AN INVESTIGATION OF THE RELATIONSHIP BETWEEN PRICES OF PHARMACEUTICAL PRODUCTS AND QUALITY OF PHARMACEUTICAL CARE: THE CASE OF SELECTED RETAIL PHARMACIES IN MOMBASA

BY

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DECLARATION

This is my original work and has not been submitted for examination in any other university.

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DEDICATION

To Sammie Ugurak.

Your love is extravagant.

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LIST OF ACRONYMS AND ABBREVIATIONS

WHO	World Health Organization
MDGs	Millennium Development Goals
MOH	Ministry Of Health
KNDP	Kenya National Drug Policy
MSEs	Micro and Small Enterprises
UNDP	United Nations Development Programme
PPB	Pharmacy and Poisons Board
PSK	Pharmaceutical Society of Kenya
CPD	Continuous Professional Development
PI	Parallel Imports
EPZ	Export Processing Zones
WTO	World Trade Organization
TRIPs	Trade Related aspects of Intellectual Property Rights
HAI	Health Action International
NQCL	National Quality Control Laboratory
STGs	Standard Treatment Guidelines
COMESA	Common Market for Eastern and Southern Africa
IMF	International Monetary Fund
OECD	Organization for Economic Cooperation and Development

ABSTRACT

Literature shows that pharmacy practice in Kenya is economically driven as opposed to the United States of America where patient care is the main focus. This juxtaposition with patient focus on one side and economic gain on the other is of critical concern. This study investigated the relationship between the prices of pharmaceutical products and the quality of pharmaceutical services in registered retail pharmacies in Mombasa.

Pharmaceutical care is the final step in management of most medical conditions and therefore failing at this point renders all the prior services futile. This study therefore aimed at qualifying and quantifying weakness in the patient care system thus providing policy makers with data necessary for the formulation of effective policies. The overall effect will be a more balanced approach where the quest to make profits in this sector is complemented by quality assurance in pharmaceutical service provision.

The study utilized primary data. Three sets of questionnaires were be used to collect data from three levels of informants. These are pharmacy owners, pharmacy staff and clients/patients. Data analysis and presentation was done using Microsoft Office Excel.

The result was a high positive correlation between the prices of pharmaceutical products and quality of pharmaceutical service in a section of pharmacies. One out of every four retail pharmacies in Mombasa is mostly concerned with profitability. They are using low prices as a strategy to maximize profits. This strategy is not complemented by quality assurance measures. The result is that the higher the tendency towards profitability and thus the lower the prices of pharmaceutical products, the lower the quality of pharmaceutical care offered and vice versa.

This puts one out of every four residents of Mombasa seeking pharmaceutical services from retail pharmacies in the city is at risk of receiving substandard care now, and since the culture is being effectively propagated, in the years to come if the problem is not effectively addressed.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Pharmaceutical services are integral to patient care. Questions have been asked whether pharmacy is a trade, a profession or a calling. There is need to establish and maintain a delicate balance between the three aspects of pharmacy since each plays an important role in the industry and the economy of the country. Quality of pharmaceutical care can't be over emphasized. It's important to note that pharmaceutical care is the final step in management of most medical conditions and therefore failing at this point renders all the prior services futile. Therefore all measures must be taken to optimize outcomes (KB Farris, 1993).

Community pharmacies and pharmacists have the potential to contribute to public health. The position of community pharmacies straddles both public and private sectors. Pharmacies' dual health and commercial roles offer a unique opportunity to target activities towards healthy people as well as those with existing health problems. For this to occur in the most effective way, service commissioners need access to the evidence of potential benefit (A. Blenkinsopp, 2006).

Pharmacists already play a vital role for local communities in dispensing medicines and providing services such as supporting people who want to give up smoking. This extended role will see many more pharmacists being able to prescribe for and deal with minor ailments on the National Health Service, as well as promoting good health, supporting those with long-term conditions and preventing illnesses through additional screening and advice. This will enable pharmacies, many of which already open 24 hours – and some working as late as midnight – to provide increased access to medicines and care (Department of Health, 2010)

Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life. These outcomes are: cure of a disease, elimination or reduction of a patient's symptomatology, arresting or slowing of a disease process, or preventing a disease or symptomatology (C.D. Hepler, 1990).

