UNIVERSITY OF KWAZULU-NATAL

THE ECONOMIC IMPACT OF PHARMACIES IN MAPUTO, MOZAMBIQUE

By

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DECLARATION

I, Jeremias Salomão Sitoi, declare that

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ABSTRACT

The pivotal role of SMEs in fostering economic growth and job creation is globally apparent, and more crucial in low income countries. This study focused in quantifying the economic impact of pharmacies in Maputo, employed a quantitative cross-sectional questionnaire based methodology, with an economic multiplier technique. From an estimated 145 functional pharmacies in Maputo, a probabilistic sample of 106 pharmacies with a 5% margin of error was randomly chosen. Two clusters were analysed namely; the municipality districts and the pharmacy franchises. Such distinction; not only aided in better understanding the pharmacy's economic impact amongst the municipality geographic areas, but also the role of their population's income, their marginal propensity to consume, and the economic nature of pharmacy franchises.

The economic impact of pharmacies was set as a function of pharmacy's activity expenditures; magnified by an economic multiplier or local premium coefficient. Such expenditure were represented by three independent variables namely; direct employment or income impact, expenditure profile or expenditure impact, and tax revenue or tax impact. The sampled pharmacies generated an estimated 723 direct jobs, worth about MZN 7.78 million in monthly salaries and wages. Expenditure profile which represented the typical pharmacy's operational expenditure excluding salaries, wages and taxes, was estimated to an annual value of MZN 9.13 million; whereas the annual tax (income and corporate) revenue was about MZN 3.63 million.

The average local premium or economic multiplier was estimated to about 3.89; which meant that for every metical generated by pharmacy's activities, it added 3.89 times the value to the local economy. When applying the economic multiplier to the sample expenditures estimates; it yielded an average sampled economic impact of about MZN 422.58 million (ZAR 112.39 million or USD 8.01 million).
When inferring the sample results to the population of functional pharmacies in Maputo, the estimated total economic impact was worth about MZN 578.06 million (ZAR 153.74 million or USD 10.96 million); which represented 0.12% of the country's GDP with each individual pharmacy contributing an average of MZN 3.99 million (ZAR 1.06 million or USD 0.076 million). Finally, the employment or income impact represented 88% of the overall impact share, 9% was attributed to the pharmacy's expenditure profile and 3% to the related tax expenditures.

The economic impact of pharmacies in the city of Maputo was apparent. It was also evident from respondents feedback that such pharmacy activities and their inter-related economic value chains were in inception phase, therefore demanding more formal and clear governance structure from the related authorities, so that the associated expenditures were able to more effectively re-cycle throughout the economy with an increasing yielded value and impact to the local economy.

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GLOSSARY

Terms and Abbreviations

Term | Abbreviation	Description
AMIBA	American Independent Business Alliance
CPI	Consumer Price Index
EAC	Economic Activity Code
EU	European Union
GDP	Gross Domestic Product
IFC	International Finance Corporation
ILO	International Labour Organization
INE	National Institute of Statistics
NISS	National Institute for Social Security
NCHA	National Council on HIV/Aids
OECD	Organization for Economic Co-operation and Development
SSA	Sub-Saharan Africa
R&D	Research and Development
UBC	University of British Columbia
USA	United States of America
VAT	Value Added Tax

Definitions and Explanations

Item	Definitions | Explanations
-	Between years; months or numbers (for example 1997-2007; January-December; 01-06) to indicate the years; months or numbers covered, including the beginning and ending years; months or numbers.
/	Between years or months (for example 1997/1998 or March/February) to indicate a fiscal or financial year, or denotes coverage of both periods.
2010=0	Denotes the base year, and in this study indicates that the CPI values have 2010 as the base year.
City or Maputo	Refers to the city of Maputo unless otherwise stated
Dollar Sign ($ or USD)	All references to dollar (USD) is the United States of America dollars; with the Central Bank of Mozambique exchange rate of 52.75 MT/USD as of 24th, November 2015 publication, unless otherwise stated.
Expenditure Profile	Denotes a typical pharmacy's expenditure pattern excluding salaries and taxation which are in this study treated separately; unless otherwise stated.
n/a	Indicates that the variable value is not applicable to the entry.
Non-Group	Refers to a single private owned pharmacy, contrary to the other named franchises which possess more than one pharmacy. The Non-Group pharmacies are comprised of twenty-six single owned pharmacies
Rand Sign (ZAR)	All references to rand (ZAR) is the South African rand; with the Central Bank of Mozambique exchange rate of 3.76MT/ZAR as of 24th, November 2015 publication, unless otherwise stated.

CHAPTER ONE: Introduction

1.1 Introduction

In this cross sectional study, the economic impact of pharmacies in Maputo was quantified. Such economic impact was set as a function of the direct expenditure stream from pharmacy's activities, magnified by the economic multiplier or local premium coefficient. A quantitative questionnaire based methodology was deployed in conjunction with the economic multiplier technique; to a probabilistic sample of 106 pharmacies within an error margin of 5%. Two clusters within the sample were explored namely; the municipality districts and the pharmacy franchises.

Such distinction in the sample, aided in better understanding of the pharmacies economic impact amongst the municipality's geographic areas, as well as the role of its population income, their marginal propensity to consume, and the economic nature of pharmacy franchises.

In the study, the pharmacy's direct expenditures were categorized in three variables namely; direct employment or income impact, expenditure profile or expenditure impact, and tax revenue or tax impact. Based on the sample size, it was estimated about 723 direct pharmacy jobs within pharmacies payroll, which generated about MZN 7.78 million monthly in salaries and wages. The second variable which was comprised by license fees, municipality dues, insurance, social security, and fire extinguisher related expenditure; was quantified to a valued of MZN 9.18 million a year. Lastly, tax revenue was derived from the employee's income tax and pharmacy's corporate tax; to an estimated sample value of MZN 3.63 million a year.

With the sample variables estimated, the study computed the economic multiplier coefficient, which was a function of the marginal propensity to consume based on the monthly income and the average family expenditure budget, the tax rate, and the income retention rate, to an estimated average value of 3.89. This meant that for every metical generated by pharmacy's activities it added about 4 times the value to the local economy. Thus, the sample average economic impact was estimated to about MZN 422.58 million; and when inferred to the population of 145 city's pharmacies, it yielded a total economic impact of about MZN 578.06 million; with an average of MZN 3.99 million per pharmacy.

1.2 Background and Rationale

The Mozambican economy remained one of the most dynamic on the continent with growth rates above 7% since 2010, far exceeding the world average and those of the Sub-Saharan African region; which were estimated at 4.6-4.9% for the 2011-2014 period (World Bank, 2014). According to INE (2007), the country holds a low income status economy with an unemployment average rate of 16%, and the capital city of Maputo had the highest rate of about 40%. The INE (2007) also noted that the unemployment in Mozambique was more acute in urban areas compared to rural, with rates of 31% and 12.9% respectively.

The role of SMEs in generating employment and fostering economic growth is undisputable, however in Mozambique and Maputo in particular such magnitude of economic relevancy was unknown. The city of Maputo possesses more than one third of all operational pharmacies of the country and yet, the economic role of such entities was not translated into a monetary figure. This is why it was relevant to solve this problem and quantify such economic role of pharmacies, as a first step for future estimation of the entire pharmaceutical industry value chain. These estimations or attributions of monetary figures are important indicators of the Macro-economic relevancy of such business and the required strategic policies and structural governance thereafter.

1.3 Problem Statement

Despite the role of SMEs in generating employment and their critical contribution for the sustainability of economic growth in general, and in particular for those of developing countries; in Mozambique the actual quantification of such economic impact to the local economy was largely uncertain. The absence of quantifiable economic impact, had hindered investments as well as the establishment of effective and efficient structural policies and related governance structures at local levels. This fact was also true for pharmacies in Mozambique and particularly those in Maputo, which counted for over one third of the total country's units (INE, 2009).

The pharmacies impact to local economies such as the city of Maputo is measured by the local premium or economic multiplier, which portrays how much value of a unit of currency spent or derived from pharmacy's activities, recycles or multiplies in value throughout the local economy. Without a clear quantification of such indicator, neither the economic value or impact of pharmacies to the city of Maputo will be known, nor the related contributions of employment, expenditures profile, and tax revenue may be used in policy conceptualization or related macro-intervention including investments in such related SME niche or in the overall pharmaceutical industry.

The absence of a quantitative value to measure the role and impact of pharmacies in the local economy, thus constituted a constraint for adequate interventions in the related industry.

1.4 Aim of the Study

The study is focused on the quantification of the overall economic impact of pharmacies to the local economy of the city of Maputo. To achieve this aim, their direct impact in terms of income from jobs, expenditures profile and taxes are first estimated; which are then magnified by the local premium or economic multiplier coefficient estimated thereafter, to derive the related economic impact. The sum of each of the economic impacts and its inference to the overall population; will yield the total economic impact of pharmacies to the city.

1.5 Research Questions

This study, focusing on pharmacies was sought to quantify the overall economic impact of their activities to the local economy of the city of Maputo in the year 2013, and to achieve such aim the following research questions were set:

a) What is the size of the direct impact of pharmacy's activities?
b) What is the pharmacy's local premium or economic multiplier for the city of Maputo? and
c) What is the overall magnitude of the economic impact or contribution of pharmacies to the local economy of the city of Maputo?

1.6 Research Objectives

In order to answer the above questions, the study set the following research objectives:

a) Quantify the direct impact of pharmacy's activities
b) Quantify the pharmacy's local premium or local economic multiplier for the city of Maputo; and
c) Quantify the overall magnitude of the economic impact or contribution of pharmacies to the local economy of the city of Maputo

1.7 Motivation for the Study

The dynamic growth of the Mozambican economy which has been steady since 2010 as one of Africa's best rates on the one hand; and the pivotal role of SMEs as fosters of economic growth and job creation in low-income countries which was estimated at about 80% (de Kok, Deijl, and Veldhuis-Van Essen, 2013) on the other, triggered a need to quantify the economic contribution of an individual SME niche which pharmacies in Maputo represented. The quantification of pharmacies role in the economy of the city of Maputo was thus crucial, due to its status of hosting 40% of the country's urban population; 20.2% of its GDP (Venture, Pazero, Hoeflich, Bennaton, and Llop, 2013); 21.2% of its economic entities; 27.8% of its companies and 30.27% of the nation's operational pharmacies (INE,2009).

Employment generation or full employment is one of the key macro-economic objectives of the Mozambican government with emphasis on youth employment, taking into account the 31% national unemployment rate being 36.8 % within the 15 to 19 years of age group (INE, 2013b). It was also imperative to ascertain the employment contribution of pharmacies as part of the larger SME's group, which was argued by Daniels (1994) to employ about 22% of the adult population in developing countries.

The establishment of a monetary value to such SME group which pharmacies represented, will most likely take the industry relevance to the right policies and structural governance required to boost its related business, and the aggregated economic benefits to the city of Maputo and beyond.

1.8 Significance and Limitations of the Study

1.8.1 Significance of the Study

The key importance of quantifying and understanding of fiscal and economic macro variables such as tax revenue, employment generation, and expenditure levels are undisputable. This study did it for a SME niche which pharmacies represent in Mozambique, and in particular for the city of Maputo hosting 30.27% of all national pharmacies (Sitoi, April 10th 2015).

By quantifying the magnitude of the local premium or economic multiplier, the study attributed an economic meaning and relevance to the expenditures generated by pharmacies direct activities; hence its position and role in the entire city's economy, which otherwise wouldn't be available. The estimations displayed in this study, ought to be the first of the king in Mozambique (based on the conducted research), will serve as foundations and a benchmark in the local industry and in futures related studies.

With such quantitative evidence, policies and governance may be drawn to foster not only the pharmacy's role and contributions, but also the entire pharmaceutical value chain economic impact to the city of Maputo and beyond.

1.8.2 Limitations of the Study

Due to data and information constraints, the research only quantified the direct economic impact of pharmacy's in the city of Maputo in three categories namely employment or income impact, expenditure profile or impact of expenditures generated from operational activities, and tax revenue or tax impact, within municipality districts and pharmacy franchises viewpoints.

Thus, the research scope didn't include estimates of the city pharmacy's induced impact in terms of the number of jobs generated in other local firms due to expenditures by pharmacy's work force, the indirect impact to analyse the role of pharmacies expenditures or purchases in creating jobs in other firms, the revenue impact to access how the money

generated from pharmacy sales add value to the city's economy, and lastly the influenced impact to access how important are the city's pharmacies in attracting clients from other geographic areas, or how they influence other areas in approaching the city of Maputo to use its pharmacies.

Due to the above reasons, the study targeted only pharmacies as an entity to assess their impact in the local economy, and didn't incorporate herbalists and the entire value chain of pharmacies relative and supporting entities such as warehouses, freight forwarders, importers, exporters, distributors, regulators, manufacturers and others relate; which would have been relevant to assess the induced and indirect impacts.

Due to the high unemployment rate in the City of Maputo, the study considered pharmacy workers as the sole income earner in their families and not the overall possible family monthly income to contrast the estimates of the average family monthly expense budget.
The research was also constrained by the lack of a wider studies relating to multiplier based pharmacy's economic impact, which was more acute (none) for Mozambique and the City of Maputo. Notwithstanding this fact the research contemplated eight (8) multiplier based local economic impact past studies, from which three (3) addressing pharmacies, and an universe of economic impacts for six (6) economic sectors.

1.9 Chapter Outline

From the introductory chapter one where the background, problem statement, aim of the study, research questions and objectives, motivation, significance and limitations of the study are presented; the study is also comprised by the following chapters and brief content:

- Chapter Two | Literature Review

  This chapter critically assesses the available literature to the context of the research. It starts by presenting the economic role of SMEs; and then reviews the economic nature of pharmacy's activities in terms of the related value chain; its cost profile and its goods and services demand determinants. The chapter ends with the assessment of the direct, indirect, induced, income, revenue, tax, and influenced economic impacts of pharmacies; as well as the local premium or economic multiplier.

- Chapter Three | Research Methodology

  In this chapter how the research objectives are materialized is unveiled in terms of the methodology employed. The chapter starts with a synopsis of research methodology, then presents the research objectives and links them to a methodology, data and data collection strategy required to attain the established objectives.

- Chapter Four | Presentation of Results

  This chapter starts by presenting the sample research results for the three variables namely employment, expenditure profile and tax; in the municipality districts and municipality pharmacy franchises perspectives. Thereafter such results are inferred to the pharmacy population to obtain the total direct economic impact of pharmacies in the city of Maputo.

- Chapter Five | Discussion of Results

  The chapter discusses findings from the previous chapter in the context of similar studies and the overall body of knowledge from the literature.

- Chapter Six | Conclusion and Recommendation

  This last chapter presents the research conclusions based on the actual research findings, and ends with recommendations to increase the economic value or impact of pharmacies to the city of Maputo.

1.10 Summary

The quantification of the economic impact of pharmacies in the city of Maputo was achieved in this study, which gave to this category of SMEs an economic indicator prone to in the future, aid macro-policies and regulations aiming at advancing its local economic role.

The research is believed to be relevant and the first in this area, therefore, with large contribution to the body of knowledge in Mozambique, particularly to pharmacies and the pharmaceutical industry at large.

The next chapter contextualizes this study with similar studies and available literature.

CHAPTER TWO: Literature Review

2.1 Introduction

In this research, the economic impact of pharmacies in Maputo was quantified in detail. This section reviews the related literature which constituted the building blocks for results analyzes and discussion thereafter. As per Davis (1990), economic impact was defined as the prediction or explanation of a change to various measures such as spending; income and employment of a local economy, after the introduction of a change or new element such as in this study the pharmacy and its related activities.

2.2 The Economic Role of Small and Medium Enterprises (SMEs)

The role of SMEs in the economy of any nation is indisputable; and they largely contribute to the key macro-economic objectives such as employment. They often constitute the building blocks for technological innovation and product development of our present global world. The importance of SMEs for developing countries such as Mozambique is emphasized by Hussain et al (2012), who stating that they accounted for more than 90% of all firms outside the agricultural sector.

The above importance was also qualified by Gabriel (2005), who distinguished the economic role of SMEs not only in the "Static Front" by their contribution to output and to the creation of "decent" jobs; but also in the "Dynamic Front" as they acted as nurseries for the larger firms of the future. Further, Gabriel (2005) also indicated that the next step or role for SMEs was in the expansion of Micro-enterprises which contributed directly and often significantly to aggregate savings and investments, as well as in their role in the development of appropriated technology. Gabriel (2005), also gave an example of Taiwan, as the most successful developing country over the past 50 years, which was built on a dynamic SME sector, producing a record breaking growth at the time and significant low level of inequality.

Tadesse (2009), pointed out a huge constraint facing SMEs, and stated that though they might account for the bulk of firms and employment in Sub-Saharan Africa (SSA), yet

they contributed very little to GDP. The reason was according to Tadesse (2009), partially due to financing constrains. Brusco (1992:17) strongly highlighted and reinforced the economic role of SMEs arguing that:

"Small business are likely to be more resilient to depression and to offer a steadier level of employment than large ones; their activities and locations are diverse, they depend on a wide variety of sources and types of raw materials, and their owners,…if only for the want of any alternative, are likely to stay in business and maintain at least some activity and employment in conditions where foreign investors would have closed their factories".

The role of financial intermediation in the SMEs business in most African economies was characterized by Tadesse (2009) as at low levels, with week capital markets which couldn't effectively supply the financial resources and other products needed by the private sector and in particular for SMEs which generally lacked scale, collateral and the relationships for formal financing.

According to Tadesse (2009), such constraint was partly reflected in the ratio of liquid liabilities to GDP, which averaged 32% in Africa, compared with 49% in East Asia and Pacific and 100% in high-income countries. Similarly, the ratio of private credit to GDP averaged 18% in Africa, compared with 30% in South Asia and 107% in high-income countries, whereas the ratio of private credit to GDP averaged 11% in low-income countries in Africa but 21% in low-income countries outside Africa (Tadesse, 2009).

Table 2.1 below illustrates the share of SME's employment in some selected African countries, whereby, the SSA countries presented an average share of 30% against an overall average of 28%.

Table 2.1| SME's Employment Share in Selected African Countries

Country	SME's Employment (%)
South Africa	21
Burundi	20
Cameroon	19
Ivory Coast	33
Kenya	38
Malawi	39
Tanzania	32
Zambia	37
Zimbabwe	15
Total Average	28
Sub-Saharan Africa	30

Source: Author Compilation data from: Ayyagari el al (2007)

De Kok et al (2013), also emphasized the role of SMEs in creating new jobs, as it constituted an important strategy to combat poverty. Job creation in the private sector had been the main cause of poverty reduction in the developing world; and over the past 30 years private sector development had also contributed to a sharp decline in the share of the population in the developing world living below the poverty line from 52% to 22% (de Kok et al, 2013). Further, SME's development had provided two-thirds (67%) of all formal jobs in developing countries, and in those of low-income mainly in SSA countries this share was even higher with 80%.

Based on observations in industrialized countries the key arguments in favor of SME's promotion are that the sector provided most of the jobs, created most of the new jobs, and had the highest employment growth rates (De Kok et al, 2013). There were also other arguments from Kok et al (2013), stating that SMEs played an important role in training young people, acting as the seed bed for development of entrepreneurial talent, enhanced competition and hence generated external benefits on economic-wide efficiency, innovation, and aggregated growth.

Given such importance of SMEs which pharmacies are also part of, it is important to establish a definition framework for it. Table 2.2 below sets such a framework in the International Finance Corporation (IFC), and European Commission views. The type of SMEs also incorporates Micro enterprises and not only the usual small and medium ones, which is in line with many developing economies and pharmacies in particular. The definition criteria are guidelines and may vary from countries and differing contexts, but, the number of employees, total assets and annual revenue are often used criterias with

varying levels in the magnitude of the figures. For the number of employees the 10, 50 and 250 are reasonable figures for micro, small and medium enterprises and the total assets and turnover are economy specific, hence guided by local authorities.

Table 2.2 | Definition Parameters for SMEs

Authority	Indicator	SME Type (Size or Class)[1]		
		Micro	Small	Medium
International Finance Corporation (IFC)	Employees	< 10 [2]	10 - 50	50 - 300
	Total Assets	< USD 100,000	USD100,000-USD 3Million	USD 3Million-USD15 Million
	Total Annual Revenue	< USD 100,000	USD100,000-USD 3Million	USD 3Million-USD15 Million
European Commission	Head Count: Annual Work Units	< 10	< 50	< 250
	Annual Turnover	< Euro 2 Million	< Euro 10 Million	< Euro 50 Million
	Annual Balance Sheet Total	< Euro 2 Million	< Euro 10 Million	< Euro 43 Million

[1] According to the IFC (2012), an enterprise is classified into a specific type if it qualifies for two of the three indicators in the above table. The European Commission (2006) in turn, classifies an enterprise if it qualifies for the head count indicator and either one of the two other indicators.

[2] Kushnir et al (2012), excludes self-employment and set micro-enterprises to have at least one employee. According to the European commission (2006), the head count includes employees, persons working for the entity or being subordinated to it and considered to be employees under national laws, remunerated managers and partners engaged in a regular activity in the enterprise and benefiting from financial gains from the entity. This includes full-time, part-time and seasonal staff, where the latter two employee categories are counted as proportions of an annual unit.

Source: Author Compilation data from: de Kok et al (2013), IFC (2012), Kushnir et al (2012) and European Commission (2006).

According to OECD (2004), empirical studies illustrated that SMEs had contributed to over 55% of GDP and 65% of total employment in high-income countries. Further, SMEs and informal enterprises accounted for over 60% of GDP and over 70% of total employment in low-income countries, while they contributed over 95% of total employment and about 70% of GDP in middle-income countries. In the same line of thought, Daniels (1994) estimated that SMEs employed about 22% of the adult population in many developing countries. For the Ghanaian economy, according to Villars (2004) the SME's sector had contributed with over 70% of the country's GDP, whereas Sidney (2012) stated that SMEs were the major form of business and the major employer making a positive impact on the economy.

In Mozambique, particularly in the capital city of Maputo, the employment role of SMEs is illustrated in table 2.3 below. The first point to note is that large entities in the city were

only 1.4% of the total, against 89.5% for small ones. Small entities also employed 57.10% of the city workforce against 20% for the large ones. The gain from large entities was in the revenue generation stream with 58.5% of the city's share, against 24% for the small entities.

Table 2.3| SME's Category, Employment and Revenue Dimensions

Company Category (Maputo City)	Entities		Employment		Volume of Revenue
	Units	Proportion (%)	Units of Jobs	Proportion (%)	Proportion (%)
Large	396	1.40	60,149	20.00	58.50
Medium	2,621	9.10	69,076	22.90	17.50
Small	25,853	89.50	171,920	57.10	24.00
Total	28,870	100	301,145	100	100

Source: Author Compilation data from: INE (2009)

2.3 The Economic Nature of Pharmacy's Activities

Pharmacies activities typically offer three types of outputs namely dispensing services for prescribed medication, provision of consumer goods through the pharmacies front shop, and recently medication counselling (Grootendorst et al, 2008).

2.3.1 The Value Chain of Pharmacies

The pharmacy's value chain was centred in the three main outputs mentioned above. According to McKesson (2007) pharmacists typically spent 40% of time dispensing and 37% of time counselling patients in relation to medication prescription and other special services.

The first chain of pharmacy activities was dispensing services which include a range of activities that accompany the provision of medication to a patient such as checking the prescription for errors, filling the prescription, adjudication of drug insurance claims on behalf of the consumer, provision of information on appropriate medication use, assessing of potential medication contraindications, communication with the prescriber to discuss these and other patient care matters (Grootendorst et al, 2008). As per Grootendorst et al (2008), some pharmacies offered other ancillary and medication delivery services.

The second chain of pharmacy activities was the provision of consumer goods including products that were sold exclusively in pharmacies. According to Grootendorst et al, (2008) such provision of consumer goods was regulated. Schedule II, stipulated that pharmacists must intervene prior to sale and the product should be available in pharmacies only behind dispensing counter. Schedule III stipulated that for products sold over the counter the pharmacist must be available to provide advice. It also listed other items that were sold by other retailers.

The third chain of pharmacy activities according to Grootendorst et al (2008), was the medication counselling which was encouraged by government subsidies, in the sense that government was remunerating pharmacists for the provision of patient counselling independent of drug dispensing. In the case of the Ontario government it introduced a medication reconciliation program called Medscheck, which compensated $50 to review the medication use of patients presenting with chronic conditions who use three or more prescription medicines.

Grootendorst et al (2008), also indicated that medication prescription was an emerging service and at the time, pharmacists in certain provinces of Canada were legally permitted to prescribe certain prescription medicines.

2.3.2 Pharmacy's Cost Profile

Pharmacies operational costs are a crucial variable when ascertaining its business sustainability. Medicine dispensing costs are either fixed or not related to the scale of production or variable and related to the costs of production. According to Grootendorst et al (2008) fixed costs included costs of maintaining an inventory of the range of prescribed drugs that were commonly prescribed, operating billing system, pharmacists who legally must be on the premises during business hours, equipment required by regulatory authorities, marketing, insurance, fixtures and utilities. The variable component was mainly comprised by additional personnel costs.

Economies of scale in dispensing volumes were promoted, whereby the fixed costs were spread out over larger dispensing volumes so that, the average fixed cost per prescription declined (Grootendorst et al, 2008). Grootendorst et al, (2008) also referred that

pharmacies routinely participated in consortia to share fixed costs such as staff recruitment and training, marketing, inventory management and other management services.

2.3.3 The Determinants of the Demand for Pharmacy's Goods and Services

The demand for pharmacy goods and services is a critical part of the sales strategy, and to identify and understand such demand determinants is a crucial task of pharmacy's management. Grootendorst et al (2008), indicated that pharmacies could compete for a share of this fixed demand by attracting customers on the basis of location and other dimensions of consumer accessibility, the retail price of the prescription, the price and range of consumer goods offering, the quality of dispensing services and advertisement amongst other variables.

Given the above and according to Grootendorst et al (2008), results from a consumer survey revealed that 76% of respondents indicated that the provision of information on medicine use by pharmacists was a very important factor when deciding where to fill a prescription; 67% indicated medication availability to dispense as a very important factor and 54% indicated location as of importance in the pharmacy selection process. Price was not referred to as a critical deciding factor.

2.4 The Economic Impact of Pharmacies

The economic impact of pharmacies in Maputo depicts the essence of this research. According to Davis (1990), economic impact is defined as the prediction or explanation of change to various measures such as employment, income or spending, of a local economy after the introduction of a change or new element to the economy. As stated by Davis (1990), the economic impact could be "Ex Ante" or "Ex Post", that is estimation before or after the change had actually taken place, and was concerned with "if", or "then" statements, or some form of causality. This research applied the "Ex Post" impact to estimate the impact of pharmacies as a result of their business activities.

The following sections detail the categories of economic impact.

