrease in manufacturing costs					
3	Growth in market share					
4	Increase in profits					
5	Improved annual sales revenue					
6	Increase in growth rate in sales per unit					
7	Improved turnover					
8	The decrease in total cost of manufacturing					
9	Increase in growth rate in Rands					
10	Improved in return on investments (ROI)					
11	Increase in return on sales					
12	increase in return on assets					

SECTION F. CRITICAL SUCCESS FACTORS

F1. Below are some factors considered to be critical for the successful implementation of lean manufacturing practises in a company. Based on your experience, please rate how influential each factor was for implementation of lean in your company

Please use the following scale: 1= Not at all influential, 2= A little influential, 3=Moderately influential, 4= Highly influential, 5= Completely influential.

Critical success factors	**1**	**2**	**3**	**4**	**5**

Organisational culture					
Skill of the workforce and in-house expertise					
Company financial strength					
Leadership and management					

We appreciate your support in participating in this important questionnaire, thank you.