Another perspective centers on service providers. It defines pharmaceutical care as "a patient-centered practice in which the practitioner assumes responsibility for a patient's drug-related needs and is held accountable for this commitment" (R.J. Cipolle, 1998).

There is a call for health care systems that respect patients' values, preferences, and expressed needs; coordinate and integrate care across boundaries of the system; provide the information, communication, and education that people need and want; and guarantee physical comfort, emotional support, and the involvement of family and friends (C.D. Hepler, 1990).

Contextual factors are environmental issues that impact on the performance of industries. The study proposed therefore that the contextual factors were likely to have significant influences on the linkage between the variables.

A pharmaceutical company can be defined as that which is involved in the research, manufacturing and/or distribution of drugs. Drugs are products which are claimed to be useful for any of the following purposes: In treating, preventing or alleviating symptoms of a disease. Secondly in diagnosing disease or ascertaining the existence, degree or extent of a physiological condition and lastly in otherwise preventing or interfering with the normal operation of a physiological function whether permanently or temporarily and whether by terminating, reducing, posting or increasing or accelerating the operation of that function in human beings and animals (John L. McGuire, 2007).

Unlike other commodities the distribution of drugs is highly regulated and they have been categorized into three distinct broad product segments. First are the Over the Counter drugs (OTC), which are found in the shops, supermarkets, pharmacies and kiosks. The second segment is the Pharmacy only drugs (Ethical Drugs), found in the pharmacies and dispensed with professional advice and the third segment are the Prescription only drugs, found in pharmacies and can only be issued upon production of a duly signed doctor's prescription (Pharmacy and Poisons Board, 2010).

Pharmaceutical companies are generally characterized by two distinct features from the other companies namely, large investment in Research and Development (R&D) and substantial expenditures devoted to promoting the diffusion of the new products ethics withstanding. The pharmaceutical market is also characterized by considerable complexity. Part of the complexity is intrinsic in this industry, relating to the large number of similar products that are available but are differentiated by brand names. There are tens of thousands of drugs on sale in the world today(Chetley, 1995).

It has become the accepted view that, for society at large, the magnitude, speed unpredictability and impact of change are today greater than before. The pharmaceutical industry like all others

has not been spared tremendous changes too over the years. Increased competitions, expanded drugs options, enhanced assessments and evaluations of drugs safety (e.g. in 2005 the cardiac side effects of the cox-2 inhibitors like Rofecoxib (Vioxx), Valdecoxib (Biaxin) leading to its global withdrawal) have all created a situation of narrow margins. This has led to some companies pooling their resources either through acquisition and mergers or strategic alliances (Royal Pharmaceutical Society of Great Britain, 2008).

Some major cases in the last 10 years illustrating the above trends include Ciba-Geigy merging with Sandoz to form Norvatis (1996). Hoechst merging with Marion Russell to form Hoechst Marion Russell while Rorer merging with Rhone Poulenc to form Rhone Poulenc Rorer (1990). The two later merged in 1998 to form Aventis, which has been acquired by Sanofi-Synthelabo to form Sanofi-Aventis. Another example is Glaxo merging with Wellcome Laboratories to form GlaxoWellcome. Later GlaxoWellcome merged Smith Kline Beechams to form Glaxo Smith Kline in 2002.Infact Smith Kline itself was formed as a result of a merger between Smith Kline and French and Beecham both UK based companies. However even with all the constraints and emerging threats, the pharmaceutical industry compared to other industries has remained the most lucrative with highest return on Assets (ROA) and with a global turn over of USD 430 Billion by end of 2003 (Royal Pharmaceutical Society of Great Britain, 2008).

From the one to two individual entrepreneurs manufacturing units present before independence, there were 30 pharmaceutical manufacturing companies, few of which were multinationals after independence. The period after independence led to a rapid expansion of healthcare and related activities as the government pledged free healthcare to all Kenyans. In the 70's the government alone was purchasing 70% of the country total consumption of pharmaceuticals. Owing to the increased and secure demand by the government, the local pharmaceutical industry which was small and largely confined to traders of imported branded drugs before independence had a boom from the late 1960's till late 1980's (Odhiambo 1999).