2.4.1 Direct Impact

The direct impact is measured as full-time equivalent workers (FTE), which are paid employees reported by a firms' wages and salaries data. This, therefore, represents the direct jobs held by the employees of a firm, (Martin and Associates, 2006). This impact is herein also considered the employment impact derived from pharmacy's activities, and was estimated in this study to be about 723 jobs.

In other related studies as in the case of the Port of Durban, according to TEMPI (2008), the estimated impact was about 25,000 jobs, and in the case of the Port of Vancouver direct jobs comprised about 2,268 workers (Martin and Associates, 2006).
The above contextualizes a very important employment generating role of pharmacies in the city, especially in the framework where the city holds 40% of unemployment amongst the city's active population (INE, 2013b).

2.4.2 Indirect Impact

The indirect impact represents jobs which are created due to purchases by the entity, and not their employees, and which are estimated on the basis of local purchases made by such entities (Martin and Associates, 2006). According to Mallinson and Schwartz (2012), the impact is derived by ancillary businesses that supply goods and or services to the pharmacy. Manufacturers, warehouses, lawyers, accountants, and technology vendors are all examples of other business that earn income as a result of a pharmacy being in business (Mallinson and Schwartz (2012).

When pharmacies purchase goods and services from such individual firms, employment is created triggering the indirect impact to the local economy or defined jurisdiction. In the case of the Port of Durban study the indirect impact of about 7,000 to 10,000 jobs in the vertical supply chain, and 5,000 to 6,000 jobs in the port using importers and exporters (TEMPI, 2008). According to Martin and Associates (2006), the indirect impact in the Vancouver study was about 1,413 jobs.

2.4.3 Induced Impact

The induced impact as per Martin and Associates (2006) and additionally to the direct and indirect effects, were due to purchases by individual income recipients. According to Martin and Associates (2006) a portion of wages and salaries was saved, another used to pay personal taxes, while the final portion was used to purchase goods and services. Some purchases were made in the local economy, and others outside. Therefore, such consumption purchases generated additional jobs in those firms supplying the goods and services, and the jobs generated in the local economy or jurisdictional area were classified as induced jobs or more generally as an induced impact.

The induced impact results from the salaries and wages expenditure by the jobs sustained by the pharmacy (Mallinson and Schwartz, 2012). According to Mallinson and Schwartz, (2012) as the pharmacy related households spent their pay-checks, they in turn enhance the chain reaction of the direct and indirect benefits of the pharmacy.

2.4.4 Income Impact

The income impact, as the name suggests, consists of the level of wage and salary earnings associated with the jobs created directly by the entity (Martin and Associates, 2006). In terms of wages and salaries, this impact may also be considered the employment expenditure impact. According to TEMPI (2008), the Port of Durban had an employment expenditure impact of about ZAR1.9 billion in port ancillary wages and salaries, ZAR 1.1 billion in other non-wage local spending, and an unquantifiable expenditure in port-using industries. According to Martin and Associates (2006), the income impact in the Vancouver study was estimated at about USD 763.57 million.

2.4.5 Revenue Impact

Revenue impact is the measure of direct business revenue received by the entity and its service providers, and the gross sales generated by direct and indirect entity's related activities (Martin and Associates, 2006).

2.4.6 Tax Impact

The tax impact is an important government source of fiscal funds to finance expenditure related to the provision of public goods and services in the local economy. It is the tax revenue generated by pharmacy's related activities. According to Martin and Associates (2006), the Port of Vancouver generated a tax revenue impact of about USD 81.80 million, from which USD 11.12 million represented non-maritime real estate, while USD 70.46 million was generated in the maritime terminals cluster.

A relevant factor to account for when dealing with tax revenue is the Laffer Curve, which plots the relationship between tax revenue and the tax rate. According to Mohr and Fourie, (2000), Laffer (Arthur Laffer was one of advisors to Ronald Reagan, the former United States of America president) argued that revenue is maximised at a certain tax rate, and after that it becomes counterproductive to raise taxes further, since people will evade or avoid tax by not working, saving or investing.

2.4.7 Influenced Impact

According to Martin and Associates (2006), ports and terminals also support activities triggered by regional exporters and importers. Thus the influenced impact, measures the impact or influence of the port's terminal on the community of port-using cargo owners at a given point in time. The same analogy may be applied to pharmacies whereby, people from other areas may approach the city of Maputo to make use of its pharmacies goods and services. It is a user impact because users may be influenced by many factors to use such entities, even though they do not directly depend on them.

2.4.8 The Local Premium or Economic Multiplier Effect

The impact of an injection of spending in a local economy is not a one-off direct phenomenon; the "first-round" expenditure from a particular economic activity such as Pharmacy, echoes through the economy in waves of re-spending or re-cycle effect. The local premium or economy multiplier measures this effect, and indicates the extent to which initial expenditure is magnified in its final effect on a community. The magnitude of such is viewed differently for locally owned and foreign or chain enterprises.

The multiplier is a descriptive tool which allows us to allocate a certain monetary figure as attributable to the existence of pharmacies in the city of Maputo for example, through a simple chain of causality, therefore, to say that a sector has a certain total economic impact is to measure the extent to which its economic impact is inter-related, or overlaps through trade with all other sectors in such specific location (Sudmant, 2009). The Keynesian multiplier as described by Krugman (2008), was derived as a result of government stimulus an in such cases a value of two (2) was considered very high.

The referred Keynesian multiplier according to Sudmant, (2009); was a "Static" multiplier measuring only the monetary values re-recycling through the economy, leaving all other fundamentals such as technology unchanged. In contrast as per Sudmant, (2009), and Martin's (1998) paper, the "Dinamic" multiplier changes the underlying economic fundamentals making workers and technology more productive. Economic impact is thus a prediction or explanation of change to various measures such as spending, income or employment of a local economy after the introduction of a change or new elements to the economy (Sudmant, 2009). As per Davis (1990), it can be "Ex Ante" or "Ex Post", that is, estimation before or after the change has actually taken place.

There are several types of multiplier impacts as discussed in section 2.4, and the income multiplier for example, reflects the level of salary associated with each industry group, as well as the leakages of income from the local economy, for a specific industry sector (Martin and Associates, 2006). Another leakage factor which affects the multiplier is the tax rate, which determines the disposable income available for spending. The higher the tax rate the smaller the spending and hence the smaller is the multiplier effect.

To benefit the local economy, spending must obviously take place in that economy and not elsewhere. The size of the local economy multiplier is consequently positively correlated to the rate of retention of spending within the local area. The bigger the retention rate, the better the local economy absorbs the expenditure generated by activities of the local entity (Martin and Associates, 2006; and TEMPI, 2008).

Another factor affecting the multiplier is the marginal propensity to consume (MPC), which represents the proportion of income that is consumed or spent. In overall terms, the local multiplier effect of spending is influenced by the marginal propensity to consume out

of the disposable income, tax leakage, the expenditure leakage from the local economy, and the expenditure retention in the local economy (TEMPI, 2008).

In the Durban study, as per TEMPI (2008), the marginal propensity to consume had values from 0.85 to 0.90, the applicable tax rate was about 17%, and the spending retention rates had values from 60% to 75%; yielding an estimated local spending multiplier of 1.7 and 2.3. The role of credit to an institution was also highlighted by Achoja (2011), emphasizing a multiplier or local premium of a micro-credit investment of 0.72, meaning that access to credit had the effect of improving institutional or entrepreneurial capacity by 72%.

According to Mallinson and Schwartz (2012), in the USA, the Bureau of Economic Analysis (BEA) had studied how regional economies responded to business patterns and published a state-by state table of multipliers called the regional input-output multiplier system II (RIMS II). In the case of pharmacies in Missouri the multiplier was estimated at 2.01, which meant that for every dollar of sale by a pharmacy there, there was $2.01 worth of total local economic activity (Mallinson and Schwartz (2012).
In the same pharmacy category, Clair and Moore (2011) estimated an income multiplier of 1.19 for a typical rural community pharmacy, which meant that for every dollar spent in wages and salaries by the pharmacy, generated 1.19 times more economic return in such rural community.

The local premium or multiplier effect also depends on the type of business. According to Milchen (2013), restaurants and service providers generated a large multiplier because they were labour intensive; therefore more of each dollar of revenue went to local payroll. Pharmacies as stated by Milchen (2013), generated relatively lower multipliers because so much of each sale went to drug manufactures. Milchen (2013), gave another perspective to the local premium indicating that 48% of each purchase at local independent business was re-circulated locally, compared to less than 14% in the case of chain stores. This view highlights the Keynesian Multiplier effect, which brings government role in aiding local business, as a necessity.

AMIBA (2014) that had conducted the cost economic impact for 10 cities in the USA, also reinforced the concept of a better local content illustrating that, in the case of Louisville

study spending at Indie retailers generated 4 times more local economic return than spending at chains, and in Raleigh and Ogden related studies spending at local businesses generated 3.76 and 3.55 times more local economic return than in related chain entities.

2.5 Summary

From the available literature in general and in similar studies in particular, the critical role of SMEs in the broader macroeconomic growth and its related sustainability was evident. In Maputo such SMEs make up 98.6% (89.5% small and 9.1% medium enterprises) of all companies, hence their relevancy in job creation and its role as the launch pad for future large corporations. As part of SMEs, Pharmacies are also faced by the same economic relevancy and constraints such as access to financing. Their economic impact is often large in terms of direct jobs but also has a relevant indirect, induced, revenue, tax and influenced impact to local economies.

The next section sets out the methodology applied for the quantification of the economic impact of Pharmacies in Maputo.

CHAPTER THREE: Research Methodology

3.1 Introduction

The literature review established the base and rationale for a quantitative-based approach to assess the economic impact of pharmacies in Maputo, similarly as in Sudmant (2009), Mallinson and Schwartz (2012), Clair and Moore (2011), AMIBA (2014), TEMPI (2008) and Martin and Associates (2006).

This study employed a quantitative questionnaire based methodology and the local premium or economic multiplier technique to quantify pharmacy's economic impact in the city of Maputo. Samples from questionnaire respondents were thereafter divided into Municipality districts and pharmacy franchise clusters; for better understanding of the pharmacy's economic impact amongst the municipality's geographic areas and the economic nature of the franchises. A qualitative follow up to evaluate and interpret the quantitative results was thereafter conducted based on feedback from respondents.

The pharmacy's economic impact was set as a dependent variable; a function of pharmacy's expenditure magnified by the local premium or multiplier coefficient. The questionnaire as a data collection instrument; was structured in order to decrease the interviewer variability, increase accuracy and ease data processing. The probabilistic sample was the deployed sampling technique, with a confidence level of 95% and 5% error margin. The sample was comprised by 106 pharmacies from all municipality districts (7); 9 pharmacy franchises, and 39 out of 44 municipality quarters or neighbourhoods, within the city of Maputo.

3.2 Synopsis of Research Methodology

This section presents an overview of research methodology highlighting its importance and need, the types of research methodology, sampling, data collection and data analysis. It also relates such elements of research to the current study.

3.2.1 What is Research and Why it is Done?

Research may be viewed or defined as a systematic process of collecting and analysing information or data, in order to increase our understanding of the problem or phenomenon that we are concerned or interested. A high quality research is characterized by attributes such as:

- It is based on work of others, hence we look to the work that has already been done to provide a basis for the subject of our research and how we may conduct our own work;
- Can be replicated, thus any credible findings can be replicated;
- Is generalizable to other settings, even in the case that some research has limited generalizability because it is difficult to replicate the exact conditions under which the research was carried out, but the results of most research can lend at least something to another setting;
- Is based on some logical rational and tied to theory, hence research activities provides answers to questions that help fill in pieces to what can be a large complicated puzzle;
- Is doable, in the sense that the problem statement research objectives and questions, need to be clear and un-ambiguous so that they can be answered;
- Generates new questions or is cyclical in nature, because the answers to today's research questions provide the foundation for research questions that will be asked tomorrow;
- Is incremental, in the sense that the whole or all knowledge about a particular area is more than the sum of the parts, because each new research advance not only inform us but it also helps to place other findings in a different and often fruitful perspective, and
- Is an apolitical activity that should be undertaken for the betterment of society. The present research for example, seeks to quantity the economic impact of pharmacies in Maputo; which once quantified its magnitude will eventually be used as a variable to consider when drafting sectorial interventions with benefits for the larger communities in the city and in Mozambique in general.

Usually the researcher engages in a deductive process based on the knowledge of the subject and the underlying theoretical underpinnings of the problem. From the identification of such problem which is linked to a theoretical framework, hypothesis or clear objectives and research questions are posed which will require collection of data and subsequent analysis to derive results or findings. Such findings are then confronted with the hypothesis or research questions and validated. At this stage of the research process the theory is also revised and new theories may also emerge.

The current study applies a deductive approach which follows from a theoretical base and seeks to yield results or findings, whereas in the case of an inductive theoretical perspective the observations or findings will result in a theory.

3.2.2 Types of Research Methodology

There are often two distinctive clusters of research strategy or general orientations to conduct research namely the quantitative and qualitative approach. A combination of the two generates a hybrid approach. The quantitative approach derives from a positivism epistemology, which holds that there is an objective reality that can be quantified. It is deductive, experimental in nature, involves measurements, variables, and search to explore and identify general patterns and relationships.
In contrast, the qualitative study takes a phenomenological view, in which reality inheres in the perception of individuals, thus focusing on meaning and understanding. It is inductive involving generation of theory, naturalistic, situational, interpretivist, constructivism, and often aims at interpreting events of historical and cultural significance.

Quantitative research is often seen as a method trying to demonstrate causal relationships under standardized (controlled) conditions. Conversely, qualitative research is often seen as a method seeking better understanding of some particular natural (uncontrolled) phenomenon.

Both quantitative and qualitative approaches depending on circumstances use research designs that can be experimental for comparison between experimental and control groups; cross-sectional for observations of a sample at a single point in time; longitudinal for

research on a sample on more than one occasion; case study with a view of revealing important features about its nature and comparative to directly compare two or more cases. Usually quantitative approach tackles macro-issues using large random and representative samples, whereas in the qualitative view the objective is often to analyse micro-issues using small non-random and non-representative samples.

The selection of the ideal research methodology or strategy is also influenced by the research participants or the targeted population (pharmacies in the City of Maputo); research instruments and their reliability and validity (local premium and economic impact); research procedure which determines how data will be collected (structured interview questionnaire) and data analysis techniques (descriptive statistics, quantification direct impacts, economic multipliers and overall economic impact).

In this study, on one hand the objective reality that pharmacy's economic impact represented to the local economy of the City of Maputo needed to be measured, and on the other, the causal relationship between direct impact of pharmacies through their expenditure streams and the overall economic impact through the multiplier effect needed also to be assessed and measured, hence the application of a quantitative approach.

3.2.3 Sampling

Sampling is a process of selecting units from the population of interest so that by studying the sample we may fairly generalize our results by inference statistics back to the population from which they were chosen. A sample error is a number that describes the precision of an estimate, and is usually expressed as a margin of error associated with a statistical level of confidence. In contrast a non-sampling error results solely from the manner in which the observations are made in terms of sampling plans and procedures, the interview effect, the respondent effect, the knowledge of the study purpose and the induced bias by either the designer of the study or the data collector.

Samples may be non-probabilistic and probabilistic based. The non-probabilistic sample doesn't apply statistical techniques and may be deemed unscientific. They can be based on convenience due to availability of such data, judgement on how best to obtain data and quota based on the population size.

In the probabilistic sample every element of the sample as the equal probability to be selected therefore they are random samples. Only random samples can be subject to statistical tests and because every element of the sample is a representative of the population, results from such sample can be inferred to the population. Probabilistic samples can be a simple random when its elements are randomly selected from a sample; a cluster when the population is divided into clusters each of them with different attitudes or differentiated; stratified when the elements of the sample are selected per categories or certain elements out the population; snowballing when the researcher selects the sample elements by his knowledge of the same or obtain referral to select; and a multi-probability sample when there are a combination of sampling techniques. Once the sample size is determine data collections methods need to be selected as detailed in the next section.

3.2.4 Data Collection Methods

Once the methodology and related techniques are selected and the sample determined, research data needs to be collected. Depending on the research circumstances and objectives various data collections methods may be used to better and efficiently collect data from the sample. The structured interview questionnaire assists the interviewer in obtaining accurate and ease data processing, as well as helps in reducing errors due to interviewer and or respondent variability. It is one of the most commonly employed in survey research with the goal to standardize the interviewing of respondents so that the difference between the interviews is minimized.

In focus groups the interviewees discuss the specific question/issue in groups which may be pre-selected to determine their position and the related differentiated data or information collected thereafter.

In the case of self-completion or self-administered questionnaire, the respondent answer questions by completing the questionnaire themselves. When relating to the structured interview questionnaire it has advantages of being cheaper and quicker to administer, absence of interviewer effects, no interviewer variability and is convenient for respondents. In contrary can’t prompt in the sense that there are no one to help, can’t probe respondents to elaborate an answer, questionnaire can be ready as a whole, can’t collect additional data, greater risk of missing data, lower response rate. As a mechanism to improve the response

rate, it is often used a pilot to test the question before sending them to the wider sample respondents.

The researcher may also use a structured observation to collect data, which is a systematic observation of the behaviour of individuals in terms of a schedule of categories. The researcher employs explicitly formulated rules for the observation and recording of behaviour. It allows behaviour to be observed directly rather than being inferred from respondent's answers to a questionnaire survey for example.

Once the data is collected and processed the analysis phases take place.

3.2.5 Data Analysis

It is crucial to think about data analysis before designing the research instrument, because the techniques of data analysis may be applicable to some types of variables and not to others. Descriptive statistics is often used as a first round of data analysis to set a view of the magnitudes of the data on hand. In a univariate analysis, variables are analysed one at the time using frequency tables, diagrams such as charts (i.e. bar, pie, and histograms), measures of central tendency such as arithmetic means, medians and mean, measures of dispersion such as variance and standard deviation.

The bivariate analysis is concerned with the analysis of the relationship of two variables at a time, to establish any causality using contingency tables to assess relationship to any pair of variables, or scatter tables to determine the trend of the variables if any.

In a multivariate data analysis two or more variables may be analysed simultaneously. The key is to provide an indication of how confident one can be with regards to the research findings. Thus one needs to establish the acceptable level of statistical significance which is a measure of the degree of risks that one might reject the null hypothesis; implying that there is a relationship in the population. Techniques such as t and chi-square tests may be employed.

To analyse sample data other specific techniques such as local premium or economic multiplier may be deployed to assess as in this study the impact magnitude of a variable in an economy in monetary terms.

The next section will detail the aim and objectives of the present study.

3.3 Aim and Objectives of the Study

From a macroeconomic perspective and as reflected in the research title, the study was devoted to an economic quantification of the relationship between pharmacies expenditures and the local economy impact. In this context, the study aimed to quantify the monetary value of the aggregated economic impact of pharmacy's activities to the local economy of the city of Maputo.

In order to achieve the above aim, three key objectives were defined as being to:

i. Quantify the direct impact of pharmacy's activities (sections 4.2.1, 4.2.2 and 4.2.3);
ii. Quantify the pharmacy's local premium or local economic multiplier for the city of Maputo (sections 4.3.1 and 4.3.2); and
iii. Quantify the overall magnitude of the economic impact or contribution of pharmacies to the local economy of the city of Maputo (sections 4.4.1, 4.4.2, 4.4.3 and 4.4.4)

3.4 Research Methodology

Evidence from the literature on similar research approaches such as in Mallinson and Schwartz (2012), " The Mail Order Ripple Effect-The Economic Impact of Mandatory Mail Order on local Communities: Economic Impact of a Local Pharmacy"; in Clair and Moore (2011), "Economic Impact of a Typical Rural Community Pharmacy"; in Milchen (2013), "Multiplier Effect of Local Independent Business Ownership"; in AMIBA (2014), "The Ten New Studies of the Local Economic Premium"; in Sudmant (2009), "Economic Impact of the University of British Columbia"; in TEMPI (2008), "An Economic Perspective of Container Expansion in the Port of Durban"; in Martin and Associates' (2006), "Local and Regional Economic Impacts of the Port of Vancouver Marine Terminals and Non-Maritime Real Estate Tenants", and in Achoja (2011), "Multiplier Effect of a Micro-Credit Investments" suggested a quantitative approach.

This is also in line with the causal relationship inferred in the research objectives by the dependent variable economic impact and its independent variables such as direct impact and the local premium.

The selection of a quantitative methodology also derive from the fact that the questions posed in the research are pre-specified and outcome-oriented (determine the economic impact), which wouldn't have been in case of a qualitative approach which is characterized by open-ended questions and process oriented.

The research employed a quantitative questionnaire based methodology, and the local premium or economic multiplier technique to quantify pharmacy's economic impact in the city of Maputo. Samples from questionnaire respondents were thereafter divided into Municipality districts and pharmacy franchise clusters; for better understanding of the pharmacy's economic impact amongst the municipality's geographic areas, the role of its population income, their marginal propensity to consume, and the economic nature of the franchises. According to Haber and Reicher (2005), each cluster was expected to have a different attitude towards a product and in this study, was evidenced by the different though similar results.

As per Glatthorn (1998), the qualitative follow up was used to evaluate and interpret the quantitative results, which in this study were inferred from questionnaire feedback from respondents.

In this study, the dependent variable, 'pharmacy economic impact' was set as a function of pharmacies functional value chain variables, representing the expenditures of pharmacy's activities, which were embodied in terms of the direct employment; pharmacy expenditure profile; and the related tax revenue; all magnified by the local premium or multiplier effect. Below, these relationships are described with the aid of mathematical equations.

$$Pharmacy\ Economic\ Impact = f(Activity\ Expenditures) \times Multiplier$$

$$Pharmacy\ Economic\ Impact = f\langle Employment|\ Expenditure|Tax\ Revenue\rangle \times Multiplier$$

The local premium or multiplier, was viewed as a factor of proportionality, representing the macro dimension of pharmacy's economic impact, because it takes into account the marginal propensity to consume (c); the tax rate (t) and the expenditure retention rate (r), for the geographic area of the city of Maputo; as per the equation below.

$$Multiplier = \frac{1}{1 - c(1 - t)r}$$

To give substance and context to this research methodology, a structured questionnaire was selected as the data collection instrument (see template in appendix 1). According to Bryman and Bell (2007), such structure not only aided in reducing errors due to interviewer/respondent variability, but also enabled accuracy and ease of data processing.
The direct employment impact, the pharmacy expenditure and the tax revenue, was obtained from data supplied by 106 questionnaire respondents which comprised the required sample, as well as primary data from the national directorate of pharmacies, the national institute of statistics, the municipality of Maputo, the customs and revenue authorities, the ministry of finance amongst relevant institutions.

With the above methodology and techniques, the study quantified the economic impact of pharmacies in Maputo. The research data employed in the above estimation is detailed in the section which follows.

3.5 Research Data

Besides the data from questionnaire responses, the research employed only other primary data such as company and government reports and publications. Based on a 95% confidence level and 5% margin of error a sample of 106 pharmacies was randomly selected from a population of 145 operational pharmacies amongst 7 municipality districts and 39 quarters or neighbourhoods in the city of Maputo. Following pharmacy's impact equations set out above, data for the independent variables such as direct employment, pharmacy expenditure profile and related tax revenue, is described below.

Table 3.1 below, illustrates the spatial geographic dimension of the sample data amongst municipality districts, where, KamPhumo had 40% of the sampled pharmacies,

KamBukuane with 19%, KaMavota with 14% and KaLhamanculo with 13%. KaMaxakene, KaTembe and Kanyaka had only 8%, 4% and 3% share of the sample.

Figure 3.1 below, shows the share of the top sampled quarters or neighbourhoods in each municipality district. In this view, central from KamPhumo had 50% of the sampled pharmacies in this municipality district; Chamanculo from KaLhamanculo had 35.71%; Maxakene from KaMaxakene had also 50%; Hulene from KaMavota had 33.33%; Magoanine from KamBukuane had 30%; all 4 sampled quarters from KaTembe had one pharmacy or 25% each, and similarly all 3 sampled quarters of Kanyaka had one pharmacy each or 33.33%.

Table 3.1 | Municipality of Maputo Pharmacy's Quantitative Landscape

Districts and Quarters or Neighbourhoods				Sampled Pharmacies					
Districts			Quarters	Quarter View			District View		
Number	Reference	Name	Name	Units	Total		Quarters		Proportion (%)
					Units	Proportion (%)	Total Units	Proportion (%)	
1	1	KamPhumo	Central A, B e C	21	42	50.00	42	19.81	40
	1	KamPhumo	Alto Maė A e B	5		11.90		4.72	
	1	KamPhumo	Malhangelene A, B	3		7.14		2.83	
	1	KamPhumo	Polana Cimento A e B	9		21.43		8.49	
	1	KamPhumo	Coop	1		2.38		0.94	
	1	KamPhumo	SommerShield	3		7.14		2.83	
2	2	KaLhamanculo	Aeroporto A e B	2	14	14.29	14	1.89	13
	2	KaLhamanculo	Xipamanine	2		14.29		1.89	
	2	KaLhamanculo	Minkadjuine	1		7.14		0.94	
	2	KaLhamanculo	Unidade 7	1		7.14		0.94	
	2	KaLhamanculo	Chamanculo A, B, C e D	5		35.71		4.72	
	2	KaLhamanculo	Malanga	2		14.29		1.89	
	2	KaLhamanculo	Munhuana	1		7.14		0.94	
3	3	KaMaxakene	Mafalala	2	8	25.00	8	1.89	8
	3	KaMaxakene	Maxaquene A, B, C e D	4		50.00		3.77	
	3	KaMaxakene	Polana Caniço A e B	2		25.00		1.89	
	3	KaMaxakene	Urbanização			0.00		0.00	
4	4	KaMavota	Mavalane A e B	2	15	13.33	15	1.89	14
	4	KaMavota	FPLM			0.00		0.00	
	4	KaMavota	Hulene A e B	5		33.33		4.72	
	4	KaMavota	Ferroviário	3		20.00		2.83	
	4	KaMavota	Laulane	1		6.67		0.94	
	4	KaMavota	3 de Fevereiro			0.00		0.00	
	4	KaMavota	Mahotas	1		6.67		0.94	
	4	KaMavota	Albazine	2		13.33		1.89	
	4	KaMavota	Costa do Sol	1		6.67		0.94	
5	5	KamBukuane	Bagamoyo	1	20	5.00	20	0.94	19
	5	KamBukuane	Benfica (George Dimitrov)	1		5.00		0.94	
	5	KamBukuane	Inhagoia A e B	3		15.00		2.83	
	5	KamBukuane	Jardim	2		10.00		1.89	
	5	KamBukuane	Luis Cabral			0.00		0.00	
	5	KamBukuane	Magoanine	6		30.00		5.66	
	5	KamBukuane	Malhazine	2		10.00		1.89	
	5	KamBukuane	Nsalane	1		5.00		0.94	
	5	KamBukuane	25 de Junho	1		5.00		0.94	
	5	KamBukuane	Zimpeto	3		15.00		2.83	
6	6	KaTembe	Gwachene	1	4	25.00	4	0.94	4
	6	KaTembe	Chale	1		25.00		0.94	
	6	KaTembe	Inguice			0.00		0.00	
	6	KaTembe	Ncassene	1		25.00		0.94	
	6	KaTembe	Xamissava	1		25.00		0.94	
7	7	Kanyaka	Ingwane	1	3	33.33	3	0.94	3
	7	Kanyaka	Ribjene	1		33.33		0.94	
	7	Kanyaka	Nhaquene	1		33.33		0.94	
			Total	106	106		106	100	100

Source: Author Compilation data from: Personal Interviews (April-August, 2015) and NCHA (2010)

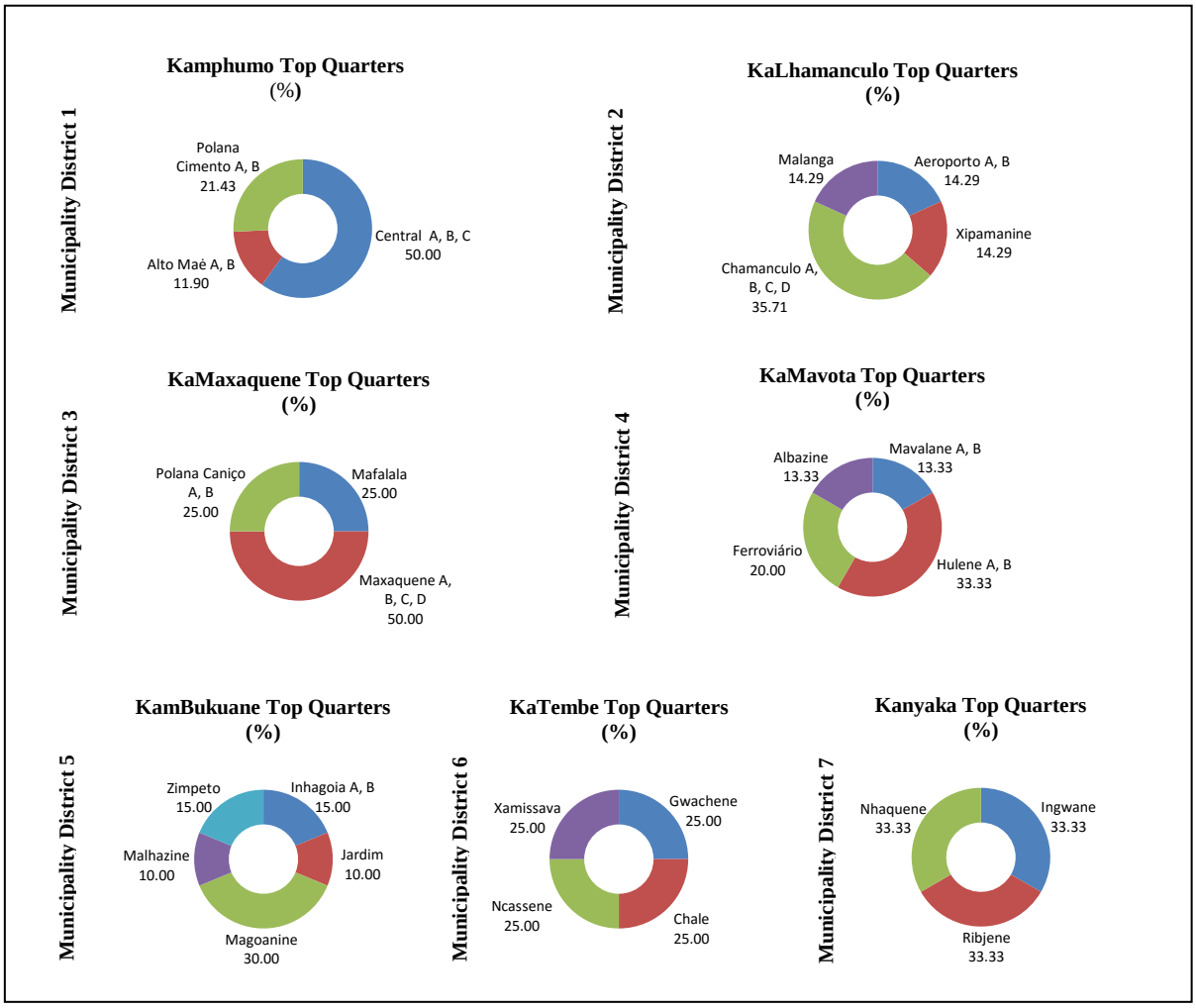

Figure 3.1 | Quarters or Neighbourhoods Share of Sampled Pharmacies
Source: Author Compilation data from: Personal Interviews (April-August, 2015) and NCHA (2010)

Table 3.2 below, illustrates the sample quarters in each municipality. Thus KamPhumo covered or sampled all 6 quarters, KaLhamaculo covered all 7 quarters, KaMaxakene covered 3 out of 4 Quarters, KaMavota covered 7 out of 9 quarters, KamBukuane covered 9 out of 10 quarters, KaTembe covered 4 out of 5 quarters and finally Kanyaka covered all 3 quarters. In brief 88.64% of all municipality quarters were sampled in terms of pharmacies in this study.

Table 3.2 | Sample Quarters Covered per Municipality District

Municipality Districts			District Quarter Coverage						Sampled Pharmacies		
			Sampled			Not Sampled					
Reference Number	Name	Total Quarters	Units	Proportion		Units	Proportion		Units	Proportion	
		Units		%	Rounded %		%	Rounded %		%	Rounded %
1	KamPhumo	6	6	100.00	100	0.00	0.00	0	42	39.62	40
2	KaLhamanculo	7	7	100.00	100	0.00	0.00	0	14	13.21	13
3	KaMaxakene	4	3	75.00	75	1.00	25.00	25	8	7.55	8
4	KaMavota	9	7	77.78	78	2.00	22.22	22	15	14.15	14
5	KamBukuane	10	9	90.00	90	1.00	10.00	10	20	18.87	19
6	KaTembe	5	4	80.00	80	1.00	20.00	20	4	3.77	4
7	Kanyaka	3	3	100.00	100	0.00	0.00	0	3	2.83	3
	TOTAL	44	39	88.64	89	5	11.36	11	106	100	100

Source: Author Compilation data from: Personal Interviews (April-August, 2015) and NCHA (2010)

Figure 3.2 below, illustrates the share of sampled pharmacies in each municipality district. KamPhumo was the district with more sampled units with 39.62%, followed by KamBukuane with 18.87%; KaMavota with 14.15% and KaLhamanculo with 13.21%.

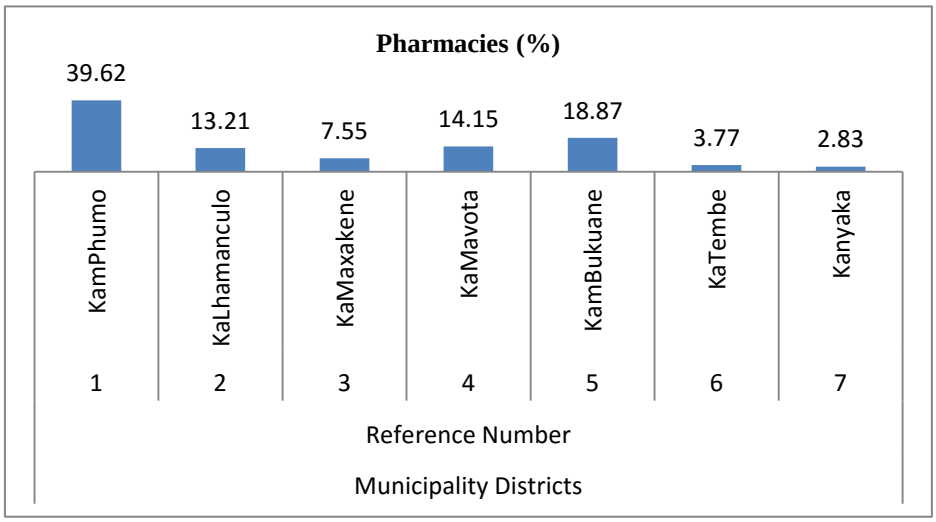

Figure 3.2 | Districts' Share of Sampled Pharmacies
Source: Author Compilation data from: Personal Interviews (April-August, 2015) and NCHA (2010)

The next detail of data refers to the cluster of pharmacy franchises. Table 3.3 below illustrates the number of pharmacies per sampled franchise, where the National Health Services had most of the pharmacies with 33 units, followed by Non-Group with 26, Farmac with 20, and Medis with 10 units. The remaining five franchises had between two to five pharmacies each.

Table 3.3 | Sample Pharmacies Covered per Franchise

Entity Group			Sampled Pharmacies		
Franchise			Units	Proportion	
Reference Number	Name/ Desigantion	Type		%	Rounded %
Francise 1	Africa	Private	5	4.72	5
Francise 2	Medis	Private	10	9.43	9
Francise 3	Luis Valente	Private	3	2.83	3
Francise 4	MedLife	Private	2	1.89	2
Francise 5	Rabeca	Private	5	4.72	5
Francise 6	Farmac	Public/Private	20	18.87	19
Francise 7	Nacional Health Services	Public	33	31.13	31
Francise 8	Non-Group	Private	26	24.53	25
Francise 9	SociFarma	Private	2	1.89	2
		Total	106	100	

Source: Author Compilation data from: Personal Interviews (April-August, 2015)

In the same cluster in analysis, figure 3.3 below, presents the relative share of pharmacies per sampled franchise. The National Health Services had the majority of the share with 31.13%, followed by Non-Group with 24.53%, Farmac with 18.87% and Medis with a sampled pharmacy share of 9.43%. The sampled pharmacy share of the other five franchises varied from 1.89% to 4.72%.

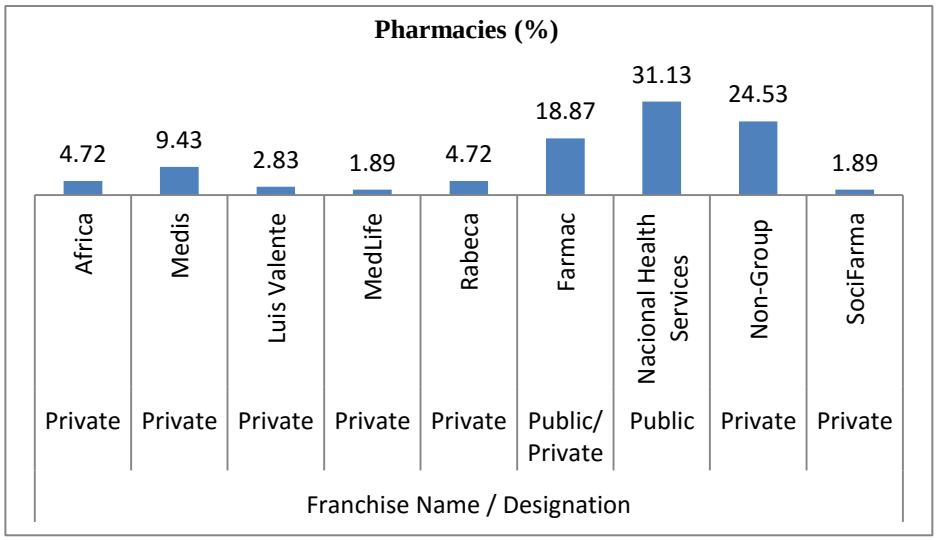

Figure 3.3 | Franchise Share of Sampled Pharmacies
Source: Author Compilation data from: Personal Interviews (April-August, 2015)

The above data was collected based on the strategy which follows.

3.6 Data Collection Strategy

The research strategy with regard to data collection was based on a clear identification of the key stakeholders for each of the three independent variables namely direct employment, Pharmacy expenditure profile, and tax revenue, as well as for the factors affecting the local premium or economic multipliers, as in the case of the marginal propensity to consume, income retention rate and the applicable tax rate. Once the stakeholder list was compiled, a probabilistic sample aimed in deriving a confidence level of 95% (thus leaving an error margin of 5%) was established. Using the sample table as per Research Advisors (2006) the sample size was determined as shown in table 3.4 below, from a population of operational pharmacies in the city of Maputo of 145 units.

Table 3.4 | Sample Size for the Dependent Variable

Research Variable		Population Size (Units)	Sample Confidence Level (%)	Sample Error Margin (%)	Required Sample Size (Units)	Applied Sample Size (Units)
Pharmacies (Operational[1] in the City of Maputo)		145	95	5	106	106
Collection Strategy Viewpoint	Municipality Districts	7	n/a	n/a	n/a	7
	Pharmacy's Franchise	9	n/a	n/a	n/a	9
	Municipality Quarters or Neighbourhoods	44	n/a	n/a	n/a	39

[1]As per the national directorate of Pharmacies (Sitoi, April 10th 2015)

Source: Author Compilation data from: Personal Interviews (April-August, 2015), NCHA (2010), Research Advisors (2006).

The above table indicates that from a population of operational pharmacies of 145 units, the applied sample size was 106 units. This figure was obtained by applying the above population size to the research advisor's sample table at 95% confidence level and error margin of 5%, the population of 145 pharmacies did not have a direct sample size, because it was between a population of 100 and 150 units, with sample sizes of 80 and 108 units respectively.

To determine the sample size corresponding to the population of 145 pharmacies, the study applied the liner interpolation technique as set by Finnemore and Franzini (2002); to derive the required pharmacy sample of 106 units (100=80; 150=108; 145=X; therefore

150-100=50; 150-145=5 and 108-80=28; 108-X; thus (108-X)/28=5/50; finally X=105.2~=106). Using 106 pharmacy units, the sample results were better inferred to the overall population. The above table 3.4 also shows that all seven municipality districts in the city of Maputo were represented in this sample; from which all nine relevant pharmacy franchises had their pharmacies also included. Further to the above, the 106 sampled pharmacies were represented in 73.10% of all municipality's quarters or neighbourhoods or 39 out of 44 quarters or neighbourhoods, which makes the city of Maputo (NCHA, 2010).

Data was obtained from the established sample using a structured interview questionnaire (refer to appendix 1). This instrument not only aided in reducing errors due to interview/respondent variability, but also enabled more accuracy and easy data processing.

3.7 Summary

The quantitative questionnaire based methodology, and the local premium or economic multiplier technique to quantify pharmacy's economic impact in the city of Maputo, yielded the established research objectives. Samples from questionnaire respondents were thereafter divided into Municipality districts and pharmacy franchise clusters; for better understanding of the pharmacy's economic impact amongst the municipality's geographic areas, the role of its population income, their marginal propensity to consume, and the economic nature of the franchises.

Data were collected from primary sources, and using a structured questionnaire as the collection instrument, the accuracy and reliability of such data were ensured by a 95% confidence level and 5% error margin of a probabilistic sampling.

The next section will use the above data and present the estimated results thereafter.

CHAPTER FOUR: Presentation of Results

4.1 Introduction

The economic impact of pharmacies in the city of Maputo, was quantified in the first step by assessing the direct impact of its activities though three expenditure perspectives. The three expenditure perspectives were contextualized to the seven sampled municipality districts and nine pharmacy franchises. The first perspective looked to one of the core macroeconomics and indeed development economics issues which employment represents, and quantified the contribution of this sector to the overall employment in the city and the related income expenditures (salaries and wages). This represented largely the fixed costs.

To operate the pharmacy the expenditure profile was analysed and quantified in the second perspective. These, a mixture of fixed and variable costs comprised social security, insurance, municipality dues, license fees and fire extinguisher related expenditures. The last perspective looked at the tax expenditure streams generated by pharmacy's sales as in the case of corporate tax, and employee's monthly remuneration for the income tax.

With the direct impact quantified, the second step was to quantify the pharmacy's local premium or economic multiplier which is a function of the marginal propensity to consume (MPC), tax rate and the local expenditure retention rate of pharmacies. The MPC was quantified by the quotient between the average monthly expenses or family budget (considering that each pharmacy employee was the sole source of income for his/her family due to the acute unemployment rate in the City) and the actual average monthly remuneration; and the retention rate was the average rate as per questionnaire responses. Similarly to the first step, multipliers were computed for the districts and franchise views respectively.

Finally, with the local premium and the three expenditure categories quantified, the magnitude of the overall economic impact was obtained by the product of the two for the municipality districts and pharmacy franchises views respectively. Thereafter, an average value of the two views was estimated for the sampled pharmacies. Such average impact was inferred to the overall population of functional pharmacies in the city, to establish the total contribution of pharmacies to the local economy of the city of Maputo, as detailed in the next sections.

4.2 The Economic Impact of Pharmacy's Activities

4.2.1 Direct Employment

Pharmacies direct employment were analysed in a spectrum of seven municipal districts and nine franchises which comprised the sample framework. Within the 106 pharmacies sampled, employees in the main categories of their roles such as pharmacy technicians, servants, accountants, tellers and managers made up a total of 723 jobs. Permanents positions made about 92% or 663 employees of the share and the remaining 8% or 60 employees were occupied by non-permanent staff, as detailed in tables 4.1 and 4.2 below. Non-permanent staff were more often accountants and in a few cases pharmacists.

Table 4.1 below shows the municipality's districts view of employment; were KamPhumo yielded the majority of jobs with 361 persons employed. Kanyaka e Katembe had the least work positions with 3 and 9 jobs respectively.

The employment position for the nine pharmacy franchises is illustrated in table 4.2 below, were the public and public/private franchises contributed about 349 jobs (48.3% of the total jobs); with the National Health Services accounting for 252 positions and Farmac with 97 respectively. The above two entities also represented 53 pharmacies or 50% of the study sample. The private sector also had a positive role in generating jobs which is represented by the non-group franchise with 181 working positions within 26 pharmacies, and Medis with 85 positions from 10 entities.

Table 4.1 | District View of the Pharmacy's Direct Employment

Municipality Districts			Total Quarters	Districts Direct Jobs		Type of Employment		Gender		Age Range (Years)					
Reference Number	Name	Total Quarters				Permanent	Non-Permanent	Male	Female	15-17	18-25	26-35	36-45	46-55	Above 55
		Units	Proportion (%)	Units	Proportion (%)										
1	KamPhumo	6	13.64	361	49.93	337	24	170	191	0	16	154	122	55	14
2	KaLhamanculo	7	15.91	95	13.14	87	8	50	45	0	6	44	32	12	1
3	KaMaxakene	4	9.09	70	9.68	59	11	32	38	0	4	28	24	9	5
4	KaMavota	9	20.45	86	11.89	75	11	39	47	0	7	43	21	14	1
5	KamBukuane	10	22.73	99	13.69	93	6	44	55	0	6	40	33	18	2
6	KaTembe	5	11.36	9	1.24	9	0	3	6	0	0	3	4	1	1
7	Kanyaka	3	6.82	3	0.41	3	0	1	2	0	0	0	3	0	0
	Total	44	100	723	100	663	60	339	384	0	39	312	239	109	24
	Proportion (%)	n/a	n/a	n/a	n/a	91.70	8.30	46.89	53.11	0.00	5.39	43.15	33.06	15.08	3.32
	Rounded Proportion (%)	n/a	n/a	n/a	n/a	92	8	47	53	0	5	43	33	15	3

Source: Author Compilation data from: Personal Interviews (April-August, 2015) and NCHA (2010)

Table 4.2 | Franchise View of the Pharmacy's Direct Employment

Franchise			Franchise Entities		Franchise Direct Jobs		Type of Employment		Gender		Age Range (Years)					
Reference	Name	Type	Units	Proportion (%)	Units	Proportion (%)	Permanent	Non-Permanent	Male	Female	15-17	18-25	26-35	36-45	46-55	Above 55
Franchise 1	Africa	Private	5	4.72	30	4.15	30	0	16	14	0	1	9	14	6	0
Franchise 2	Medis	Private	10	9.43	85	11.76	69	16	30	55	0	1	59	13	11	1
Franchise 3	Luis Valente	Private	3	2.83	26	3.60	26	0	6	20	0	5	17	2	1	1
Franchise 4	MedLife	Private	2	1.89	11	1.52	11	0	5	6	0	1	9	1	0	0
Franchise 5	Rabeca	Private	5	4.72	32	4.43	27	5	10	22	0	3	17	4	7	1
Franchise 6	Farmac	Public/ Private	20	18.87	97	13.42	94	3	58	39	0	2	17	38	31	9
Franchise 7	Nacional Health Services	Public	33	31.13	252	34.85	252	0	109	143	0	10	97	107	36	2
Franchise 8	Non-Group	Private	26	24.53	181	25.03	151	30	102	79	0	16	81	57	17	10
Franchise 9	SociFarma	Private	2	1.89	9	1.24	3	6	3	6	0	0	6	3	0	0
		Total	106	100	723	100	663	60	339	384	0	39	312	239	109	24
		Proportion (%)	n/a	n/a	n/a	n/a	91.70	8.30	46.89	53.11	0.00	5.39	43.15	33.06	15.08	3.32
		Rounded Proportion (%)	n/a	n/a	n/a	n/a	92	8	47	53	0	5	43	33	15	3

Source: Author Compilation data from: Personal Interviews (April-August, 2015)

The proportion view of the pharmacy employment in the municipality districts is illustrated in figure 4.1 below. Kamphumo employed about half of the available positions with 49.93%. In contrast Kanyaka and Katembe with 0.41% and 1.24% respectively were the districts with the least employment contribution in the pharmacy sector.

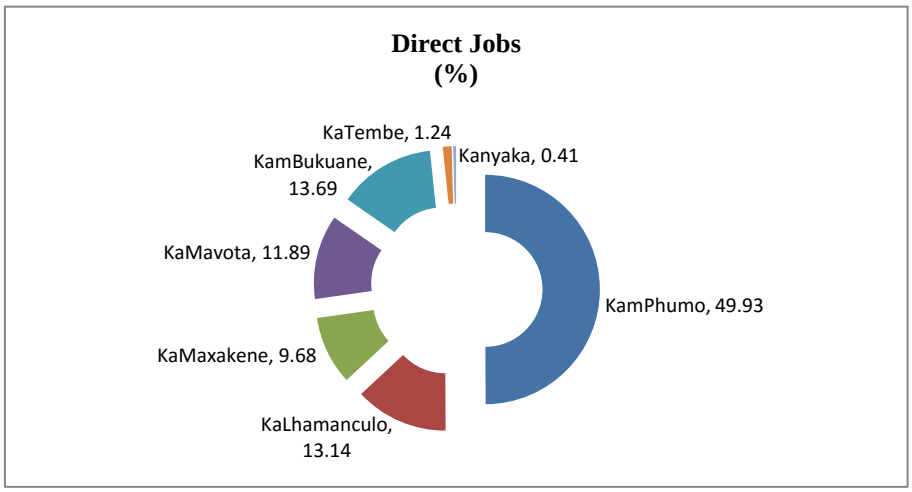

Figure 4.1 | Pharmacy's District Share of Direct Employment
Source: Author Compilation data from: Personal Interviews (April-August, 2015) and NCHA (2010)

Figure 4.2 below details the employment share in terms of jobs of the municipality franchises; where 48.27% of the available jobs are shared between public and public/private entities namely the National Health Services with 34.85% and Farmac with 13.42% positions respectively. The private franchises represented by the non-group accounted for 25.03% of employment followed by Medis with 11.76% share.

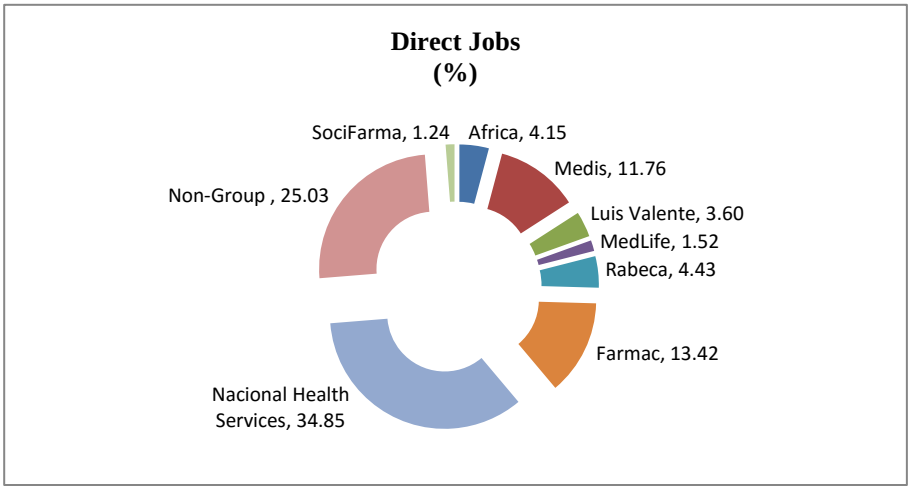

Figure 4.2 | Pharmacy's Franchise Share of Direct Employment
Source: Author Compilation data from: Personal Interviews (April-August, 2015)

The employment impact also takes into account the geographic distribution of economic entities and companies nationwide. Table 4.3 below details the study findings in this regard, where out of 48,148 economic units nationwide, the city of Maputo hosts 10,187 of them from which 8,823 are classified as companies; representing 27.8% out of the national total of 65.9% companies from the overall economic units.

The city of Maputo also hosts about 222,448 jobs from its economic units or 42.7% nationally. Companies in the city of which pharmacies are part yielded about 141,009 jobs representing 45.3% on the national companies. The city of Maputo had 145 functional pharmacies out of a national total of 479 units, representing about 30.27% of national pharmacies, 1.42% of the total economic entities in the city and 0.3% of the total economic entities nationwide.

The 106 sampled pharmacies also represented 22.13% of national pharmacies; 73.10% of the city's pharmacies; 1.04% of the city's economic entities and 0.22% of the national economic entities. The same table illustrates that the total of 723 jobs generated by the sampled pharmacies represents 0.24% of the national company's jobs; 0.51% of the jobs of the city's companies; 0.33% of the jobs of the city's economic entities and 0.14% of the nationwide economic entity's employment.

4.2.1.1 Gender Perspective

The gender impact in the overall pharmacy employment was one of the variables analysed. As shown in figure 4.3 and figure 4.4 below for the district's and franchise's gender perspectives respectively, females were the majority with 53.11% or 384 jobs, leaving 339 jobs for males or 46.89% of the overall employment.

Table 4.3 | National Entities and the Pharmacy's Employment Dimension

Category	Jurisdiction	National Census on Entities				Pharmacies					
		Number of Entities		Employment		Entities		Sampled Entities		Sampled Employment	
		Units	Proportion (%)	Units of Jobs	Proportion (%)	Units (Open and Functional)	Maputo City Proportion (%)	Units	Maputo City Proportion (%)	Units of Jobs	Proportion (%)
Economic Entities	Maputo City	10,187	21.20	222,448	42.70	n/a	1.42	n/a	1.04	n/a	0.33
	Mozambique	48,148	100	521,207	100	n/a	0.30	n/a	0.22	n/a	0.14
Companies	Maputo City	8,823	27.80	141,009	45.30	145	30.27	106	73.10	723	0.51
	Mozambique	31,735	65.9	301,145	57.80	479	n/a	n/a	22.13	n/a	0.24

Source: Author Compilation data from: INE (2009), and Personal Interviews (April-August, 2015)

Most of the municipality districts had more females than males with the exception of KaLhamanculo with 50 males against 45 females. This trend though doesn't ignore the smooth distribution trend between men and women employment in each pharmacy.