However, in the mid 80's, the Kenyan government followed the policy of liberalization as a measure of economic reform, the market started transforming. With the relaxation in Government controls and restriction like, removal of foreign exchange allocation license (FEAL) and liberal import of foreign technology, a new phase emerged for the industry. The local manufacturing pharmaceutical companies started facing many constraints like foreign exchange controls, taxation on raw materials, machinery & packaging materials, slow and cumbersome

payment procedures for local purchases, borrowing at abnormal market interest rates, and external sources of funds had attached donors' conditionality. Imported pharmaceuticals became cheaper as no duty is chargeable on item (Pharmacy and Poisons Board, 2010).

The post liberalization period thus saw the rapid growth of trading sector in the pharmaceutical industry. Many multinationals either directly or through local trade partners started operations in Kenya. Today, over 1500 pharmaceutical companies are selling their products in Kenya. With this kind of numbers mainly from countries with low manufacturing costs like, India, China, Egypt, Pakistan and even Europe there has been a resultant increased influx of low priced generics into the market (Pharmacy and Poisons Board, 2010). According to the Government of Kenya (1994) owing to acute need for good and cheaper medicines coupled with factors like free market economies and economic liberalization during 1980s the pharmaceutical products and services began to grow faster than demand leading to a hyper competition scenario. We are in a situation where on one hand we have excess of some drugs available under different brand names and on the other hand, a shortage of direly needed affordable drugs like for diseases like TB, malaria and typhoid, HIV/ AIDS etc. The increased demands placed on the industry coupled with the effects of liberalization have thus led to an increase in the number of products and firms in the local industry (Gacoin, 2006).

This has led to intense competition, price undercutting and even malpractices as per the Kenya National drugs policy (KNP) formulated in 1993 and formally adopted towards the end of 1994. To curb this and increase profitability, most multinationals entered into franchise agreements with local traders to undertake the logistics pressures of distribution, importation, registration and marketing function. This way they cut down on operating expenses associated with maintaining offices and management teams (Pharmacy and Poisons Board, 2010).

As a result of the above developments in Kenya, the pharmaceutical industry is specifically regulated in accordance with Cap 244 (Pharmacy and Poisons act), laws of Kenya. Accordingly a regulatory agency Pharmacy and Poisons board (PPB) was established under the Ministry of Health and they were mandated to regulate – importation, manufacture, marketing, stocking and distribution of pharmaceutical products in Kenya. Consequently all wholesalers, retailers, importers and distributors in the pharmaceutical industry have to be registered by Pharmacy and Poisons Board under section 27 of the Pharmacy and Poisons act (Pharmacy and Poisons Board, 2010).

Several views have been highlighted as to the classification of the pharmaceutical industry in Kenya and they include the following:

Mbau (2000) who indicated that pharmaceutical firms in Kenya operate under three different forms namely; Manufacturers accounting for 31.8 % of the industry, distributors accounting for 59.1 % of the industry and those who combine both accounting for 9.1 %of the industry. Vinayak (2001) who categorized the pharmaceutical business in Kenya as one manufacturing companies, which he defines as those importing raw materials, and manufacturing finished products, which they sell and market in Kenya and neighbouring countries. Majority of them are local firms, though few are subsidiaries of multinationals. Two multinationals described as companies importing finished research based pharmaceutical products into the country. Some of them undertake all marketing functions by themselves, like product pricing, promotion and distribution, while others have left some aspects of these functions, such as distribution to local agents. Three, Kenyan agents are defined as local firms importing and marketing finished pharmaceutical products through contractual arrangements with foreign manufacturers whereas Local traders are local firms engaged only in distribution and trading of pharmaceutical products and include the pharmacies/chemists and wholesalers (Mbau 2000).

It is however important to point out that today the multinational companies category recognized above have all migrated to Kenyan agents due to increased competition, pressure to lower prices leading to cost reduction by closure of scientific office and lower profitability due to government policy of procurement of most drugs based on competitive bidding, furthered by patent protection lapse on most drugs. For these reasons the Kenyan agents who are primarily importers and distributors now play a very important role in the operations of the pharmaceutical industry. It is however important to point out that all this companies are owned by individuals or groups of individuals operating as SME's though with albeit more focused structures due to nature of industry (Export Processing Zones Authority, 2005).