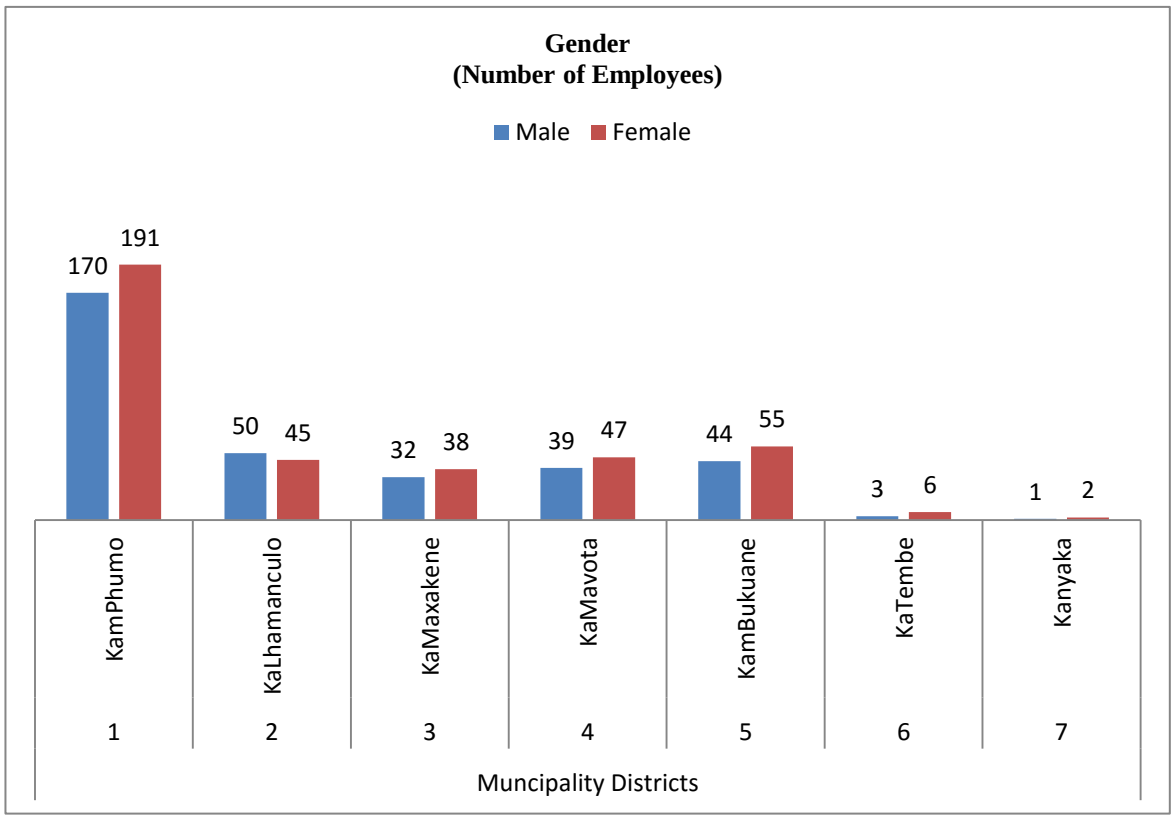

Figure 4.3 | Pharmacy's District Gender Distribution
Source: Author Compilation data from: Personal Interviews (April-August, 2015) and NCHA (2010)

Figure 4.4 below shows that in the franchise view females had also the majority status in most of them, with the exception of Africa, Farmac and non-group. In such franchises, men filled the majority of jobs with 16 positions against 14; 58 against 39 and 102 against 79 positions occupied by women respectively for the three franchises. The smooth distribution of gender between men and women is also present in the Franchise perspective.

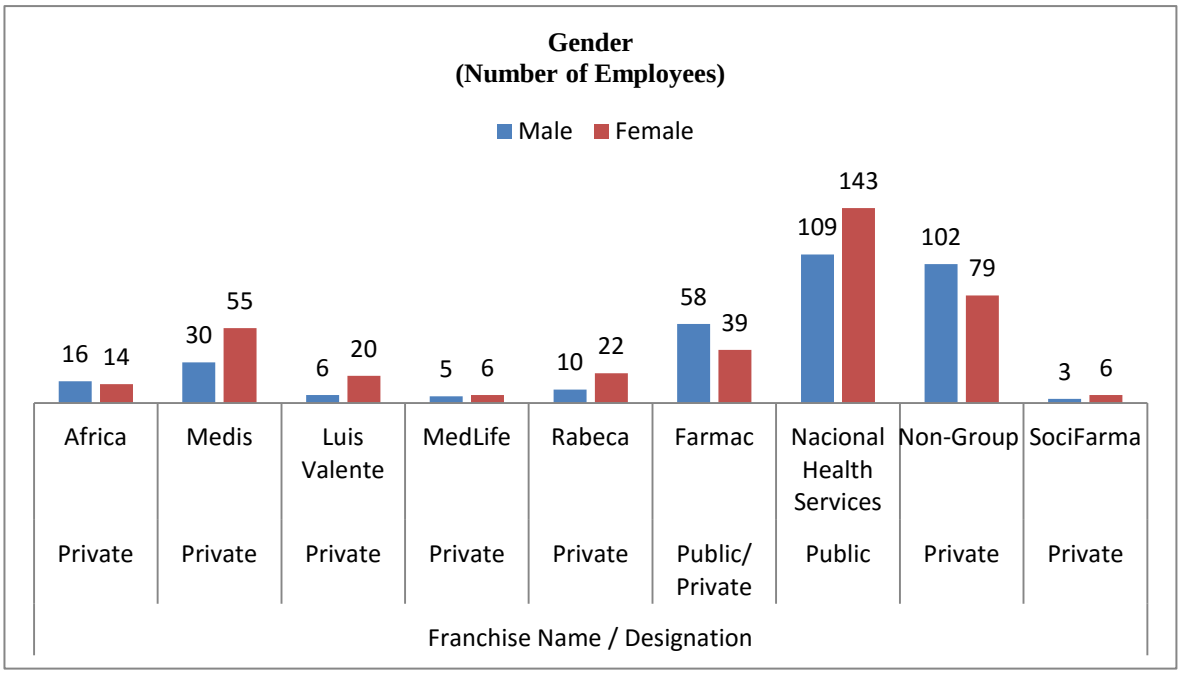

Figure 4.4 | Pharmacy's Franchise Gender Distribution
Source: Author Compilation data from: Personal Interviews (April-August, 2015)

Population is also a key factor to bear in mind when analysing employment. With this in mind, table 4.4 below presents this pharmacy view based on the last 2007 national population census and its 2013 or study year projections. From the estimated 1.21 million habitants in the city of Maputo in the study year; 52% were female and 48% male. In the sampled pharmacies the 723 jobs comprised about 0.06% of the entire population of the city.

Table 4.4 | Municipality Population Versus Pharmacy's Direct Employment

Data Reference	Jurisdiction Category	Population			Sampled Pharmacies					
					Employment			Proportion (%)		
		Total	Men	Women	Total Units of Jobs	Men	Women	Total Units of Jobs	Men	Women
2007 National Population Census	Maputo City	1,111,600	540,800	570,800	n/a	n/a	n/a	n/a	n/a	n/a
	Mozambique	20,632,000	9,930,000	10,702,000	n/a	n/a	n/a	n/a	n/a	n/a
2013 Projections (Based on 2007 Census)	Maputo City	1,209,993	583,334	626,659	723	339	384	0.0598	0.0581	0.0613

Source: Author Compilation data from: INE (2011), INE (2013a), and Personal Interviews (April-August, 2015)

4.2.1.2 Age Perspective

The pharmacy age groups were also analysed to assist in explaining the impact of the national and city's age trends on employment. Figure 4.5 below shows the district's age view in a trend of a bell shaped normal distribution amongst the 5 age groups, with its peak pointing to the 26-35 years group in the most of the districts, representing 43.15% of the districts pharmacy's employment. The age range 36-45 follows with 33.06% of the working positions. In the districts of Katembe and Kanyaka the 36-45 age range employed the majority of workers though with insignificant magnitude of 4 and 3 jobs respectively.

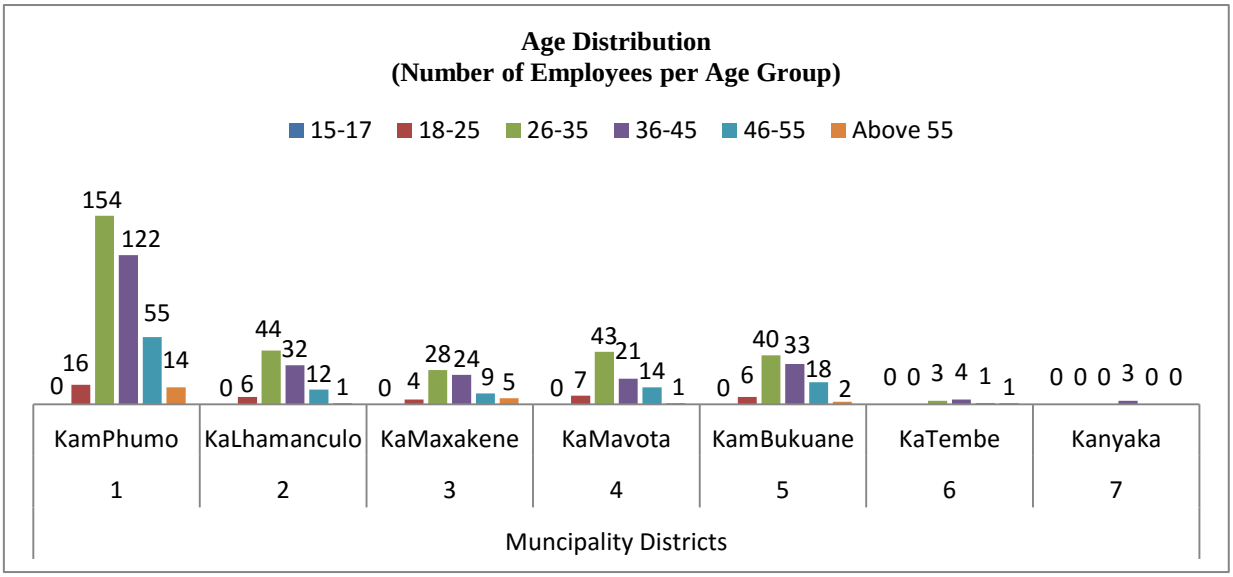

Figure 4.5 | Pharmacy's District Age Distribution
Source: Author Compilation data from: Personal Interviews (April-August, 2015) and NCHA (2010)

In the franchise age distribution perspective of pharmacy's employment, figure 4.6 below, presents similar trends as in the case of the municipality districts, with the majority of the employment falling into the 26-35 age range as in the case of six franchises.

The other three franchises presented the 36-45 age range with the majority of the employment, namely Africa, Farmac and the National Health Services. In Africa and the National Health Services such age range was followed by the traditional 26-35 group, however, for Farmac the next best employee age group was in fact 46-55 with 31 positions against 17 for the traditional 26-35 age group. This aspect will be further discussed in the discussion section 5.2.1.

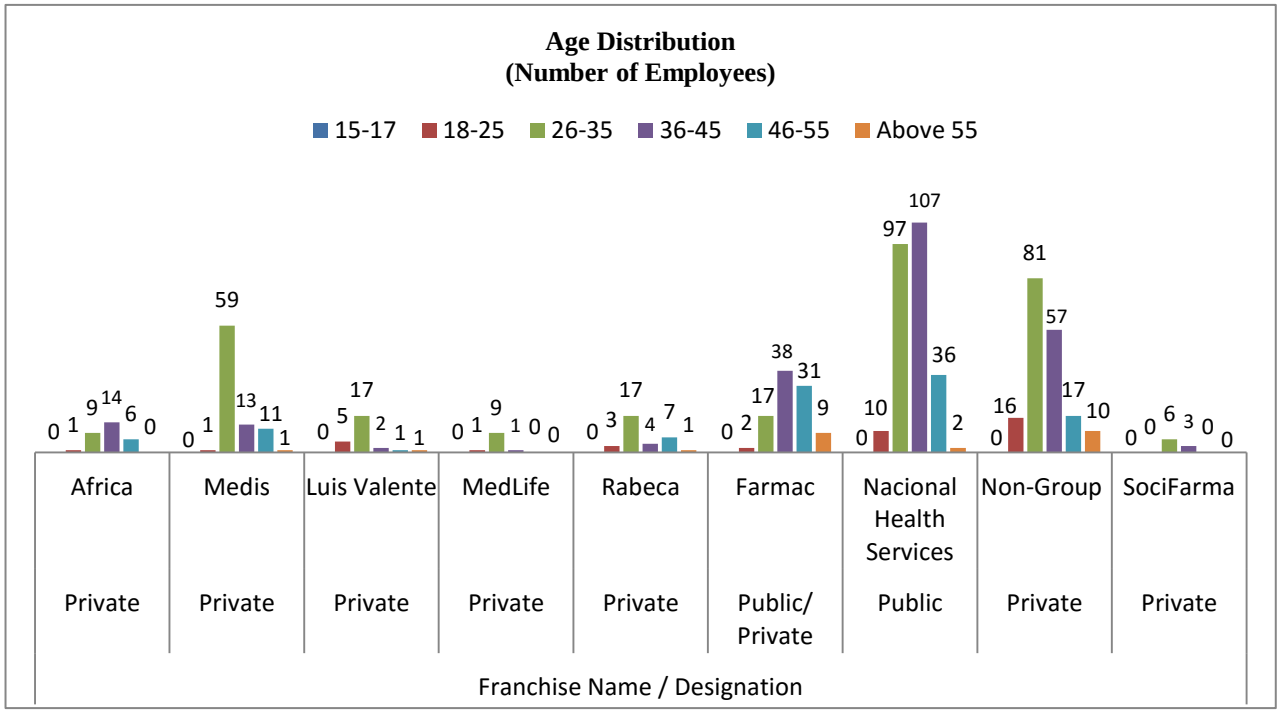

Figure 4.6 | Pharmacy's Franchise Age Distribution
Source: Author Compilation data from: Personal Interviews (April-August, 2015)

4.2.1.3 Income or Direct Remuneration Position

The above employment yields of the sampled pharmacies generated the pharmacy's income impact in terms of salaries and wages or the jobs remuneration in general, which accounted for about MZN 7,780,834 monthly.

Table 4.5 below shows that in the district perspective, KamPhumo generated the majority of the income impact with about MZN 4,584,725 worth in monthly salaries and wages.

The franchise view is illustrated in table 4.6 below, where the National Health Services had the better income impact with monthly remuneration of about MZN 2,378,400; followed by the Non-group and Farmac with MZN 1,989,744 and MZN 1,278,515 worth of monthly employee remuneration respectively.

Table 4.5 | District View of Pharmacy's Direct Remuneration

Municipality Districts		Quarters		Quarters Direct Jobs		Remuneration			
						Monthly		Year	
Reference Number	Name	Units	Proportion (%)	Units	Proportion (%)	Value (MZN)	Proportion (%)	Value (MZN)	Proportion (%)
1	KamPhumo	6	13.64	361	49.93	4,584,727.00	58.92	55,016,723	58.92
2	KaLhamanculo	7	15.91	95	13.14	825,962	10.62	9,911,541	10.62
3	KaMaxakene	4	9.09	70	9.68	595,200	7.65	7,142,400	7.65
4	KaMavota	9	20.45	86	11.89	728,640	9.36	8,743,680	9.36
5	KamBukuane	10	22.73	99	13.69	931,805	11.98	11,181,669	11.98
6	KaTembe	5	11.36	9	1.24	89,000	1.14	1,068,000	1.14
7	Kanyaka	3	6.82	3	0.41	25,500	0.33	306,000	0.33
	Total	44	100	723	100	7,780,834	100.00	93,370,013	100.00

Source: Author Compilation data from: Personal Interviews (April-August, 2015) and NCHA (2010)

Table 4.6 | Franchise View of Pharmacy's Direct Remuneration

Franchise			Franchise Entities		Franchise Direct Jobs		Remuneration			
							Monthly		Year	
Reference	Name	Type	Units	Proportion (%)	Units	Proportion (%)	Value (MZN)	Proportion (%)	Value (MZN)	Proportion (%)
Franchise 1	Africa	Private	5	4.72	30	4.15	287,600.00	3.70	3,451,200.00	3.70
Franchise 2	Medis	Private	10	9.43	85	11.76	952,500.00	12.24	11,430,000.00	12.24
Franchise 3	Luis Valente	Private	3	2.83	26	3.60	281,400.00	3.62	3,376,800.00	3.62
Franchise 4	MedLife	Private	2	1.89	11	1.52	214,000.00	2.75	2,568,000.00	2.75
Franchise 5	Rabeca	Private	5	4.72	32	4.43	291,350.00	3.74	3,496,200.00	3.74
Franchise 6	Farmac	Public/Private	20	18.87	97	13.42	1,278,515.48	16.43	15,342,185.76	16.43
Franchise 7	Nacional Health Services	Public	33	31.13	252	34.85	2,378,400.00	30.57	28,540,800.00	30.57
Franchise 8	Non-Group	Private	26	24.53	181	25.03	1,989,744.00	25.57	23,876,928.00	25.57
Franchise 9	SociFarma	Private	2	1.89	9	1.24	107,325.00	1.38	1,287,900.00	1.38
		Total	106	100	723	100	7,780,834	100	93,370,014	100

Source: Author Compilation data from: Personal Interviews (April-August, 2015)

Figure 4.7 below shows the districts share of monthly remuneration. KamPhumo presented the biggest share of 58.92%; Kanyaka and Katembe contrasted with the least share of 0.33% and 1.14 respectively.

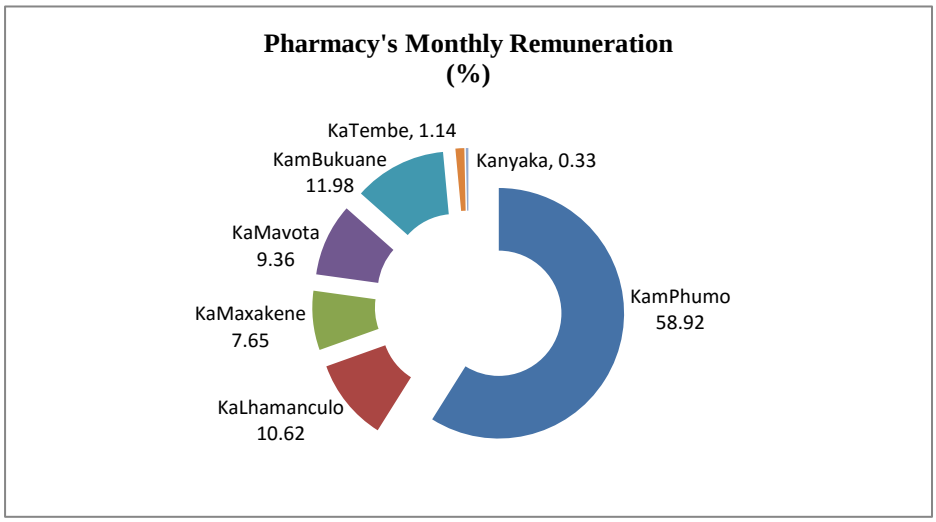

Figure 4.7 | District's Share of Monthly Remuneration
Source: Author Compilation data from: Personal Interviews (April-August, 2015) and NCHA (2010)

The franchise view of pharmacy's monthly remuneration share is presented in figure 4.8 below. The National Health Services had most of the share with 30.57%, followed by the Non-group with 25.57%. Results also illustrated that, Africa and Rabeca franchises with a single local owner also deserve its relevancy in the income impact with their 3.7% and 3.74 % share respectively; when compared with other well established, structured and sometimes multinational group franchises.

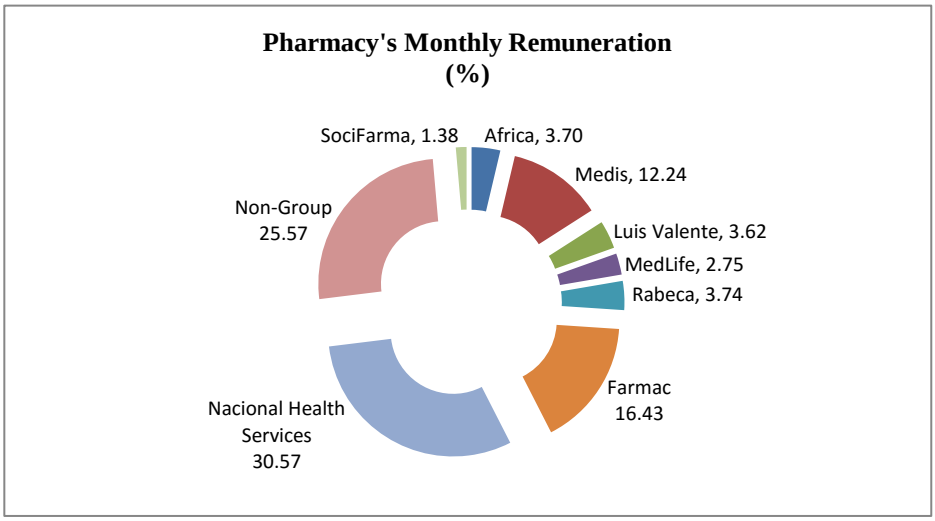

Figure 4.8 | Franchise's Share of Monthly Remuneration
Source: Author Compilation data from: Personal Interviews (April-August, 2015)

4.2.2 Expenditure Profile of a Pharmacy

In the normal business operations of a typical pharmacy, the following standard expenditures needed to be performed in an established frequency within the financial year, namely licence fees payable to the national directorate of pharmacies, municipality dues payable to the municipality of Maputo, insurance premium mainly fire and personal accident, payable to applicable pharmacy insurer company, social security contributions payable to the National Institute of Social Security and the fire extinguisher maintenance fee payable to the relevant service provider.

Other expenditures such as direct employment remuneration and taxes are herein dealt in dedicated sections.

Figure 4.9 below shows such picture of the expenditure shares where social security contribution had the majority of the expenditure profile share with 77.06%; followed by municipality dues with 14.86%.

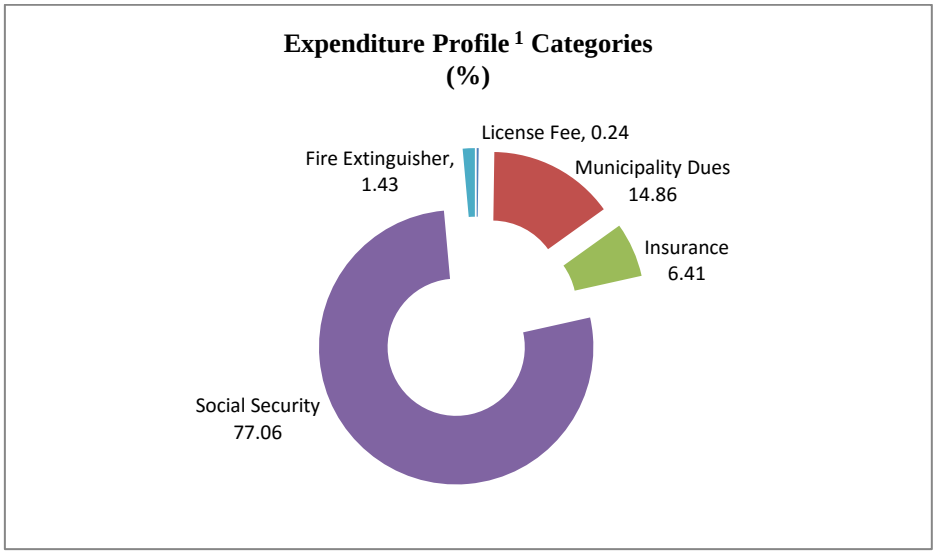

Figure 4.9 | Pharmacies Expenditure Profile
[1]Excludes Salaries/Wages (remuneration) and Tax dues

Source: Author Compilation data from: Personal Interviews (April-August, 2015)

4.2.2.1 Municipality Dues

According to official reports, the municipality of Maputo in the year 2013 generated total revenue worth MZN 245,908,337.80 from the economic entities operating in the city. The applicable revenue categories were economic activity tax, advertisement or fee on the displayed entity name, property tax and waste collection tax. Table 4.7 below illustrates that property tax had the majority of the revenue share with 44.98%, followed by the waste tax with 41.85%, and the economic activity tax with 12.54%. When comparing such overall declared municipality revenue with the sampled pharmacy expenditure due to the municipality, results showed that the pharmacy contribution was about 0.55% (MZN 1,357,777.47). This relatively low contribution is due amongst others reasons to the deficient payment collections mechanism and will be discussed in section 5.2.2.

Table 4.7 | Dimension of Municipality Dues for 2013

Category	Municipality Dues			
	Total Entities		Sampled Pharmacies	
	Value (MZN)	Proportion (%)	Value (MZN)	Proportion (%)
Municipality Economic Activity Tax	30,838,476.94	12.54	n/a	n/a
Municipality Entity Display Name Tag Fee	1,539,230.00	0.63	n/a	n/a
Municipality Property Tax	110,613,274.70	44.98	n/a	n/a
Municipality Waste Tax	102,917,356.16	41.85	n/a	n/a
Total	245,908,337.80	100.00	1,357,777.47	0.55

Source: Author Compilation data from: Municipality of Maputo (2013) and Personal Interviews (April-August, 2015)

4.2.2.2 Social Security

In the social security perspective, the National Institute for Social Securities (NISS) collected in the year 2013 a total of MZN 4,466,773,560 from national contributions, from which 0.016% or MZN 733,432.34 were contributions from pharmacies as illustrated in table 4.8 below. Pharmacies in the city of Maputo accounted for 29.94% of the national share or MZN 219,588.90.

Results accounted for from respondents in sampled pharmacies in the City; revealed a figure of MZN 7,038,550.49 worth out of contributions which was significantly different from the one reported by the authorities. Mis-reporting, computerization and related system errors, contribution's processing software upgrade and false declarations by pharmacy contributor, were some of the reasons behind pointed out by the authorities.

Table 4.8 | Dimension of Social Security Expenditure

Jurisdiction	Social Security Contribution							
	Pharmacies		Total National		Sampled Pharmacies			
	Value (MZN)	Proportion (%)	Value (MZN)	Proportion (%)	Value (MZN)	Proportion (%)	Variance from Total National	
							Value (MZN)	Proportion (%)
Maputo City	219,588.90	29.94		0.005	7,038,550.49	0.16	-6,818,961.60	-0.15
Mozambique	733,432.34	100.00	4,466,773,560.00	0.016			-6,305,118.15	-0.14

Source: Author Compilation data from: NISS (2015) and Personal Interviews (April-August, 2015)

From a total of MZN 9,134,206.44 in the pharmacy's expenditure profile, MZN 21,600 were from license fees; MZN 1,357,777 in municipality dues; MZN 585,876.86 in insurance covers; MZN 7,038,550.49 in social security contributions and MZN 130,401.62 were spent in maintaining fire extinguishers. The above is illustrated in a district view in table 4.9 below, which also shows KamPhumo and KamBukuane as the biggest spenders with MZN 5,852,652.81 and MZN 1,066,401.07 respectively.

The franchise view of pharmacy's expenditure profile is presented in table 4.10 below, where, the Non-group had the most of the expenditure with MZN 2,727,887.08 followed by the National Health Services with MZN 2,033,796, Farmac with MZN 1,852,108.46 and Medis with MZN 1,183,728.43 respectively.

Table 4.9 | District View of Pharmacy's Expenditure Profile

Municipality Districts			Year Value of Expenditure Categories (MZN)					Total Expenditure	
Reference Number	Name	Pharmacies Units	License Fee	Municipality Dues	Insurance	Social Security	Fire Extinguisher	Value (MZN)	Proportion (%)
1	KamPhumo	42	10,500.00	788,454.35	412,506.51	4,585,090.63	56,101.32	5,852,652.81	64.07
2	KaLhamanculo	14	2,700.00	131,698.94	55,870.95	656,883.88	13,172.46	860,326.23	9.42
3	KaMaxakene	8	1,500.00	89,696.32	25,939.00	382,433.52	10,718.15	510,286.99	5.59
4	KaMavota	15	2,400.00	110,239.72	18,261.87	575,925.60	18,116.15	724,943.34	7.94
5	KamBukuane	20	4,200.00	225,092.14	66,578.53	742,036.86	28,493.54	1,066,401.07	11.67
6	KaTembe	4	300.00	11,876.00	6,720.00	74,760.00	2,300.00	95,956.00	1.05
7	Kanyaka	3	0.00	720.00	0.00	21,420.00	1,500.00	23,640.00	0.26
	Total	106	21,600.00	1,357,777.47	585,876.86	7,038,550.49	130,401.62	9,134,206.44	100
	Proportion (%)	n/a	0.24	14.86	6.41	77.06	1.43		

Source: Author Compilation data from: Personal Interviews (April-August, 2015) and NCHA (2010)

Table 4.10 | Franchise View of Pharmacy's Expenditure Profile

Franchise			Pharmacies	Year Value of Expenditure Categories (MZN)					Total Expenditure	
Reference	Name	Type	Units	License Fee	Municipality Dues	Insurance	Social Security	Fire Extinguisher	Value (MZN)	Proportion (%)
Franchise 1	Africa	Private	5	1,500.00	74,194.00	0.00	241,584.00	0.00	317,278.00	3.47
Franchise 2	Medis	Private	10	3,000.00	236,957.20	108,593.35	800,100.00	35,077.88	1,183,728.43	12.96
Franchise 3	Luis Valente	Private	3	900.00	69,560.16	18,695.00	236,376.00	11,712.30	337,243.46	3.69
Franchise 4	MedLife	Private	2	600.00	24,840.00	12,080.00	179,760.00	6,450.00	223,730.00	2.45
Franchise 5	Rabeca	Private	5	1,500.00	67,992.00	7,530.00	244,734.00	16,300.00	338,056.00	3.70
Franchise 6	Farmac	Public/Private	20	5,700.00	465,869.51	296,258.51	1,073,953.00	10,327.44	1,852,108.46	20.28
Franchise 7	National Health Services	Public	33	0.00	13,440.00	0.00	1,997,856.00	22,500.00	2,033,796.00	22.27
Franchise 8	Non-Group	Private	26	7,800.00	382,068.60	126,170.00	2,185,314.48	26,534.00	2,727,887.08	29.86
Franchise 9	SociFarma	Private	2	600.00	22,856.00	16,550.00	78,873.00	1,500.00	120,379.00	1.32
		Total	106	21,600.00	1,357,777.47	585,876.86	7,038,550.48	130,401.62	9,134,206.43	100
		Proportion (%)	n/a	0.24	14.86	6.41	77.06	1.43		

Source: Author Compilation data from: Personal Interviews (April-August, 2015)

The relative district expenditure share is presented in figure 4.10 below, with KhamPhumo presenting the biggest share of about 64.07% followed by KamBukuane with 11.67%. In contrast, Kanyaka and KaTembe had the least share with 0.26% and 1.05% respectively.

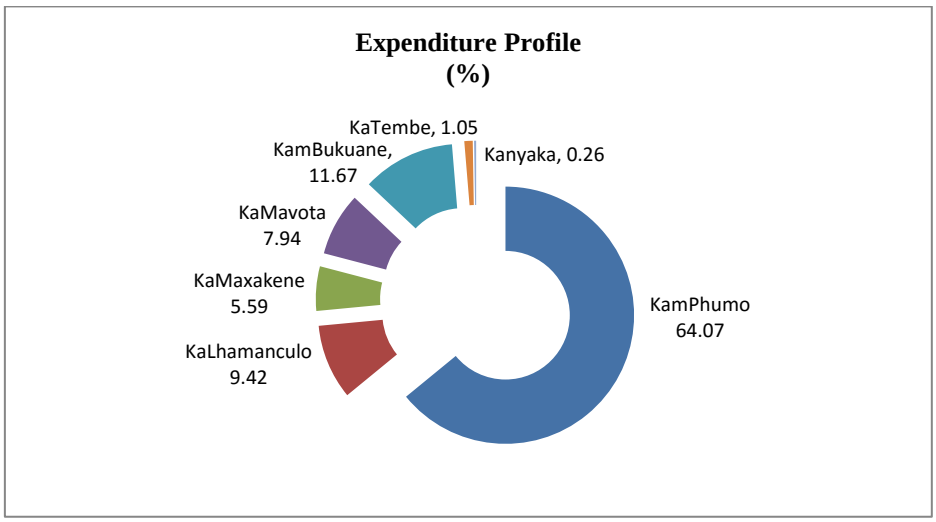

Figure 4.10 | District's Share of Pharmacy's Expenditure Profile
Source: Author Compilation data from: Personal Interviews (April-August, 2015) and NCHA (2010)

The expenditure share of the municipality franchises is illustrated in figure 4.11 below, where the Non-group presented the biggest share of 29.86%, followed by the National Health Services, Farmac and Medis with 22.27%; 20.28% and 12.96% respectively.

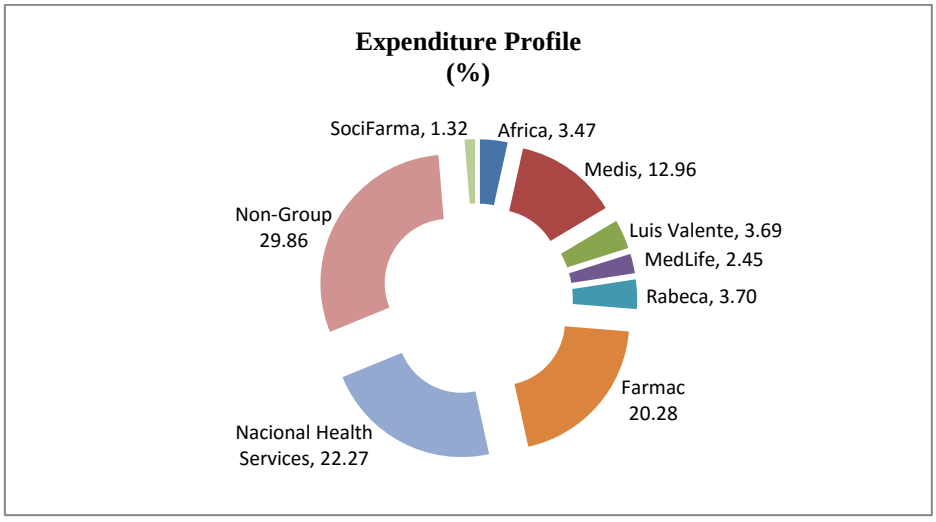

Figure 4.11 | Franchise Share of Pharmacy's Expenditure Profile
Source: Author Compilation data from: Personal Interviews (April-August, 2015)

4.2.3 Tax Impact of a Pharmacy

From a fiscal perspective and taking into consideration the ongoing national budget deficit, and the quest for in-country sources of funds; pharmacy's tax expenditure and its related economic impact was a very relevant variable in this study. The corporate and income tax were the considered tax variables which are regulated by the Ministry of Finance. Figure 4.12 below shows that the income tax had most of the share with 55.95% against corporate tax with 44.05%.

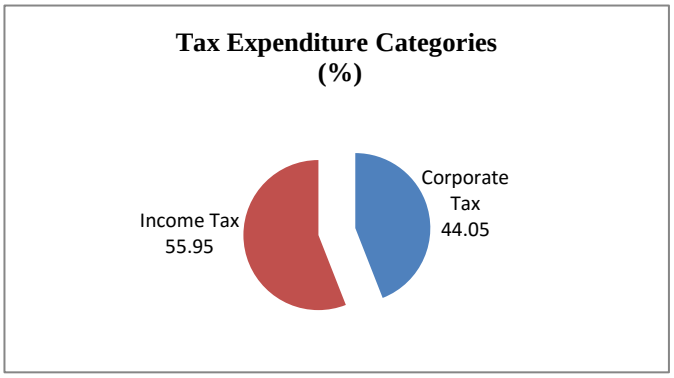

Figure 4.12 | Pharmacy's Tax Expenditure Categories
Source: Author Compilation data from: Personal Interviews (April-August, 2015)

The district's view of the tax expenditure is displayed in table 4.11 below, where out of a total of MZN 3,632,515.46, KamPhumo contributed the most with MZN 2,510,874.49 and the sampled Kanyaka pharmacies had no tax expenditure related to pharmacy activities.

Table 4.11 | District View of Pharmacy's Tax Expenditure

Municipality Districts			Tax Expenditure Categories (MZN)		Total Tax Expenditure	
Reference Number	Name	Pharmacies Units	Corporate Tax	Personal Tax	Value (MZN)	Proportion (%)
1	KamPhumo	42	776,548.93	1,734,325.56	2,510,874.49	69.12
2	KaLhamanculo	14	186,153.86	42,666.00	228,819.86	6.30
3	KaMaxakene	8	77,595.80	81,906.00	159,501.80	4.39
4	KaMavota	15	233,518.18	56,226.00	289,744.18	7.98
5	KamBukuane	20	307,736.37	102,188.76	409,925.13	11.28
6	KaTembe	4	18,500.00	15,150.00	33,650.00	0.93
7	Kanyaka	3	0.00	0.00	0.00	0.00
	Total	106	1,600,053.14	2,032,462.32	3,632,515.46	100
	Proportion (%)	n/a	44.05	55.95		

Source: Author Compilation data from: Personal Interviews (April-August, 2015) and NCHA (2010)

From the franchise perspective, table 4.12 below shows that the non-group spent about MZN 1,605,773 followed by Medis and Farmac with MZN 679,146.06 and MZN 628,837.32 respectively.

Table 4.12 | Franchise View of Pharmacy's Tax Expenditure

Franchise			Pharmacies	Tax Expenditure Categories (MZN)		Total Tax Expenditure	
Reference	Units	Type	Units	Corporate Tax	Personal Tax	Value (MZN)	Proportion (%)
Franchise 1	Africa	Private	5	141,261.08	44,100.00	185,361.08	5.10
Franchise 2	Medis	Private	10	528,846.06	150,300.00	679,146.06	18.70
Franchise 3	Luis Valente	Private	3	148,940.00	37,500.00	186,440.00	5.13
Franchise 4	MedLife	Private	2	7,560.00	37,500.00	45,060.00	1.24
Franchise 5	Rabeca	Private	5	96,770.00	41,328.00	138,098.00	3.80
Franchise 6	Farmac	Public/ Private	20	18,063.00	610,774.32	628,837.32	17.31
Franchise 7	National Health Services	Public	33	0.00	139,200.00	139,200.00	3.83
Franchise 8	Non-Group	Private	26	634,313.00	971,460.00	1,605,773.00	44.21
Franchise 9	SociFarma	Private	2	24,300.00	300.00	24,600.00	0.68
		Total	106	1,600,053.14	2,032,462.32	3,632,515.46	100
		Proportion (%)	n/a	44.05	55.95		

Source: Author Compilation data from: Personal Interviews (April-August, 2015)

The district's tax expenditure share is illustrated in figure 4.13 below, where KamPhumo spent most of the share with 69.12% followed by Kambukuane with 11.28%. Kanyaka and KaTembe had the least share with zero and 0.93% respectively.

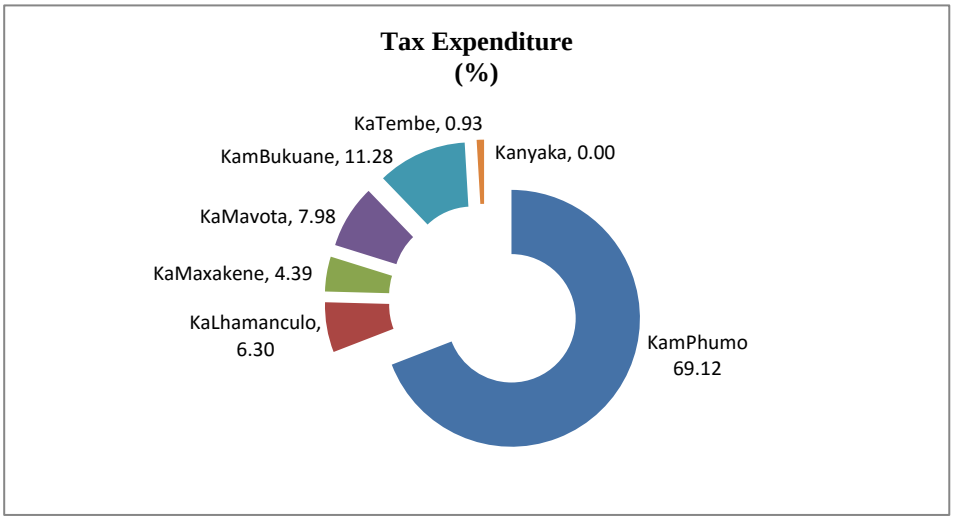

Figure 4.13 | District's Share of Pharmacy's Tax Expenditure
Source: Author Compilation data from: Personal Interviews (April-August, 2015) and NCHA (2010)

Figure 4.14 below presents the tax expenditure share for the pharmacy franchises in the municipality of Maputo. The biggest tax payer was the Non-group with 44.21% followed by Medis with 18.7% and Farmac with 17.31%. SociFarma and MedLife presented the least share with 0.68% and 1.24% respectively.

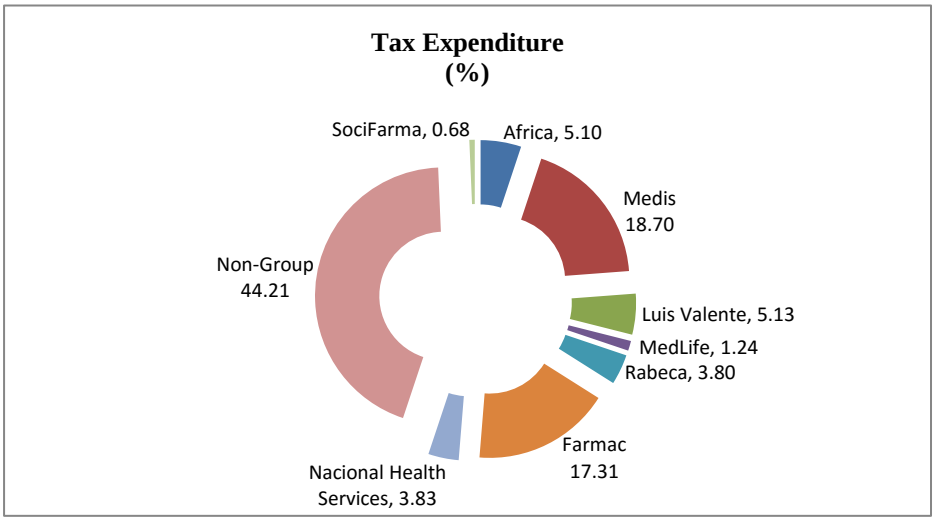

Figure 4.14 | Franchise Share of Pharmacy's Tax Expenditure
Source: Author Compilation data from: Personal Interviews (April-August, 2015)

This study also had a glimpse of the magnitude of the pharmacy Tax expenditure in comparison to the national customs and excise tax revenue. Table 4.13 below depicts such results from a context of an overall capital and current tax revenue of about MZN 12,887,910,630 representing 27.04% of the country's gross domestic product (GDP). The relevant study variables from the national tax revenue were corporate tax worth MZN

34,482,898,460 and income tax with MZN 14,831,276,090; representing 7.35% and 3.16% of the national GDP respectively.

The national customs and excise authority also classifies pharmacies in a specific economic activity code (EAC). Results from such tax code excluding VAT, indicated that, pharmacy's corporate tax had a share of 41.55% or MZN 7,687,507.22 and the income tax contributed with 58.45% or MZN 10,814,023.62 which represented 0.022% and 0.073% of the national corporate and income tax respectively.

Results from the sampled pharmacies showed a corporate tax expenditure share of 20.81% and income tax of 18.79% from the total national pharmacy tax revenue excluding VAT, or MZN 1,600,053.14 and MZN 2,032,462.32 for corporate and income tax respectively. The total tax revenue from the sampled pharmacies of MZN 3,632,515.46 represented 19.63% of the total national pharmacy corporate and income tax excluding VAT contributions. In the same line of comparison the sampled corporate tax revenue represented 0.005% and the income tax 0.014% of the total corporate and income customers and excise tax revenue respectively, in the same period.

Table 4.13| National Versus Pharmacy's Tax Expenditure

Tax Category	Pharmacy Realised Tax (CAE Pharmacy)							Total National Customs and Excise Revenue			
	National				Sampled Pharmacies			Designated Fiscal Revenue		Capital and Current Revenue GDP Current Prices = MZN 469,238,000,000	
	Value (MZN)	Value Proportion Excluding VAT (%)	Value Proportion with VAT (%)	Total Designated Fiscal Revenue Proportion (%)	Value (MZN)	Value Proportion on National Excluding VAT (%)	Total Designated Fiscal Revenue Proportion (%)	Value (MZN)	GDP Proportion (%)	Value (MZN)	GDP Proportion (%)
Corporate Tax	7,687,507.22	41.55	38.51	0.022	1,600,053.14	20.81	0.005	34,482,898,460	7.35		
Income Tax	10,814,023.62	58.45	54.17	0.073	2,032,462.32	18.79	0.014	14,831,276,090	3.16		
Sub Total	18,501,530.84	100	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Added Value Tax (VAT)	1,463,030.65	n/a	7.33	0.004				39,127,467,430	8.34		
Total	19,964,561.49	n/a	100		3,632,515.46	19.63				126,887,910,630	27.04

Source: Author Compilation data from: Personal Interviews (April-August, 2015), Customs and Excise Authority (2013) and Customs and Excise Authority (2014)

4.3 Local Premium or Economic Multiplier of a Pharmacy

Once quantified the pharmacy's income expenditure, expenditure profile and tax expenditures; this section illustrated the quantification and results for economic multipliers or local premiums for the municipality districts as well as the sampled municipality pharmacy franchises. Formula 4.1 below sets out the mathematical equation to determine the magnitude of pharmacies economic impact represented by the economic multiplier or local premium.

Formula 4.1 | Local Premium or Economic Multiplier Equation

$$Multiplier = \frac{1}{1 - c(1-t)r}$$

Variable	Description
Multiplier	Factor of proportionality (by how much a variable changes)
c	Marginal propensity to consume (the proportion of income that is spent)
r	Retention rate (the proportion of expenditure that is spent in the City of Maputo)
t	Tax rate (official tax rate on goods and services)

Source: Author Compilation, data from: TEMPI (2008)

4.3.1 Marginal Propensity to Consume

The multiplier calculation starts with the quantification of marginal propensity to consume (c) for the municipality districts and pharmacy franchises. In this study, the marginal propensity to consume is viewed on a family basis monthly expenditure budget which is associated to a family monthly income.

With this line of thought, table 4.14 below, shows the estimated family expense as per 2008/9 household inquiry on family budgets. The second variable is the expenditure retention rate in the municipality of Maputo as viewed by respondents. The final variable in the above equation is the tax rate which was set to the value of 17% or the official rate on goods and services; in line to the pharmacy's transactional impact and indeed to its key role on the overall national tax revenue, representing 8.34% of GDP.

As explained in the subsequent sections, the base year for the consumer price index which directly affects the family budgets; expenditures thereafter and the overall consumption and saving patterns, is the year 2010 (2010=0). As illustrated in table 4.14 below, the city

of Maputo had an average monthly family expense of 11,156 meticals, and the related national urban expense amounted to 5,530 meticals (Chipembe et al, 2011:28-29).

Table 4.14 | Estimated Family Expenses (2008/9)

Geographic Jurisdiction	Average Monthly Family Expenses (MZN)	Average Yearly Family Expense (MZN)
	Family Budget Survey	Family Budget Survey
	2008/9	2008/9
National Urban	5,530	66,360.00
Maputo City	11,156	133,872.00

Source: Author Compilation, data from: Chipembe et al (2011)

The average monthly family expenses illustrated above were subject to changes from 2008/9 to the study year 2013. Acknowledging this fact, table 4.15 below, shows the magnitude of such changes in terms of the evolution of the consumer price index (CPI) throughout the five years of relevance for this study (2009-2013) for the city of Maputo and the equivalent national urban. The year CPI average index was then determined from the monthly values for the city of Maputo and the nation urban perspectives.

Thus, for 2009, the city of Maputo had a CPI average of 83.31, with a national average of 82.96, resulting in a positive variance of 0.42%, meaning that prices in the city of Maputo exceeded national urban levels by 0.42%.

With the same approach, in 2010, the city had an average CPI of 93.89, with a national urban average of 93.27, which placed the city further above national prices by 0.66%. In the year 2011, the city had a CPI average of 103.61, with a national average of 103.68, turning the city cheaper than the national urban price levels by 0.08%; and for the year 2012 the city had a CPI average of 105.48, with a national average of 106.38, which further reduced the city's price levels by 0.58%, when comparing to those at a national urban level.

Finally in the study year 2013 the city had a CPI average of 110.22, with a national urban average of 110.92, which further turned the city's price levels more cheaper by 0.63%.

Table 4.15 | Evolution of the Consumer Price Index (2009-2013)

Consumer Price Index (CPI) ׀ 2010 Base Year (2010=0)															
Year	Geographic Jurisdiction	Months												Year Average	Variance from National (%)
		January	February	March	April	May	June	July	August	September	October	November	December		
2009	City of Maputo	83.37	83.37	84.1	83.86	82.78	82.56	82.68	82.12	82.3	82.81	83.99	85.75	83.31	0.42
	National Urban	84.21	84.04	83.93	83.35	82.00	81.57	81.76	81.52	82.06	82.51	83.43	85.15	82.96	n/a
2010	City of Maputo	87.59	89.07	90.1	91.48	93.29	94.54	96	96.14	96.13	95.66	96.64	100	93.89	0.66
	National Urban	87.45	89.35	90.40	91.38	92.65	93.86	94.05	93.96	94.61	95.11	96.41	100	93.27	n/a
2011	City of Maputo	102.1	103.32	103.4	103.4	103.9	103.3	103.4	103.7	103.63	103.64	104.12	105.46	103.61	-0.08
	National Urban	101.62	102.96	102.86	103.05	103.60	103.25	103.68	104.14	104.06	104.15	104.70	106.14	103.68	n/a
2012	City of Maputo	106.4	105.88	106.2	106	105.6	105	104.9	104.8	104.9	105.18	106.68	107.76	105.77	-0.58
	National Urban	106.82	106.56	106.78	106.52	105.96	105.60	105.63	105.61	105.67	106.02	107.14	108.28	106.38	n/a
2013	City of Maputo	108.9	110.46	110.8	111.4	111	110.5	110.1	109.5	109.36	109.61	110.24	110.95	110.22	-0.63
	National Urban	109.74	111.01	111.34	111.62	111.15	110.73	110.47	110.19	110.45	110.71	111.47	112.11	110.92	n/a

Source: Author Compilation, data from: INE (2015)

Once the yearly average CPI was determined, the study year average monthly family expenses for the city of Maputo and the nation urban were derived using formula 4.2 below. The equation calculates the fixed value of the average family monthly expense, representing the value of the expense today or in this case the study year (2013), from its original value of 2008/9. The quotient between the past value and its past index is then multiplied by the index of the year in question, which represents the present day value of money, to obtain the study year average monthly expenses.

With this principle as illustrated by calculations below, the 2013 average monthly family expense of the city of Maputo was estimated to the value of 14,760 meticals, whereas for the national urban the value was 7,393 meticals. Note that below, the 2009 CPI value of 83.31 represents the average CPI for the year to cater for the inflation impact on pricing.

Formula 4.2 | Converting Value of Money into its Present Day Value

$$FixedPrice = \frac{CurrentPrice}{CurrentIndex} x PresentDayValueforMoney$$

Variable	Description
Fixed Price	The present time commodity price, fixed as a reference of the past commodity price
Current Price	Reference year price or value
Current Index	Reference year commodity index
Present Day Value for Money	Today's commodity index or the year to be fixed

Source: Author Compilation, data from Gujarati (2003)

$$Fixed\ Family\ Monthly\ Expense(2013) = \frac{Monthly\ Expense\ (2009)}{Consumer\ Price\ index\ (2009)} x\ Consumer\ Price\ index\ (2013)$$

$$Fixed\ Family\ Monthly\ Expense: Maputo\ City(2013) = \frac{Monthly\ Expense\ (2009)}{Consumer\ Price\ index\ (2009)} x\ Consumer\ Price\ index\ (2013)$$

$$Fixed\ Family\ Monthly\ Expense: Maputo\ City(2013) = \frac{11{,}156\ MZN\ /Month}{83.31} x\ 110.22$$

$$Fixed\ Family\ Monthly\ Expense: Maputo\ City(2013) = 14{,}759.50\ \cong 14{,}760\ MZN/Month$$

$$Fixed\ Family\ Monthly\ Expense: National\ Urban\ (2013) = \frac{Monthly\ Expense\ (2009)}{Consumer\ Price\ index\ (2009)} x\ Consumer\ Price\ index\ (2013)$$

$$Fixed\ Family\ Monthly\ Expense: National\ Urban\ (2013) = \frac{5{,}530\ MZN/Month}{82.96} x\ 110.92$$

$$Fixed\ Family\ Monthly\ Expense: National\ Urban\ (2013) = 7{,}393.42\ \cong 7{,}393\ MZN/Month$$

To elucidate the family expense changes throughout the five years from 2009 to 2013, the study applied an average year-on-year inflation rate to the estimated family expense. Formula 4.3 below describes the mathematical equation to derive an inflation value between two periods. As an example, the city's inflation rate between 2009 and 2010 was calculated to the value of 12.7%. The city's inflation rate series between 2009-2010, 2010-2011, 2011-2012 and 2012-13 are illustrated in table 4.16 below.

Formula 4.3 | Inflation Rate

$$Inflation\ Rate_{\ year1-year2} = \frac{CPI_{year\ 2} - CPI_{year\ 1}}{CPI_{year\ 1}} x\ 100$$

Source: Author Compilation, data from: Gujarati (2003)

$$Inflation\ Rate_{\ City,2009-2010} = \frac{CPI(2010) - CPI\ (2009)}{CPI\ (2009)} x\ 100$$

$$Inflation\ Rate_{\ City,2009-2010} = \frac{93.89 - 83.31}{83.31} x\ 100$$

$$Inflation\ Rate_{\ City,2009-2010} = 12.70\%$$

The same table, applying the above principles, also shows results for the national urban year-on-year inflation, to fit the corresponded expense. Thus, the average family monthly expenses for the four years following 2009, was derived by the product of the year inflation rate and the previous year average family expense. Results in table 4.16 below showed that the city's inflation rate decreased from 12.7% in 2009/10 period to 10.35% in the 2010/11; 2.09% in the 2011/12 period and increased to 4.21% in the 2012/13 period. The same trend was present for the national urban perspective but with slightly higher values, with the exception of the 2009/10 period where the city had higher rate of 12.7% against 12.43% of the national urban.

The family budgets for the city and national urban increased by 32.31% and 33.69% respectively from 2008/9 to 2013, and the family expense level in the city was about twice when compared to the country's urban level.

Table 4.16 | Inflation Rate and Family Expenses - Maputo City (2009-2013)

Geographic Jurisdiction	Inflation Rate (% CPI Change)				Average Family Monthly Expenses (MZN/Month)				
	Year				Year				
	2009-2010	2010-2011	2011-2012	2012-2013	2009	2010	2011	2012	2013
City of Maputo	12.70	10.35	2.09	4.21	11,156	12,573	13,874	14,164	14,760
National Urban	12.43	11.17	2.60	4.26	5,530	6,217	6,911	7,091	7,393

Source: Author Compilation, data from: INE (2015), Gujarati (2003) and Chipembe et al (2011).

Table 4.17 below, illustrates the CPI and inflation variances for the city of Maputo and the national urban. When analysing the CPI variances, in 2009 the city was 0.35 points more expensive than the national urban, and in 2010, the city prices increased by 0.62 points. In 2011 the city decreased its expensive status by 0.08 points and in 2012 such decline increased by 0.61 points. In the study year 2013, such decline in prices increased by 0.69 when compared with national urban.

Table 4.17 | CPI and Inflation Variances: City of Maputo versus National Urban

CPI Variances (Index Points)					Inflation Variances (%)			
Year					Year			
2009	2010	2011	2012	2013	2009-2010	2010-2011	2011-2012	2012-2013
0.35	0.62	-0.08	-0.61	-0.69	0.27	-0.82	-0.51	-0.05

Source: Author Compilation data from: INE (2015) and Chipembe et al (2011).

When comparing inflation variances from previous year to the next, the city showed that in 2010 the prices were 0.27% more expensive than the national urban ones, in 2011 the city prices level decreased by 0.82%; in 2012 the city level of prices were 0.51% cheaper than the national urban, and finally in 2013 the city presented price levels 0.05% cheaper than the national urban levels.

To ascertain the level of consumption expenditure out of monthly income, the marginal propensity to consume (MPC) was estimated as a quotient between the expenditure or monthly budget and the average monthly remuneration or income (total monthly remuneration divided by the number of jobs). Table 4.18 below shows results for the municipality districts (franchises illustrated in table 4.19 below), where the average MPC was estimated to be 159.08%; meaning that in average a pharmacy worker in the municipality districts spent monthly 59.08% above their monthly salaries or wages to cater for the estimated monthly expenses or family budget. Each worker is viewed in this study

due to the high level of urban unemployment, to be the sole family source of monthly income.

As illustrated in the Table 4.18, there were no savings in the municipality districts from pharmacy's direct income, and the extra required income varied from 16.22% to 74.21%. Thus the marginal propensity to consume in the City is 100% or MPC=1 as the entire income is ought to be consumed to cater for the estimated monthly expense budget.

Table 4.18 | District View of the Average Marginal Propensity to Consume (2013)

Municipality Districts		Monthly Remuneration		Average Month Remuneration	Expense / Remuneration Ratio (Marginal Propensity to consume- MPC)	Consumption Variance from Budget
Reference Number	Name	Value (MZN)	Direct Jobs (Units)	Value (MZN)	%	%
1	KamPhumo	4,584,727	361	12,700	116.22	16.22
2	KaLhamanculo	825,962	95	8,694	169.77	69.77
3	KaMaxakene	595,200	70	8,503	173.59	73.59
4	KaMavota	728,640	86	8,473	174.21	74.21
5	KamBukuane	931,805	99	9,412	156.82	56.82
6	KaTembe	89,000	9	9,889	149.26	49.26
7	Kanyaka	25,500	3	8,500	173.65	73.65
	Total	7,780,834	723	n/a	n/a	
	Average	n/a	n/a	n/a	159.08	

Source: Author Compilation, data from: Personal Interviews (April-August, 2015), NCHA (2010), INE (2015), Gujarati (2003) and Chipembe et al (2011).

Table 4.19 | Franchise View of the Average Marginal Propensity to Consume (2013)

Franchise		Monthly Remuneration		Average Month Remuneration	Expense / Remuneration Ratio (Marginal Propensity to consume- MPC)	Consumption Variance from Budget
Reference	Name / Designation	Value (MZN)	Direct Jobs (Units)	Value (MZN)	%	%
Franchise 1	Africa	287,600	30	9,586.67	153.97	53.97
Franchise 2	Medis	952,500	85	11,205.88	131.72	31.72
Franchise 3	Luis Valente	281,400	26	10,823.08	136.38	36.38
Franchise 4	MedLife	214,000	11	19,454.55	75.87	-24.13
Franchise 5	Rabeca	291,350	32	9,104.69	162.12	62.12
Franchise 6	Farmac	1,278,515	97	13,180.57	111.99	11.99
Franchise 7	National Health Services	2,378,400	252	9,438.10	156.39	56.39
Franchise 8	Non-Group	1,989,744	181	10,993.06	134.27	34.27
Franchise 9	SociFarma	107,325	9	11,925.00	123.78	23.78
	Total	7,780,834	723		131.83	

Source: Author Compilation, data from: Personal Interviews (April-August, 2015), INE (2015), Gujarati (2003) and Chipembe et al (2011).

For the municipality pharmacy franchises the approach to MPC is the same as in the case of the municipality districts. Table 4.19 above shows an average franchise MPC of 131.83%, which means that in average pharmacy franchises spent 31.83% above remuneration to meet the budgeted expenditure; with exception to MedLife that met the expenditure budget and save about 24.13% of monthly remuneration. The other eight franchises didn't save and spent between 11.99% to 62.12% more to cover the required monthly expense budget, assuming one average income earner supporting an average of five (5) people which was the estimated family size (INE, 2007).

The district picture of consumption and savings is illustrated in the figure 4.15 below. In the city of Maputo there were no savings from monthly income, and an additional average of 59.08% was needed to cover monthly expenditure budget. In contrast when looking to the national urban expense budget perspective, all districts have monthly savings ranging from MZN 1,079.56 in KaMavota to MZN 5,307.07 in KamPhumo.

Figure 4.16 below shows the franchise view of consumption and savings. Almost all franchises didn't save and spend in average 31.83% above income to match the required expense needs; with the exception of MedLife that saves about 24.13% or MZN 4,694.55 monthly. The national urban expense perspective indicated savings in all franchises with values ranging from MZN 1,711.69 in Rabeca to MZN 12,061.55 for MedLife, due to the relatively low estimates of the monthly family expense budget when compared to the city one (INE, 2007).

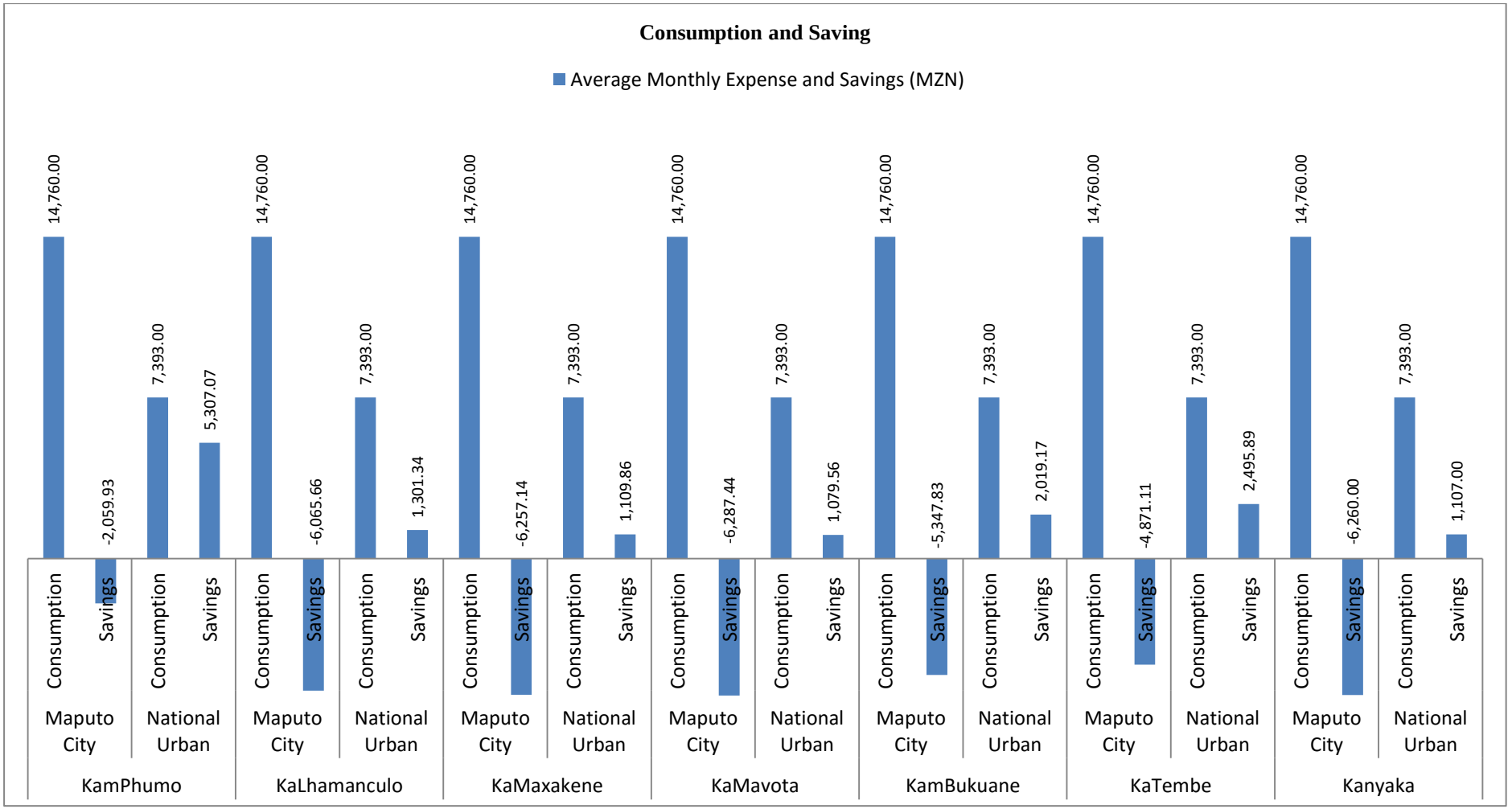

Figure 4.15 | District's View of the Average Consumption and Savings (2013)

Notes: (1) Expenditures budgets of MZN 14,760 and MZN 7,393 were obtained from 2008/9 INE estimates (INE, 2007) adjusted to CPI of the study year 2013 for the City and national urban respectively. (2) Levels of saving/dis-savings were calculated as a quotient between the average monthly expense budget and the average monthly income

Source: Author Compilation, data from: Personal Interviews (April-August, 2015), NCHA (2010), INE (2015), Gujarati (2003) and Chipembe et al (2011).

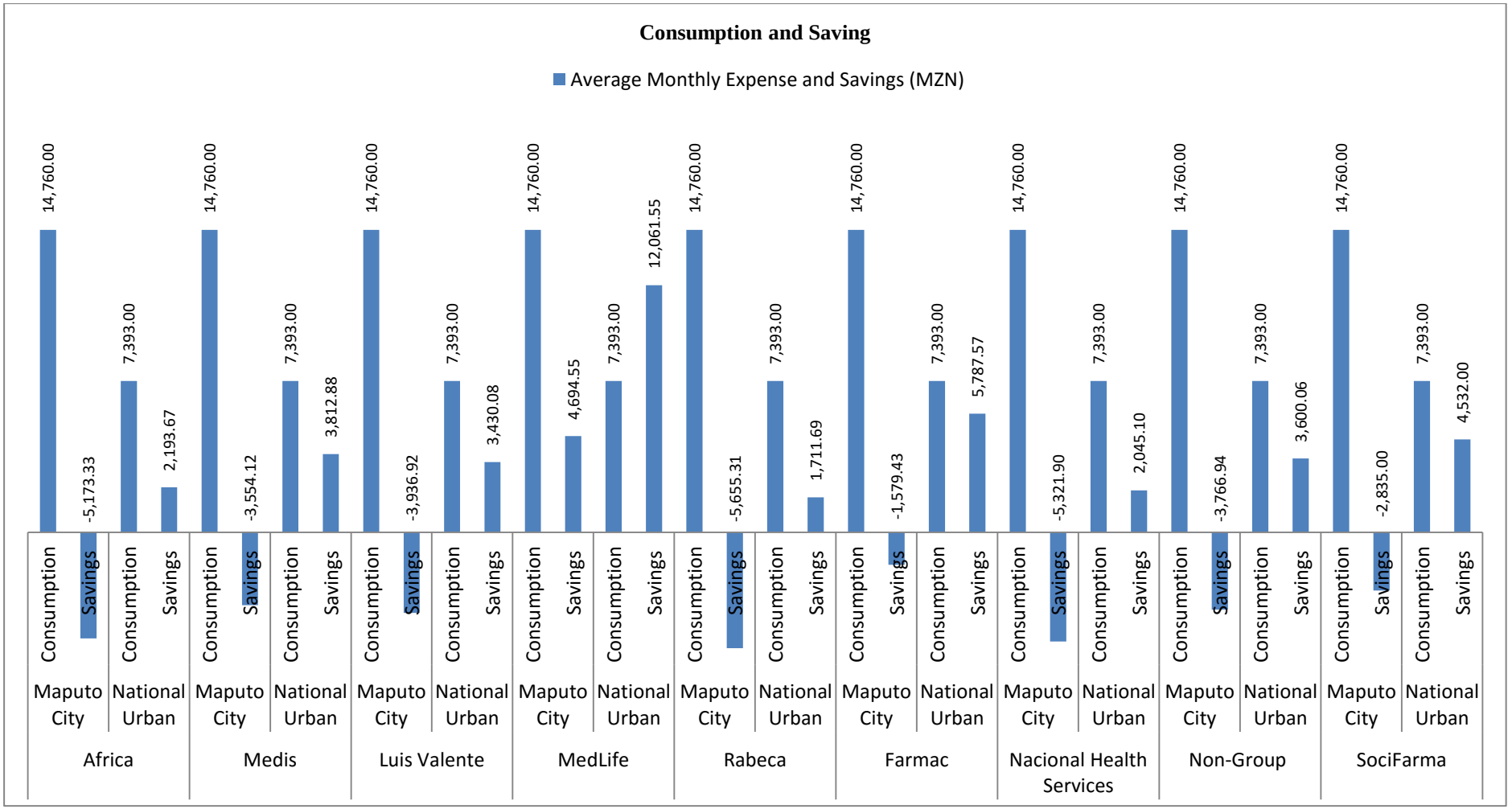

Figure 4.16 | Franchise's View of the Average Consumption and Savings (2013)

Notes: (1) Expenditure budgets of MZN 14,760 and MZN 7,393 were obtained from 2008/9 INE estimates (INE, 2007) adjusted to CPI of the study year 2013 for the City and national urban respectively. (2) Levels of saving/dis-savings were calculated as a quotient between the average monthly expense budget and the average monthly income

Source: Author Compilation, data from: Personal Interviews (April-August, 2015), INE (2015), Gujarati (2003) and Chipembe et al (2011).

4.3.2 Local Premium or Economic Multiplier

Once the MPC has been computed, table 4.20 below, describes all the relevant variables required to determine the economic impact of pharmacies in the city of Maputo. There are three multiplier variables and three pharmacy economic impact independent variables. The multiplier variables are the MPC which was computed above, representing the level of income which is consumed therefore generating the related consumption expenditure in the city. In this study MPC was considered one (1) because the average family expense budget exceeded the related income with the exception of one franchise.

The second multiplier variable was the retention rate or the proportion of income or expenditures which is retained within the boundaries of the city of Maputo. This is an important indicator of the overall income and the redistribution of money from one economic interface to the other within the circular flow of economic activity of the city. This variable was derived from an average of the minimum and maximum value of the category selected in the respondent's questionnaire for the seven districts and the related nine pharmacy franchises

Results are displayed for the district perspective in table 4.21 below with an estimated average value of 0.9068, meaning that 90.68% of the pharmacy income and expenditures were kept within the city and only 9.32 elsewhere. The franchise perspective is displayed in table 4.22 below, with an estimated average retention rate of 0.8917 or 89.17% of the income and expenditure stayed in the city of Maputo and 10.83% moved elsewhere. The last multiplier variable is the applicable tax rate which was set at 17% and is the official rate on goods and services, which significant impact to the national GDP estimated at 8.34%, the highest amongst the fiscal tax rates.

Table 4.20 | Variables of the Economic Multiplier

Variable	Unit of Measure / Designation	Description
Direct Employment	Average Annual Remuneration (MZN)	Direct jobs as per computation from the seven districts and the nine franchises sampled.
Expenditure Profile	MZN	District and franchise computed typical pharmacy's operational expenditure pattern (license fee, municipality dues, insurance, social security and fire extinguisher service fee), excluding salaries/wages remuneration and taxation.
Tax Revenue	Tax	Computed legal and fiscal obligations of corporate tax payable on pharmacy's revenue and income tax charge on employees month remuneration as per applicable tax brackets .
Marginal Propensity to Consume	MPC (c)	As per computation for the seven districts and the nine franchises sampled. Assumed 100% or 1 when the rate exceeds 100%, which means that the entire income or remuneration is consumed or spent. In this study the family expense budget exceeded the average income except for one franchise.
Average Retention Rate for Maputo	r	As per the questionnaire responses for the seven districts and the nine franchises sampled.
Tax Rate	t	Official standard rate of 17% on goods and services, whose monetary value represented about 8.34% of the country's 2013 GDP.

Source: Author Compilation, data from: TEMPI (2008), Personal Interviews (April-August, 2015), NCHA (2010), INE (2015), Gujarati (2003), and Chipembe et al (2011).

The three pharmacy's economic impact independent variables which were estimated in the previous sections, representing the income impact, the expenditure profile impact and the tax impact, were the direct employment (direct jobs), expenditure profile (typical pharmacy operational expenditure patterns) and tax revenue (legal and fiscal obligations).

The magnitude of the economic multiplier or local premium for the municipality districts is also illustrated in table 4.21 below. For its computation the MPC was fixed/assumed at one (1) meaning all the earned income is consumed (indeed as illustrated in previous sections the income was not enough to cover the required expense budget), which had a relative inflationary impact to the value of the multiplier when compared to values of MPC<1. Results revealed an average value of 4.05; which mean that for every metical spent or generated by the district pharmacy's it generated 4.05 times more local economic return which in this study is referred to as local premium or economic multiplier impact.

Table 4.21 | District's Magnitude of the Economic Multiplier

Municipality Districts		Average MPC (c)	Average Tax Rate (t)	Average Retention Rate (r)	Multiplier Coefficient (Units)
Reference Number	Name				
1	KamPhumo	1.00	0.17	0.9037	4.0011
2	KaLhamanculo	1.00	0.17	0.9071	4.0468
3	KaMaxakene	1.00	0.17	0.8972	3.9166
4	KaMavota	1.00	0.17	0.9083	4.0632
5	KamBukuane	1.00	0.17	0.8813	3.7241
6	KaTembe	1.00	0.17	0.9250	4.3057
7	Kanyaka	1.00	0.17	0.9250	4.3057
Average	n/a	1	n/a	0.9068	4.05

Source: Author Compilation, data from: TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), NCHA (2010), INE (2015), Gujarati (2003) and Chipembe et al (2011)

The franchise multiplier magnitude is also shown in table 4.22 below, and similarly to the district perspective above, the MPC was considered one (1) with the exception of MedLife that consumed 75.87 of the available income. The average multiplier coefficient was estimated at 3.72, representing 3.72 more economic return for every metical spent or generated by the pharmacy's franchises.

Table 4.22 | Franchise's Magnitude of Economic Multiplier

Franchise		Average MPC (c)	Average Tax Rate (t)	Average Retention Rate (r)	Multiplier Coefficient (Units)
Reference	Name / Designation				
Franchise 1	Africa	1.00	0.17	0.8000	2.9762
Franchise 2	Medis	1.00	0.17	0.9250	4.3057
Franchise 3	Luis Valente	1.00	0.17	0.9250	4.3057
Franchise 4	MedLife	0.7587	0.17	0.9250	2.3952
Franchise 5	Rabeca	1.00	0.17	0.8000	2.9762
Franchise 6	Farmac	1.00	0.17	0.9188	4.2124
Franchise 7	National Health Services	1.00	0.17	0.9250	4.3057
Franchise 8	Non-Group	1.00	0.17	0.8817	3.7287
Franchise 9	SociFarma	1.00	0.17	0.9250	4.3057
Average	n/a	0.97	n/a	0.8917	3.72

Source: Author Compilation, data from: TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), INE (2015), Gujarati (2003) and Chipembe et al (2011)

4.4 The Magnitude of Pharmacy's Economic Impact

The impact of pharmacies on the economy of the city of Maputo is quantified by the magnitude of the independent variables namely the direct employment, expenditure profile and the tax revenue. Such variables numeric values quantified in previous sections are magnified or multiplied by the local premium or multiplier coefficient for the districts and pharmacy franchises. In this perspective the economic impact is quantified per district and per franchise, highlighting in this manner the unique and critical contributions on one hand of the geographic locations of the districts and on the other the role of the pharmacy franchises and their categories to the overall contribution to the economy of the city. The next sections discuss each of the independent variables.

4.4.1 Employment or Income Impact

The employment or income impact is the product of the direct employment annual remuneration by the related multiplier coefficient. Table 4.23 below shows an estimated district impact of about MZN 371.30 million (ZAR 98.75 million and USD 7.04 million). KamPhumo was the district with most of the impact with about MZN 220.13 million.

Table 4.23 | District's Direct Employment Impact (2013)

Municipality Districts		Multiplier Coefficient (Units)	Economic Impact (MZN)
Reference Number	Name		Direct Employment
1	KamPhumo	4.0011	220,129,408.75
2	KaLhamanculo	4.0468	40,110,320.63
3	KaMaxakene	3.9166	27,973,868.50
4	KaMavota	4.0632	35,527,383.99
5	KamBukuane	3.7241	41,641,692.83
6	KaTembe	4.3057	4,598,493.00
7	Kanyaka	4.3057	1,317,545.75
Total (MZN)			371,298,713.44
Proportion (%)			87.97
Exchange ZAR	ZAR/MZN @	3.76	98,749,657.83
Exchange USD	USD/MZN @	52.75	7,038,838.17

Source: Author Compilation, data from: TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), NCHA (2010), INE (2015), Gujarati (2003) and Chipembe et al (2011)

The franchise employment or income impact is presented in table 4.24 below, with an estimated value of MZN 372.67 million (ZAR 99.11 million and USD 7.06 million). The

National Health Services with MZN 122.89 million, Non-Group with MZN 89.03 million, Farmac with MZN 64.63 million and Medis with MZN 49.21 million were the franchises with most of the economic impact. It is important to note albeit study limitations that, for high pay franchises such as Medlife with average income exceeding their employee average monthly expenses, the multiplier coefficient was relatively lower than when comparted with the National Health Services with lower monthly income and relatively higher multiplier. Thus, in this study income had a significant role in the overall estimation of the economic impact and direct impact perspectives.

Table 4.24 | Franchise's Direct Employment Impact (2013)

Franchise		Multiplier Coefficient (Units)	Economic Impact (MZN)
Reference	Name / Designation		Direct Employment
Franchise 1	Africa	2.9762	10,271,428.57
Franchise 2	Medis	4.3057	49,214,208.83
Franchise 3	Luis Valente	4.3057	14,539,504.84
Franchise 4	MedLife	2.3952	6,150,848.18
Franchise 5	Rabeca	2.9762	10,405,357.14
Franchise 6	Farmac	4.2124	64,626,976.70
Franchise 7	National Health Services	4.3057	122,888,266.95
Franchise 8	Non-Group	3.7287	89,030,228.68
Franchise 9	SociFarma	4.3057	5,545,317.55
Total(MZN)			372,672,137.44
Proportion (%)			88.08
Exchange ZAR	ZAR/MZN @	3.76	99,114,930.17
Exchange USD	USD/MZN @	52.75	7,064,874.64

Source: Author Compilation, data from: TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), INE (2015), Gujarati (2003) and Chipembe et al (2011)

4.4.2 Expenditure Impact

As in the case of employment impact, the expenditure impact is the product of the annual expenditure profile for the districts and franchises and the related economic multipliers. Table 4.25 below indicates that the municipality districts had an impact of about MZN 36.33 million (ZAR 9.66 million and USD 688.71 thousands). KamPhumo with MZN 23.42 million was the district with most of the impact.

Table 4.25 | District's Expenditure Impact (2013)

Municipality Districts		Multiplier Coefficient (Units)	Economic Impact (MZN)
Reference Number	Name		Expenditure Profile
1	KamPhumo	4.0011	23,417,261.74
2	KaLhamanculo	4.0468	3,481,593.92
3	KaMaxakene	3.9166	1,998,586.07
4	KaMavota	4.0632	2,945,595.04
5	KamBukuane	3.7241	3,971,387.97
6	KaTembe	4.3057	413,158.23
7	Kanyaka	4.3057	101,786.87
Total (MZN)			36,329,369.85
Proportion (%)			8.61
Exchange ZAR	ZAR/MZN @	3.76	9,662,066.45
Exchange USD	USD/MZN @	52.75	688,708.43

Source: Author Compilation, data from: TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), NCHA (2010), INE (2015), Gujarati (2003) and Chipembe et al (2011)

The Franchise expenditure impact is illustrated in table 4.26 below. A total of MZN 36.28 million (ZAR 9.65 million or USD 687.84 thousands) was quantified as expenditure impact, with the majority distributed amongst Non-Group with MZN 10.17 million; National Health Services with MZN 8.76 million; Farmac with MZN 7.80 million and Medis with MZN 5.1 million.

Table 4.26 | Franchise's Expenditure Impact (2013)

Franchise		Multiplier Coefficient (Units)	Economic Impact (MZN)
Reference	Name / Designation		Expenditure Profile
Franchise 1	Africa	2.9762	944,279.76
Franchise 2	Medis	4.3057	5,096,785.49
Franchise 3	Luis Valente	4.3057	1,452,070.87
Franchise 4	MedLife	2.3952	535,875.88
Franchise 5	Rabeca	2.9762	1,006,119.05
Franchise 6	Farmac	4.2124	7,801,767.78
Franchise 7	National Health Services	4.3057	8,756,925.73
Franchise 8	Non-Group	3.7287	10,171,509.94
Franchise 9	SociFarma	4.3057	518,316.47
Total(MZN)			36,283,650.97
Proportion (%)			8.58
Exchange ZAR	ZAR/MZN @	3.76	9,649,907.17
Exchange USD	USD/MZN @	52.75	687,841.72

Source: Author Compilation, data from: TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), INE (2015), Gujarati (2003) and Chipembe et al (2011)

4.4.3 Tax Impact

The pharmacy tax impact is the product of the annual tax revenue by the related multiplier coefficient for the districts and franchises. Pharmacy corporate and income tax were the sub-tax variables analysed in this study. Table 4.27 below illustrates the district view of tax impact, where a value of MZN 14.45 million (ZAR 3.84 million or USD 273.85 thousands) was estimated. KhamPhumo was the district with the highest impact with MZN 10.05 million.

Table 4.27 | District's Tax Impact (2013)

Municipality Districts		Multiplier Coefficient (Units)	Economic Impact (MZN)
Reference Number	Name		Tax Revenue
1	KamPhumo	4.0011	10,046,351.12
2	KaLhamanculo	4.0468	925,995.05
3	KaMaxakene	3.9166	624,703.51
4	KaMavota	4.0632	1,177,290.65
5	KamBukuane	3.7241	1,526,603.62
6	KaTembe	4.3057	144,886.98
7	Kanyaka	4.3057	0.00
Total (MZN)			14,445,830.94
Proportion (%)			3.42
Exchange ZAR	ZAR/MZN @	3.76	3,841,976.31
Exchange USD	USD/MZN @	52.75	273,854.61

Source: Author Compilation, data from: TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), NCHA (2010), Customs and Excise Authorities (2013), Customs and Excise Authorities (2014), INE (2015), Gujarati (2003) and Chipembe et al (2011)

The franchise view of tax impact is displayed in the table 4.28 below. The total franchise tax impact was estimated to the value of about MZN 14.14 million (ZAR 3.76 million or USD 268.04 thousands). Non-group with MZN 5.99 million, Medis with MZN 2.92 million and Farmac with MZN 2.65 million were the franchises with most of the impact. The NHS besides of its large distribution with 33 sampled pharmacies the tax impact and contribution were low due on one hand, to the low income base which confers none or low tax contribution in accordance to income tax brackets, and on the other the medication subsidies with no or insignificant tax payments on sale. As a public entity many transactions in NHS pharmacies were also tax exempt (personal interviews, April-August 2015).

Table 4.28 | Franchise's Tax Impact (2013)

Franchise		Multiplier Coefficient (Units)	Economic Impact (MZN)
Reference	Name / Designation		Tax Revenue
Franchise 1	Africa	2.9762	551,669.88
Franchise 2	Medis	4.3057	2,924,202.63
Franchise 3	Luis Valente	4.3057	802,755.65
Franchise 4	MedLife	2.3952	107,927.27
Franchise 5	Rabeca	2.9762	411,005.95
Franchise 6	Farmac	4.2124	2,648,896.02
Franchise 7	National Health Services	4.3057	599,354.14
Franchise 8	Non-Group	3.7287	5,987,467.79
Franchise 9	SociFarma	4.3057	105,920.34
Total(MZN)			14,139,199.68
Proportion (%)			3.34
Exchange ZAR	ZAR/MZN @	3.76	3,760,425.45
Exchange USD	USD/MZN @	52.75	268,041.70

Source: Author Compilation, data from: TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), Customs and Excise Authorities (2013), Customs and Excise Authorities (2014), INE (2015), Gujarati (2003) and Chipembe et al (2011)

The next section presents the overall economic impact of pharmacies in the city of Maputo.

4.4.4 Overall Economic Impact

In the previous sections the independent variables direct employment; expenditure profile and tax revenue were quantified, and through the local premium or economic multiplier magnified to yield the relative economic impact. This section aggregates such impacts in the district and franchise perspectives to generate the overall economic impact of pharmacies to the city of Maputo.

Table 4.29 below presents the complete details of the overall economic impact (from each of the expenditure streams and the total) of pharmacies in the seven districts of the city. It was estimated an impact of MZN 422.07 million (ZAR 112.25 or USD 8 million) for the pharmacies in the municipality districts. Direct employment or income impact had the majority share of the economic impact with 87.97%, the expenditure impact had a share of 8.61% and finally tax impact with 3.42% of the share.

The Franchise view of the overall economic impact is presented in the subsequent table 4.30 below. The aggregated franchise impact was worth MZN423.09 million (ZAR 112.25 million or USD 8.02 million). The direct employment or income impact also had here the majority of the share with 88.08%, expenditure impact had a share of 8.58% and finally the tax expenditure contributed 3.34% to the overall franchise economic impact.

Table 4.29 | District's Overall Economic Impact (2013)

Muncipality Districts		Multiplier Coefficient (Units)	Economic Impact (MZN)			Total Economic Impact	
Reference Number	Name		Direct Employment	Expenditure Profile	Tax Revenue	Value (MZN)	Proportion (%)
1	KamPhumo	4.0011	220,129,408.75	23,417,261.74	10,046,351.12	253,593,021.62	60.08
2	KaLhamanculo	4.0468	40,110,320.63	3,481,593.92	925,995.05	44,517,909.61	10.55
3	KaMaxakene	3.9166	27,973,868.50	1,998,586.07	624,703.51	30,597,158.08	7.25
4	KaMavota	4.0632	35,527,383.99	2,945,595.04	1,177,290.65	39,650,269.68	9.39
5	KamBukuane	3.7241	41,641,692.83	3,971,387.97	1,526,603.62	47,139,684.42	11.17
6	KaTembe	4.3057	4,598,493.00	413,158.23	144,886.98	5,156,538.21	1.22
7	Kanyaka	4.3057	1,317,545.75	101,786.87	0.00	1,419,332.62	0.34
Total (MZN)			371,298,713.44	36,329,369.85	14,445,830.94	422,073,914.23	
Proportion (%)			87.97	8.61	3.42	100	
Exchange ZAR	ZAR/MZN @	3.76	98,749,657.83	9,662,066.45	3,841,976.31	112,253,700.59	
Exchange USD	USD/MZN @	52.75	7,038,838.17	688,708.43	273,854.61	8,001,401.22	

Source: Author Compilation, data from: TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), NCHA (2010), INE (2015), Gujarati (2003) and Chipembe et al (2011)

Table 4.30 | Franchise's Overall Economic Impact (2013)

Franchise		Multiplier Coefficient (Units)	Economic Impact (MZN)			Total Economic Impact	
Reference	Name / Designation		Direct Employment	Expenditure Profile	Tax Revenue	Value (MZN)	Proportion (%)
Franchise 1	Africa	2.9762	10,271,428.57	944,279.76	551,669.88	11,767,378.21	2.78
Franchise 2	Medis	4.3057	49,214,208.83	5,096,785.49	2,924,202.63	57,235,196.94	13.53
Franchise 3	Luis Valente	4.3057	14,539,504.84	1,452,070.87	802,755.65	16,794,331.37	3.97
Franchise 4	MedLife	2.3952	6,150,848.18	535,875.88	107,927.27	6,794,651.32	1.61
Franchise 5	Rabeca	2.9762	10,405,357.14	1,006,119.05	411,005.95	11,822,482.14	2.79
Franchise 6	Farmac	4.2124	64,626,976.70	7,801,767.78	2,648,896.02	75,077,640.50	17.74
Franchise 7	National Health Services	4.3057	122,888,266.95	8,756,925.73	599,354.14	132,244,546.82	31.26
Franchise 8	Non-Group	3.7287	89,030,228.68	10,171,509.94	5,987,467.79	105,189,206.42	24.86
Franchise 9	SociFarma	4.3057	5,545,317.55	518,316.47	105,920.34	6,169,554.36	1.46
Total (MZN)			372,672,137.44	36,283,650.97	14,139,199.68	423,094,988.09	
Proportion (%)			88.08	8.58	3.34	100	
Exchange ZAR	ZAR/MZN @	3.76	99,114,930.17	9,649,907.17	3,760,425.45	112,525,262.79	
Exchange USD	USD/MZN @	52.75	7,064,874.64	687,841.72	268,041.70	8,020,758.07	

Source: Author Compilation, data from: TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), INE (2015), Gujarati (2003) and Chipembe et al (2011)

Looking to the individual districts aggregated pharmacy' economic impact, figure 4.17 below shows that KamPhumo had most of the districts impact with 60.08% share, and in contrast Kanyaka and KaTembe had the least share with 0.34% and 1.22% of the total impact respectively.

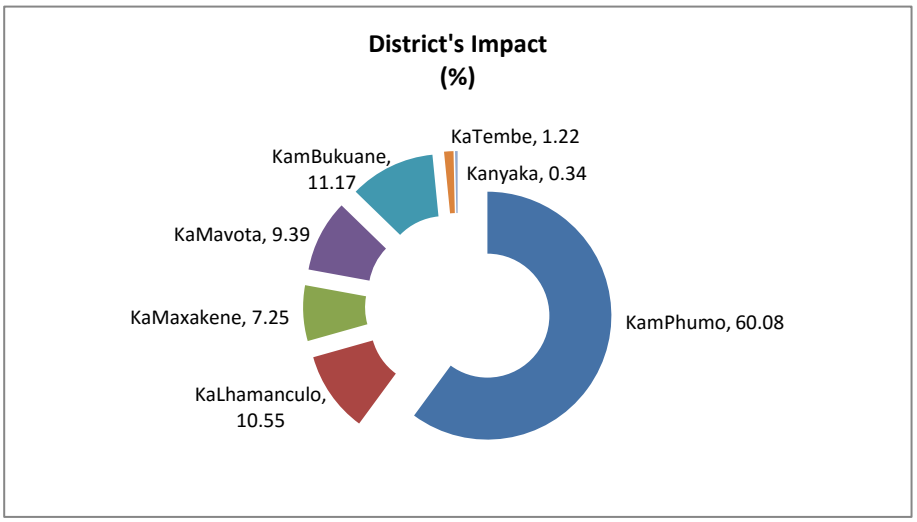

Figure 4.17 | District's Overall Economic Impact (2013)
Source: Author Compilation, data from: TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), NCHA (2010), INE (2015), Gujarati (2003) and Chipembe et al (2011)

The individual franchises' share of the aggregated economic impact is illustrated in figure 4.18 below. The National Health Services presented the larger share with 31.26%, followed by Non-Group with 24.86%; Farmac with 17.74% and Medis with 13.53%.

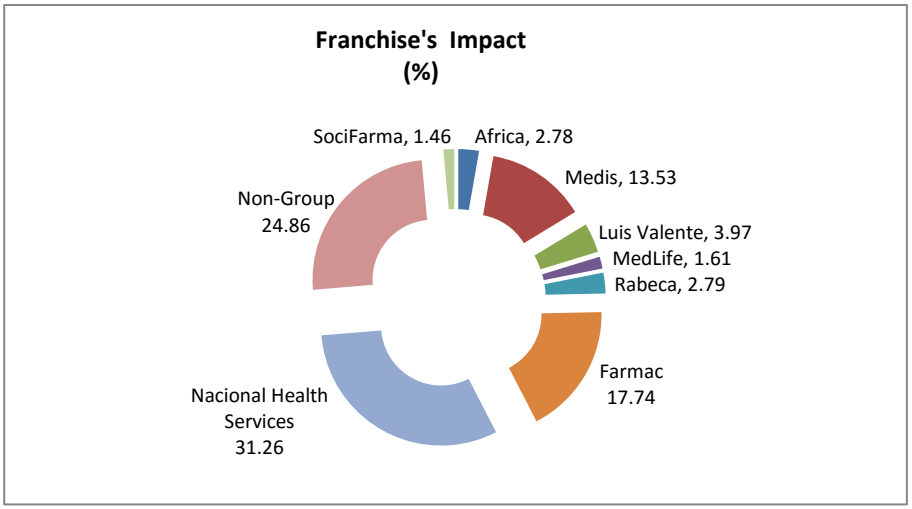

Figure 4.18 | Franchise's Overall Economic Impact (2013)
Source: Author Compilation, data from: TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), INE (2015), Gujarati (2003) and Chipembe et al (2011)

One of the last results to be presented in this section is the comparison between the districts and franchise related aggregated pharmacies economic impact, as illustrated in table 4.31 below. The seven districts had an impact of about MZN 422.07 million (ZAR 112.25 million or USD 8 million) and the nine franchises an impact worth MZN 423.09 million (ZAR 112.53 million or USD 8.02 million); leaving a variance of MZN 1,02 million (ZAR 271,562.20 or USD 19,356.85) or 0.24% more impact for the franchises.
Such variances are due to differences in MPCs and the related multipliers for the districts and franchises

Table 4.31 | The Jurisdictional Economic Impact of Pharmacy's (2013)

Jurisdiction	Sampled Units	Economic Impact	Variance	
		Value (MZN)	Value (MZN)	Proportion (%)
Municipality Districts	7	422,073,914.23	n/a	n/a
Municipality Franchises	9	423,094,988.09	1,021,073.85	0.24

Source: Author Compilation, data from: Municipality of Maputo (2013), TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), NCHA (2010), INE (2015), Gujarati (2003) and Chipembe et al (2011)

Lastly in the sample analysis, the economic impact of pharmacies in the city of Maputo was presented in three categories, which corresponded to the three independent variables previously presented. There were namely the direct employment or income impact, the expenditure profile or expenditure impact and the tax revenue or tax impact. Figure 4.19 below shows the relative share of such categories of impact, where the direct employment or income impact had about 88% of the share, followed by expenditure profile or expenditure impact and tax revenue or tax impact with 9% and 3% of the overall share respectively.

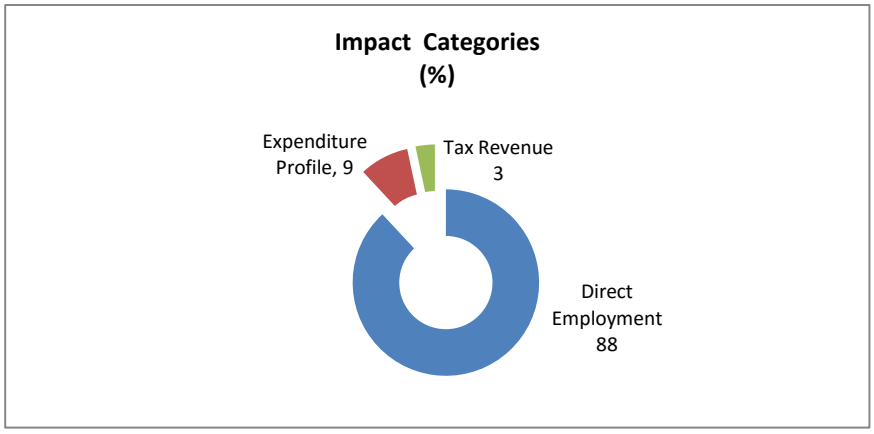

Figure 4.19 | Pharmacy's Overall Economic Impact Categories (2013)
Source: Author Compilation, data from: TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), NCHA (2010), INE (2015), Gujarati (2003) and Chipembe et al (2011)

When inferring the sample results to the overall population, table 4.32 below illustrates the total economic impact of the 145 functional pharmacies in the city of Maputo. From an average sample economic impact of about MZN 422.58 million, the activity of pharmacies in the city of Maputo generated a total impact of about MZN 578.06 million; which represented about 0.12% of the country's GDP. On an individual level; the average estimated pharmacy contribution to the city's economy was about MZN 3.99 million.

Table 4.32 | Total Economic Impact of Pharmacies in Maputo (2013)

Jurisdiction	Average Multiplier Coefficient (Units)	Economic Impact (MZN)			
		Direct Employment	Expenditure Profile	Tax Revenue	Total Value
Municipality Districts	4.05	371,298,713.44	36,329,369.85	14,445,830.94	422,073,914.23
Municipality Franchises	3.72	372,672,137.44	36,283,650.97	14,139,199.68	423,094,988.09
Average Sample Economic Impact		371,985,425.44	36,306,510.41	14,292,515.31	422,584,451.16
Sample Size (units of Pharmacies)	106				
Average Sample Pharmacy Economic Impact		3,509,296.47	342,514.25	134,835.05	3,986,645.77
Population Size (Units of Pharmacies)	145				
Total Economic Impact		508,847,987.63	49,664,566.13	19,551,082.26	578,063,636.02
National GDP (2013) Current prices (MZN)	469,238,000,000.00				
GDP Proportion (%)		0.108	0.011	0.004	0.123
Exchange ZAR	ZAR/MZN @ 3.76	135,331,911.60	13,208,661.20	5,199,755.92	153,740,328.73
Exchange USD	USD/MZN @ 52.75	9,646,407.35	941,508.36	370,636.63	10,958,552.34

Source: Author Compilation, data from: Municipality of Maputo (2013), TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), NCHA (2010), INE (2015), Gujarati (2003) and Chipembe et al (2011)

Figure 4.20 below depicts the size of the total economic impact of pharmacies in the city of Maputo, in categories representing the three independent variables in analysis. It was clear from the visual display that direct employment with MZN 508.85 million; had the majority of contribution to the total pharmacy's economic impact in the city.

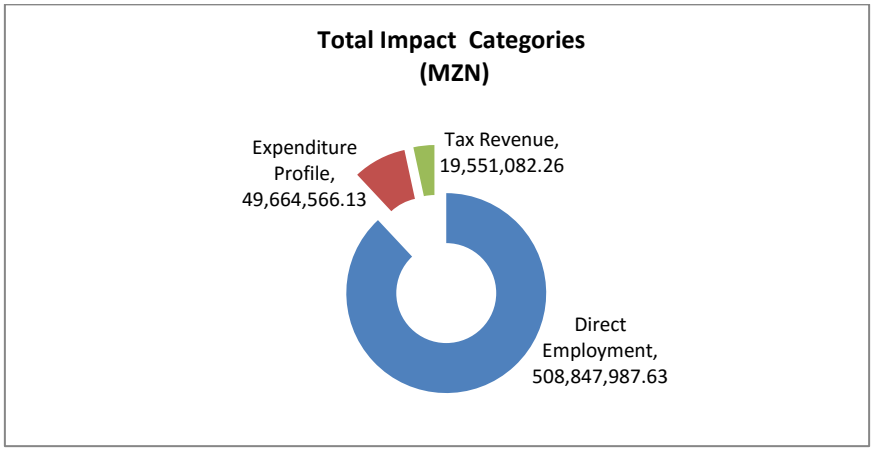

Figure 4.20 | Categories of Pharmacy's Total Economic Impact in Maputo (2013)
Source: Author Compilation, data from: TEMPI (2008), Customs and Excise (2013), Personal Interviews (April-August, 2015), NCHA (2010), INE (2015), Gujarati (2003) and Chipembe et al (2011)

4.5 Summary

In the above results, the dependent variable pharmacy economic impact was set as a function of pharmacy's activity expenditures magnified by the local premium or economic multiplier. The pharmacy activity expenditures were represented by three independent variables namely direct employment, expenditure profile and tax revenue. The city of Maputo had 30.27% of all national pharmacies and the sampled units represented 22.13% of the national units and 73.10% of the city ones. Results were estimated for the sampled pharmacies within municipality districts and for the city pharmacy franchises.

It was estimated that an aggregated district's economic impact of about MZN 422.07 million (ZAR 112.25 million or US 8 million), and the franchise impact had a value of about MZN 423.09 million (ZAR 112.53 million or USD 8.02 million). The 0.24% positive variance for the franchises was due to differences in the marginal propensity to consume values and the related economic multipliers for the districts and franchises. The direct employment or income impact represented 88% of the pharmacy's economic impact in the city, 9% was attributed to the expenditure profile and 3% to tax expenditures.
Finally the population of functional pharmacies in the city were attributed a total economic impact of MZN 578.06 million or 0.12% of the country's GDP, with a single pharmacy contributing with an average of MZN 3.99 million.

In the next section the results herein presented will be critically discussed with the aid of related reviewed literature and similar past studies.

CHAPTER FIVE: Discussion of Results

5.1 Introduction

The presented results revealed a significant impact of pharmacies on the local economy of the city of Maputo. The relevance of the impact of the three independent variables namely direct employment, expenditure profile and tax revenue are also supported by the related literature, and similar studies as in the case of Mallinson and Schwartz (2012) for the local pharmacy multiplier impact in the United States of America (USA), Clair and Moore (2011) for the economic impact of a typical rural community pharmacy in the USA; Milchen (2011) for the multiplier effect of the independent business ownership in the USA; TEMPI (2008) and Martin and associates (2006) for the local economic impact of the Ports of Durban in South Africa and Vancouver in the USA.

There were about 723 direct jobs quantified out of an estimated city (hosting 40% of the country urban population (Ventura et al, 2013)) population of about 1.2 million (INE, 2011), which yielded a monthly income worth MZN 7.78 million. The overall pharmacy expenditure profile was about MZN 9.13 million and pharmacies generated tax revenue to the value of about MZN 3.63 million. Such sampled pharmacy expenditures when magnified by the local premium or economic multiplier produced an aggregated sampled economic impact to the city of about MZN 422.07 million when looking to the districts perspectives, and MZN 423.09 million for the franchise one.

When inferred to the pharmacy's population, estimates indicated a total economic impact on the City of about MZN 578.06 million, with an average of MZN 3.99 per pharmacy. The estimates were generally in line with the literature and past related studies.
In the following sections such results will be discussed and compared to the reviewed literature and similar studies.

5.2 Economic Impact of Pharmacy's Activities

The quantification of the local premium or economic multiplier and its effects on the expenditures generated by pharmacy's activities was a significant measure of the economic impact of pharmacies to the city of Maputo. The economic impact was herein viewed as an

explanation of change to employment, expenditures and tax which was brought about to the city of Maputo by the existence of Pharmacies (Sudmant, 2009).

Results also partially supported Porter's principle of the four economic success factors, such as factor endowments, the extent and strength of related and supportive industries, firms' strategy and rivalry, as well as the demand conditions (Mohr and Fourie, 2000).

The three expenditures independent variables which quantified the first research objective are discussed in the following sections.

5.2.1 Direct Employment

According to Daniels (1994), it was estimated that SMEs employed 22% of the adult population in many developing countries. In this study, the sampled 106 pharmacies generated 723 jobs in the city of Maputo from which 92% were permanent positions. This is a significant contribution towards employment in the city given that the city had the biggest unemployment rate of about 40%, which was two and a half times the national average (INE, 2013b). According to INE, (2013b) the national urban unemployment rate was about 31% of which 36.8% between 15 to 19 years of age.

In this study the age of the employees with most of the jobs was between 26 and 35 years of age with a 43% share, followed by the range between 36 to 45 years of age with 33% of the job positions. The most affected age range in terms of urban unemployed was reflected in this study by the 18-25 age intervals with only 5% of the quantified pharmacy jobs. This may be due to the required specific pharmacy related training and the lack of qualified professionals as referred by respondents (Personal Interviews, April-August, 2015).

The 53/47% female/male composition of the sampled pharmacy jobs was also in line with the city's gender split of 52/48% for female and male respectively (INE, 2011). The estimated monthly remuneration expenditure of about MZN 7.78 million yielded an arithmetic monthly average salary of about MZN 10,762 per employee and is different for each pharmacy and franchises; due to different remuneration basis in the public sector employing 34.85% of the sampled jobs, with a minimum wage and pharmacy specific

remuneration table (Personal Interviews, April-August, 2015); and of those in the private sector with relatively better remuneration especially for qualified pharmacists (Personal Interviews, April-August, 2015).

5.2.2 Expenditure Profile of a Pharmacy

The overall pharmacy's expenditure profile which excluded remuneration and taxes, showed a significant interlinked value chain of economic activities in five categories in analysis; generating about MZN 9.13 million of expenditure to the city's economy. Such expenditure pattern was crucial not only to determine the economic impact of pharmacies; but also to analyse the future value of this industry to the economy of the city.

Out of the five expenditures categories, municipality dues and social security with 14.86% and 77.08% respectively, had the majority of the share. Municipality dues had about MZN 1.36 million and constituted 0.55% of the overall municipality income from the economic activity tax, advertisement tax, property tax and waste tax (Municipality of Maputo, 2013). This contribution was considered relatively low and is attributed on one hand, to the lack of a formal structured payment collection mechanism by the municipality authorities and on the other to considered non-payment of the municipality dues by pharmacy owners.

The property tax (44.98% share) didn't reflect the geographic location of the entity (rural/ urban) and negatively affected many pharmacies especially in less advantaged locations in the city, and a review is needed (Personal Interviews, April-August, 2015). The waste tax (41.85% share) charge is linked to the electricity consumption and not to the actual waste generation, its type and quantity as per the type and nature of pharmacy activity. This is a methodology enforced by the municipality authorities in the absence of an ideal mechanism and to exploit the existing electricity service provider billing infrastructure; which is not a fair proxy as pharmacies may consume more electricity with the required operational equipment and not necessarily yield the same quantity of waste.

The economic activity tax (12.54% share) according to Personal Interviews, (April-August, 2015) was the most contested charge due to as in the case of waste tax, absence of a clear, fair, cost related and equitable methodology for its computation. The last municipality

charge was the pharmacy name advertisement tax with an insignificant 0.63% share. This result is sought to be a consequence of a high tax burden faced by pharmacies which opted to save rather than having the pharmacy name displayed. This tax may be structured differently and incorporated into the property tax variables in a fixed cost perspective, following Mohr and Fourie, (2000) Laffer Curve concept and establish and optimal tax rate to maximize the overall municipality tax revenue in this perspective.

Social security expenditure was the one with MZN 6.8 million deficit between the sampled pharmacies with MZN 7.04 Million and the National Institute of Social Security reported numbers, about MZN 219,589 for the city pharmacies (NISS, 2015). The city's NISS contribution was very significant and worth about 29.94% of the national NISS pharmacy's contribution. According to NISS (2015), this may be due to mis-reporting of contribution by pharmacists and processing flaws when administering the contribution and in the implementation of new automated processing systems by NISS. The migration of a manual to an automated system to administer company's social security contributions was also referred by the authorities as a plausible cause of such significant difference.

There was a strong need to enhance the collection methodologies to safeguard on one hand that the contributions are effectively paid by pharmacists and received by NISS, and on the other, guarantee that the pharmacy's work force benefit from such social security when their become due.

The remaining three categories namely license fee from the national directorate of pharmacies, insurance and fire extinguisher maintenance, followed regulatory compliance. Pharmacies generally complied with such related laws and regulations but in the case of insurance and fire extinguisher, there was a need of a clear dissemination of the applicable laws, rules and regulations so that pharmacies are aware and duly comply, with emphasis for the insurance related work protection.

5.2.3 Tax Impact of a Pharmacy

The tax expenditure was divided into corporate and income tax respectively. Income tax had more contribution with 55.95%, due to the large size of 723 workers when compared with 106 sampled pharmacies; despite lower wages in the public sector which hosts 34.85% of all jobs (Personal Interviews, April-August, 2015); and the exemption for remunerations up to MZN 20,249.99 (Customs and excise, 2014). Corporate tax constituted 44.05% of pharmacies tax expenditure, and as in the case of income tax, there was a need to revisit the collection mechanisms and the related administrative requirements to ensure that all pharmacies comply with their tax requirements.

Tax expenditure yielded a value of about MZN 3.63 million, which represented 19.63% of all income and corporate tax revenue nationwide (Nhancule and Nhamazane, 2015). This was a critical indication of the fiscal potential of such economic activities in the city of Maputo. From Nhancule and Nhamazane (2015) data, results illustrated that out of the 106 sampled pharmacies in the city, income tax represented 18.79% and corporate tax 20.81% of the correspondent national tax expenditures for pharmacies excluding VAT. Such relatively lower value of tax is due in one hand to the non-disclosure of the real sales revenue by pharmacists, and in the other the absence of accounting controls and mechanisms by the authorities for this industry.

5.2.4 Local Premium or Economic Multiplier of a Pharmacy

In this section the second research objective as to quantify the pharmacy's local premium or economic multiplier is discussed. According to Sudmant (2009) multiplier analysis was an integral part of the economic impact because spending and income circulate through the economy. As referred by Sudmant (2009), and in the context of this research; the multiplier or local premium is a descriptive tool, which allows us to allocate a certain monetary value as attributable to the existence of pharmacies in the city of Maputo through a simple chain of causality. The multiplier herein discussed is so called "static" multiplier; measuring only the monetary value of expenditures re-circulating through the economy, leaving other factors such as technology unchanged (Sudmant,2009).

Results illustrated multipliers of about 4.05 and 3.72 for the municipality districts and pharmacy franchises respectively; meaning that for every metical derived from pharmacy it resulted in 4.05 and 3.72 of total economic activity or value in the city of Maputo; when analysing the districts or franchises perspective respectively. As reported by Mallinson and Schwartz (2012), the regional input-output multiplier system II (RIMS II) illustrated a multiplier of 2.01 for Missouri pharmacies in the USA.

When analysing the variables underlying the multiplier calculations in this study the MPC was about 159.08% and 131.83% for districts and franchises respectively, meaning that all of the pharmacy workers' salaries were consumed and indeed 59.08% and 31.83% were required to match the required expense budget. With a MPC=1 the result for the multiplier coefficient was relatively high that would have been for MPC value below one (1). The study used monthly family budget expense as estimated by INE (2007), and due to the high unemployment rate in the city assumed a pharmacy worker as the sole income earner in the family which contributed for such result of the local premium.

The other relevant variable in explaining the size of the city's multiplier was the expense retention rate within the city of about 90.68% and 89.37%for districts and franchises respectively. Thus an estimated 10% of the overall pharmacy expenditure was thought to have left the city and the rest absorbed and re-circulated in the city's economy. These two variables were the main reason for the relatively higher multiplier when compared to pharmacies in Missouri or the impact of Port of Durban as presented by TEMPI (2008).

In TEMPI (2008), the multiplier varied between 1.7 and 2.3; with an MPC between 85% to 90% and a retention rate in the city of Durban of about 60-70%. In this view the presented results are consistent with other similar studies. The size of local premium or economic multiplier varies depending on the type of business. According to Milchen (2012), restaurants and service providers generate a large multiplier because they are so called labour intensive, hence more of each monetary value of expenditure went to local payroll. Milchen (2012), also stated that pharmacies generated a relatively lower multiplier, because so much of each sale went to drug manufactures.

Another perspective that supports the above research results is the fact that only 22% of the sampled pharmacy franchises had foreign stakeholders, hence some share of the overall

pharmacy expenditure went abroad and the majority 78% stayed in the city. As per AMIBA (2014), studies on local economic premium revealed that locally-owned business returned much more from each monetary unit of their expenditures to their communities, than chains or foreign owned entities. In the Louisville study expenditures at Indie retailers generated four (4) times more local economic return than expenditures at chains (AMIBA, 2014). According to AMIBA (2014); other similar studies quantified multipliers of 3.76 and 3.55 as in the case of Raleigh and Ogden respectively.

5.2.5 The Magnitude of Pharmacy's Economic Impact

The third research objective which was to quantify the overall magnitude of the economic impact of pharmacies is discussed in this section. Impact results reflected the geographic dispersion of pharmacies in the city with the municipality districts view; as well as the pharmacy grouping with the sampled franchise perspective. Districts and Franchise results are similar with variances due to different relative size of calculation variables.

Three impact categories namely income or direct employment; expenditure profile and tax were analysed, giving also three dimensions of the role of pharmacies in the city as to; generating employment, fuelling the city economic activities through its expenditure profile, as well as contributing to the city's and indeed national fiscal needs with tax revenue.

The overall sampled pharmacy economic impact in the city was estimated to a value of about MZN 422.07 million for the district perspective and MZN 423.09 million for the franchise one; with an average sample impact of MZN 422.58 million. In similar studies as in TEMPI (2008) and Martin and associates (2006) for the local economic impact of the ports of Durban in South Africa and Vancouver in the USA; the estimated impacts were about MZN 14.29 billion and MZN 84.40 billion respectively. The size difference when compared to the research results is due to differences in the economies, scale and context on the analysis, but the significance of all studies to their local economies prevailed in this study.

When inferring the above sample results to the overall pharmacy population in Maputo, the estimated total impact of MZN 578.06 million and its 0.12% GDP share; were very significant taking into consideration the industry's latency status, which fosters a promising future role of this SME's niche to the country's economy.

The employment or income impact was the most relevant with 88% of the overall share when compared with the expenditure and tax impact with 9% and 3% respectively. This is due on one hand to the labour intensive nature of pharmacy activities, and on the other to the latency state of the industry where tax collection mechanisms and related enforcements, as well as the exploitation of supporting industries and related services are minimal and not properly structured.

5.3 The Respondent Feedback and the Qualitative Follow-Up

Feedback from respondents provided a comprehensive view of the status of pharmacies in the city; their role in the local economy, and generally were in line with the research findings and pharmacy trends from available literature. Despite the fact that the three independent variables in analysis in this study namely employment, expenditures and tax were in conformance with the quality of results presented, there are significant constrains to the optimal operations of pharmacies to be addressed.

There was consensus on the role of pharmacy's employment generation and its contribution to the overall income impact, however the strong competition was referred to be diminishing profit margins. This fact results from an inadequate geographic allocation of pharmacies by the pharmacy regulator, which had crowded certain areas in the city in detriment of others. The quality of pharmacy professionals was also a concern and there were a clear need for an urgent intervention by the authorities to boost skills levels at the training centres such as universities. Industry workshops and continued knowledge sharing was also suggested as a mechanism to increase the industry skill levels.

The literature agrees partially with the strong competition argument contributing to a decline in profits and as Grootendorst et al (2008) said, the quality of the pharmacy dispensing services was the key element to consider. According to Grootendorst et al

(2008), 77% and 67% of respondents to a consumer survey elected the provision of information on medicine use and the availability of medicines as a key factor when deciding which pharmacy to approach; and only 54% indicate location as a key factor.

The expenditure profile was the variable with most of the concerns from respondents. They argued the lack of continuous and or delays in the supply of medicines by the approved distributors; lack of diversity of medicines, lack of coordination of what is prescribed by doctors and what is supplied by distributors to match the demand, conflicts of interest between distributors and pharmacies they hold, lack of coordination between the regulator and distributors on stock levels and inventory management, deficient regulations on the role of pharmacist and pharmacy technicians in advising, counselling patients, poor quality of imported medicines from Indian laboratories, prohibition to sale medicines not supplied by local distributors, and the difficulties in obtaining credit purchases from suppliers.

The above concerns were supported by literature and need to be revisited by the authorities. Pharmacies in general have three outputs, dispensing prescribed medicines, providing consumer goods and medication counselling (Grootendorst et al, 2008). In the city of Maputo and indeed in Mozambique there is a need to revisit pharmacies laws in this regard. Mckesson (2007) stated that typically pharmacists spent 40% of time dispensing and 37% counselling patients. The difficulties in obtained credit sales from suppliers is justified by Tadesse (2007) to the low level of financial intermediation in Africa particularly in the SME's sector which generally lacks scale, collateral and relationships for formal financing.

Operationally there was also a lack of economies of scale in dispensing volumes to induce a decline in the average fixed costs per prescription (Grootendorst et al, 2008). Pharmacies may collaborate here and share the costs of some fixed elements such as inventory management software and other related items, therefore decreasing the operational fixed costs.

The overall tax expenditures was agreed by respondents with an exception for the municipality economic activity tax, which was deemed by some respondents of being arbitrary without taking into account the geographic location of the pharmacy. Such charge if properly structured has potential to be an incentive to open pharmacies in relatively

disadvantaged locations. As per Mohr and Fourie (2000), tax revenue is maximized at an optimal rate and not the maximum rate in the Laffer curve. It is suggested here that the authorities determine such optimal rate to maximize tax revenue.

In general, the respondents' feedback was in line with the quality of the research results, in terms of their validity and adequacy to the factual reality of pharmacies in the city of Maputo and their local economic impact.

5.4 Summary

The above discussion of research results illustrated not only a significant contribution of pharmacies to the city's economy through the quantified magnitude of the economic impact, but also conferred support to the same results as highlighted in similar studies and in the reviewed literature, albeit study limitations. The economic impact of pharmacies in the city of Maputo was apparent. It was also evident that such pharmacy activities and their related value chain of economic activities were in inception phase, therefore needing more formal governance structures from the related authorities so that, the associated income, operational and tax expenditures were able to more effectively re-cycle throughout the economy with an increasing yielded value for the local economy.

Results were also aligned with and have evidenced in this study the key role of SMEs in fostering employment specially in developing economies such as Mozambique, with an estimated 88% of the overall magnitude of pharmacy's economic impact to the local economy of the City of Maputo, attributed to the direct employment or income impact.

The last chapter sets not only the main conclusions based on the study results, key findings and discussions following the defined objectives and research questions, but also draws recommendations to the related stakeholders and future studies.

CHAPTER SIX: Conclusion and Recommendations

6.1 Introduction

Based on results that have been generated in this study; presented and discussed in the previous sections, the research questions and associated objectives were successfully addressed and, the aim of the study as to quantify the magnitude of the economic impact of pharmacies to the local economy of the City of Maputo achieved, and in line with similar pharmacy and other economic sector's studies, as well as the broader literature, albeit research limitations.

The overall impact estimation from a sample of 106 pharmacies scattered in the seven (7) municipal districts and within nine (9) franchises; was drawn from pharmacy's expenditures streams from its related operational activities, which were magnified by the local premium or economic multiplier to yield their economic value or value add to the City of Maputo. The impact portrayed the pharmacy's direct expenditures to hold jobs as in the case of employment or income impact; to pay for business operational expenses as in the case of the expenditure profile or expenditure impact, and for paying taxes as in the case of the tax impact.

Largely the economic impact came from direct employment or income effect with 88% share; followed by expenditure impact and tax impact with 9% and 3% share respectively, with an estimated contribution worth about 0.12% of the national GDP in the study year. For each metical spent or generated by pharmacy's activities in 2013, it added in average about four (4) times (local premium or multiplier) more in value to the local economy of the City; clearly demonstrating the real impact or value of pharmacies to the City.

In the actual latency status of the pharmacy industry in Maputo, the role of government in defining how pharmacy spending is re-cycled in the local economy, and how such spending fundamentals change the local economy by the res-pending effect were largely absent. In average, the sampled workers displayed a dissaving pattern consuming 32% to 59% more when comparing to their earnings. One of the reasons for such dis-savings was the sectorial mismatch between inflation and its reflection on the employees reported salaries and wages.

Despite the significant contribution of pharmacies to the local economy of the city of Maputo, the study was limited to available information and data on the pharmaceutical industry in Mozambique and particularly for the City of Maputo, hence a strong recommendation for future studies to address the entire value chain of the pharmaceutical industry, which would yield a more complete picture of its local economic relevancy.

6.2 Conclusion

This research presented a comprehensive overview of pharmacy's activities and their related impacts to the local economy of the city of Maputo. It addressed the basic research questions posed and objectives set in the study, relating to the direct impact of pharmacies activities, the local premium or economic multiplier, and the overall magnitude of the economic impact or contribution of pharmacies to the local economy of the City of Maputo. The research problem was successfully addressed and its aim reached as detailed in the sub-sections below.

6.2.1 The Direct Impact of Pharmacies Activities

This first research objective was achieved by quantifying the pharmacy's monetary value of expenditures derived from direct jobs, operational expenses and taxes. The study estimated 723 jobs representing 0.06% of the city's estimated population, from which 92% permanent positions in a 53/47% gender mixture of female and male respectively; with 43% of the employees within the 26-35 years of age group. Monthly remuneration accounted for MZN 7.78 million with an average employee monthly income of MZN 10,762 which was below the estimated average monthly expense budget of MZN 14,760 for the city of Maputo. This fact Employment was mostly from private entities with only 34.87% of the sample owned or managed by public institutions.

To operate a pharmacy, standard operational expenditures such as license fee, municipality dues (economic activity tax, display name tax, property and waste tax), social security, insurance and fire extinguisher maintenance fee were estimated and formed the pharmacy expenditure profile worth an annual value of about MZN 9.13 million. The key contributors were social security expenses with 77.06% (city of Maputo represented 29.94% of the national contribution of pharmacies) followed by municipality dues with

14.86% share. The numeric value of the municipality dues was considered relatively low, which was due to the absence of a formal and structured payment collection mechanism by the municipality authorities and tax evasion by pharmacists. The study also quantified a social security expenditure gape of MZN 6.8 million from what was estimated by the study and the MZN 219,589 reported by the authorities. This was attributed by the authorities to system, processing and reporting errors including miss-reporting by pharmacy owners.

Tax represented the third expenditure category which was estimated from an income and corporate tax perspectives. Results from the study attributed a share of 55.95% and 44.05% respectively for income and corporate tax expenditures. Due to the lack of an effective control mechanism of sales report, the study found that often pharmacy's owned by individuals are more likely to miss-report their sales volume compared to established franchises. Tax expenditure was estimated to an annual value of about MZN 3.63 million.

Such direct expenditures were a reflection of the potential local economic impact of pharmacies, within a context of an inception phase of this sector in Mozambique, albeit the study's information and data limitations. The next section displays the key conclusions from the results in the quantification of the second research question, the local premium or economic multiplier.

6.2.2 Pharmacy's Local Premium or Economic Multiplier

In the second research question the magnitude of the economic value of pharmacies to the local economy was portrayed, by quantifying the economic multiplier coefficient from a relationship of the marginal propensity to consume, tax rate and the expenditure retention rate. The MPC was assumed to be one meaning that in almost all sampled entities there were no saving from monthly employee income and the entire remuneration was spent to cover the estimated monthly expenditures. This was evidenced by the average employee income of MZN 10,761 compared to the estimated expense budget of MZN 14,760, which required an average of 45.46% more money to match the expenses budget. Due to high unemployment in the City the pharmacy worker was deemed the sole income earner in his/her family, and with an average income below the expense budget there was no savings

in the sampled districts and franchises with exception to one franchise, hence the setting of MPC value as one (1), and the relatively high local premium estimates.

The average retention rate as per respondents data was also high at about 90.68%, and together with the official 17% tax rate on goods and services, the multiplier coefficient was estimated to an average value of about 4 (3.89), which was within estimates from others sectors such as retailers and restaurants. Pharmacy's activities added about four times more economic value from each metical derived from their economic activities. The next section concludes the key findings from the overall pharmacy's economic impact.

6.2.3 The Overall Magnitude of Economic Impact

The third research question or the magnitude of pharmacy's economic impact was estimated from the direct expenditures magnified by the multiplier coefficient. The study also portrayed the relative impact from Municipality district and pharmacy franchise perspectives, which were very relevant for future policies and governance structures aiming to foster this economic sector. Such dual perspectives for the three expenditure perspectives were as follows:

- Sample employment or income impact-MZN 371.30 million for districts and MZN 372.67 million for franchises;
- Sample expenditure impact - MZN 36,33 million for districts and MZN 36.28 million for franchises;
- Sample tax impact –MZN 14.45 million for districts and MZN 14.14 million for franchises; and
- Overall sample impact of pharmacies was about MZN 422.07 million (ZAR 112.25 million or USD 8 million) for the district analysis and MZN 423.09 (ZAR 112.53 million or USD 8.02) for franchises, with an overall average of MZN 422.58 million (ZAR 112,39 million or USD 8,01 million);

The inference of the above sample results to the population of 145 functional pharmacies in the City, yielded a total economic impact of pharmacies to the local economy of the City of Maputo of MZN 578.06 million (ZAR 153.74 million or USD 10.96 million), representing 0.12% of the country's GDP (2013 current prices) and with an individual

pharmacy contributing an average MZN 3.99 million (ZAR 1.06 million or UDS 0.076 million). Employment or income impact contributed with 88%, expenditure impact with 9% and tax impact with 3% to the above pharmacy's economic impact in the city of Maputo.

6.3 Research Implications

From the above results this research will hopefully set a benchmark reference in the quantification of monetary value of pharmacy's activities to the city of Maputo. Being probably the first research in the economic impact of pharmacies in the city of Maputo, it also sets a landmark in the overall Mozambican body of knowledge in this regard.

It is hoped that the details that the research has presented on the various impact streams and magnitudes in respect of employment, expenditure profiles and tax revenue, may be utilized to aid all related pharmacy stakeholders and relevant authorities in their decision making processes towards the development of sustainable sectorial strategies, adequate planning and in the overall pharmacy's business management and operational processes.

6.4 Recommendations

Given the latency status of pharmacies in the city and their crucial economic impact, it is hereby suggested that government should pave the way in building a sustainable and broader pharmacy business governance framework, so that, in the near future the questions about how pharmacy's spending will re-cycle in the local economy and how such spending fundamentals will change the local economy find a sustainable answer.

In order to better maximize the economic contribution of pharmacies in the city of Maputo, in terms of their direct expenditure streams; the study presents to all related pharmacy's stakeholders, interested parties and all economic actors, the following recommendations:

- Create policies that promote not only pharmacy jobs and the related income impact, but also employment in the wider value chain of the pharmaceutical industry including related micro-enterprises, informal sector and agricultural enterprises.

Such policies should also incorporate elements of accessing to finance and credit purchases;

- Invest in quality training of pharmacy professionals, so that services such as medical counselling and drug prescription, may also be part of pharmacy's expenditure streams and contribute to the overall direct economic impacts to the City;
- Review and update the regulations on the role of pharmacies and their related professionals to include specific provisions on dispensing of prescribed medicines, prescribing medicines, provision of consumer goods and patient medication counselling in order to maximize the value to the City to be derived from the associate direct expenditure streams;
- Regulate pharmacy's information and data requirements and foster fiscal reporting and control mechanisms, with emphasis for government and municipality related tax payments and social security contributions so that such expenditures are properly accounted for;
- Introduce specific pharmacy economic activity and property tax in an incentive basis, to promote the industry and its related value to the local economy and increase the related revenue streams;
- Introduce a specific pharmacy waste tax according to their size, nature of business and the amount of waste generated, which is not correlated to energy consumption as presently;

Due to the study limitations presented in the introductory section 1.8.2; it is herein also recommended that in future related researches, estimates of the city pharmacy's induced impact, in terms of the number of jobs generated in other local firms due to expenditures by pharmacy work force; the indirect impact, to analyse the role of pharmacies expenditures or purchases in creating jobs in other firms; the revenue impact, to access how the money generated from pharmacy sales add value to the city's economy; and lastly the influenced impact, to access how important are the city's pharmacies in attracting clients from other geographic areas or, how they influence other areas in approaching the city of Maputo to use its pharmacies, to be included.

The family monthly expense budget and the family monthly income also need to be re-assessed in light of changes in inflation and the related purchasing power.

Herbalists and the entire value chain of pharmacies relative and supporting entities such as warehouses, freight forwarders, importers, exporters, distributors, regulators, manufacturers and others, are also recommended to be part of future analysis; in order to build a holistic picture of the pharmaceutical industry and its fuller impact to local economies.

6.5 Summary

The aim and objectives of this research were achieved as illustrated by results shown above. Such results detailed the answers for each of the three research questions, and attributed numerical values for the pharmacy activities' direct impact; the local premium or economic multiplier; and lastly to their overall economic impact to the local economy of the City of Maputo. Pharmacy's impact and its role in the local economy of the City were apparent from the estimated results, which were in line with similar studies and available literature.

Notwithstanding this fact, the industry was on its latency phase, requiring structural governance and regulatory enhancements so that the current direct expenditures streams are sustained and those of the future enhanced, to generate an ever greater economic impact to the local economy of the City of Maputo.

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APPENDICES

Appendix 1: Structured Interview Questionnaire Template

COMPLETE ONE (1) FORM PER ENTITY

Master in Business Administration (MBA)
Dissertation Research for the Year 2013
Interview Questionnaire

Objective	Determine the size of the overall economic impact of pharmacies to the local economy of the city of Maputo

Appendix 1: Interview Questionnaire

1	**Entity**

1.1	**Entity Identification**	Name / Designation	Location (District, Quarter, Street/AV, Hospital, Mall)	Year of Inception	Interviewer Name and Contact	Date (dd.mm.yy)
	Complete the Fields					

1.2	**Type of Entity**	Private	Public	Pharmacy	Herbalist	Importer	Exporter	Warehouse	Distributor	Producer	Agent	Regulator
	Mark with X the Correct Options											

	Mark with X the Correct Options	0-5%	5-10%	10-15%	15-20%	20-30%	30-40%	40-50%	50-60%	60-75%	75-85%	85-100%
1.3	**Percentage of Income Spent in the City of Maputo**											
1.4	**Percentage of Income Spent Outside the City of Maputo, but in Mozambique**											
1.5	**Percentage of Income Spent Abroad/outside Mozambique**											

2	**Employment / Number of Workers**

2.1	**Type / Employee Category** **Complete the Fields and or Mark with X the Correct Options**	Number of Employees	Average Monthly Remuneration (MT/Month)	Type of Employment		Gender		Age Range (Years)					
				Permanent	Non-Permanent	M	F	15-17	18-25	26-35	36-45	46-55	Above 55
A	Head Pharmacist												
B	Other Pharmacists												
C	Servant												
D	Accountant												
E	Teller												
F	Lawyer												
G	Manager												
H	Owner												
I	Other Managers												
J	Other Category-												
K	Other Category-												
L	Other Category-												

2.2	**Comments and Additional Observations**

3	**Entity Tax and Duties**

3.1	**Tax and Duties** **Complete the Fields and or Mark with X the Correct Options**	Payment Frequency		Average Amount (MT)	Beneficiary Entity					
		Month	Year		Ministry of Health	Municipality of Maputo	Ministry of Finance	Customs and Excise	Insurance company	Other (Please Name)
A	Economic Activity Fee									
B	Entity Name Label									
C	Property Tax									
D	Waste Tax									
E	Company Tax									
F	Personal Tax									
G	Fire Insurance									
H	Other Insurance									
I	Fire Extinguisher Maintenance									
J	Import Duties									
K	Export Duties									
L	Other Tax or Duty-									
M	Other Tax or Duty-									
N	Other Tax or Duty-									

4	Problems and General Concerns

4.1	Type / Category	Description

5	Suggested Solutions to Problems and General Concerns

5.1	Type / Category	Description

Source: Author Compilation, based on: Bryman and Bell (2007).

Appendix 2: Categories of Pharmacy Ownership

Category	Description
Independent	Not affiliated with any corporate run banner, franchise or chain program. The name of the store is unique to that store, and the owner has complete control over ordering, marketing strategies, store image, etc. The owner may own more than one store; however it is generally acceptable that five or more stores under single ownership constitute a chain pharmacy.
Banner	Independent pharmacies that are affiliated with a central office and pay fees for the right to use a recognized name and participate in centralized buying, marketing, professional programs, etc. While the banner stores usually assume a required "Look and Feel" the stores themselves are independently owned and the owner retains a high level of autonomy as far as local marketing, professional services etc. If the owner of a banner pharmacy owns five or more stores, these are considered to comprise a chain.
Franchise	While the franchisees do not necessarily owns the physical store or the fixtures, the master leases are usually held by the franchisor, they enjoy some autonomy in local marketing. The buying and in-store services, as well as access to developmental programs are led by the head office.
Chain	Employ salaried pharmacy manager who follows the directions of the head office for all marking, merchandising, buying, professional activities, etc. An individual or corporation must own five or more stores to be considered a chain.
Supermarket	Department within a supermarket, employ salaried pharmacy manager who follows the directions of the head office for all marking, merchandising, buying, professional activities, etc.
Mass Merchandiser/ Department Store	Department within a large retail outlet, which employ salaried pharmacy manager who follows the directions of the head office for all marking, merchandising, buying, professional activities, etc.

Source: Author Compilation data from: Bachynsky (1998), Grootendorst et al (2008) and McKesson (2005)

Appendix 3: Ethical Clearance Approval Letter

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

26 May 2015

Mr Jeremias Salomão Sitoi (204501157)
Graduate School of Business & Leadership
Westville Campus

Dear Mr Sitoi,

Protocol reference number: HSS/0461/015M
Project title: The Economic Impact of Pharmacies in Maputo, Mozambique

Full Approval – Expedited Application

With regards to your application received on 07 May 2015. The documents submitted have been accepted by the Humanities & Social Sciences Research Ethics Committee and **FULL APPROVAL** for the protocol has been granted.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

Please note: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

[redacted]

Dr Shenuka Singh (Chair)

/ms/

Cc Supervisor: Dr Muhammad Hoque
Cc Academic Leader Research: Dr Muhammad Hoque
Cc School Administrator: Ms Zarina Bullyraj

Humanities & Social Sciences Research Ethics Committee
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