Given the many companies that the local trade agents have to deal with since most have an average of 5 agencies they represent, and given the numbers of products registered daily, along with increased and expanding work force, one would expect that the management of the pharmaceutical importers and distributors would turn to strategic management practices more so the formal strategic planning practices as a way of continuously monitoring their organizations

definition of business and as a means of ensuring that they do not become obsolete or falter (Export Processing Zones Authority, 2005).

1.2 Statement of the problem

The research problem addressed in this study was that despite the high deviation of prices of identical pharmaceutical products in the market, little has done to determine price effects on the overall quality of pharmaceutical services in the respective community pharmacy outlets.

Poor quality products and services are on offer especially to many Kenyans who are more concerned about their costs rather than their respective quality. In 2005 in Kenya, a random survey by the National Quality Control Laboratories (NQCL) and the Pharmacy and Poisons Board found that almost 30% of the drugs in Kenya were counterfeit. Some of the drugs were no more than just chalk or water marketed as legitimate pharmaceutical products. According to figures from the Kenyan Association of Pharmaceutical Industry, counterfeit pharmaceutical products account for approximately $130 million annually in sales in the country (World Health Organization, 2010).

Undercutting to attract more customers and parallel importation of pharmaceutical have also been used with the aim of maximizing profits. Pharmacies that have established themselves as low priced and attract many customers could show little regard to quality care (Parmar, 2008).

The essence of this study therefore was to define and characterize the problem.

1.3 Purpose of the study

The purpose of the study was to find out the relationship between pricing of pharmaceutical products and the commensurate quality of pharmaceutical services in retail pharmacies in Mombasa.

1.4 Objectives of the study

The specific objectives of the study were:

I. To establish out the prices of selected indicator pharmaceutical products across pharmacies in Mombasa and calculate price index.

II. To establish the indices of quality of pharmaceutical care using selected quality parameters in the respective pharmacies.

III. To relate the derived price index with corresponding quality index in respective pharmacies in the context of organizational culture.

1.5 Research Questions

The following research questions were addressed in this study:

I. What are the prices of the selected indicator pharmaceutical products across pharmacies and what are the price indices for the respective pharmacies based on the selected items?

II. What are the indices of quality of pharmaceutical care using selected quality parameters in the respective pharmacies?

III. How do the derived price indices relate with corresponding quality index in respective pharmacies?

1.6 Basic assumptions of the study

The study postulated that:

I. The theoretical and the conceptual frameworks were an accurate reflection of the phenomenon studied and the models fitted observed data.

II. Relationships among concepts in the model were necessary, sufficient, and clear.

III. The measurement model and data analysis would adequately capture the core concept.

IV. Evidence generated by the study method would be sufficient to confirm/disconfirm/expose/ uncover the theory.

V. Findings to accrue from this study would have worth to the contemporary health care industry and millions of would-be clients.

1.7 Significance of the Study

It was envisioned that the study would shed new light on this important part of care in the cascade of patient management. It would illuminate an issue that is of significant public health

concern and that urgently needs to be addressed thus providing policy makers with critical objective information necessary to alter and modify existing regulation on the pharmaceutical industry. The overall effect would be the protection from exploitation of majority of Kenyans who being low income earners are more concerned about the price and lesser on the respective quality of pharmaceutical products and services and health care in general. Consequently we would build a healthy people able to competently contribute to the socioeconomic welfare of the nation.

1.8 Scope of the study

The study covered retail pharmacies in Mombasa town. Only price was studied as relating to service quality. The price index for the various pharmacies was derived based on selected key items to facilitate ease and speed of study.

1.9 Limitations of the study

The following challenges were expected:

I. Financial constraints: this study was to be financed from limited personal sources.
II. Time: the study was a requirement for academic qualification within a specified time frame.
III. Few sources of relevant information needed to facilitate the study within Mombasa.

1.10 Definition of significant terms used in the study

Quality pharmaceutical care: responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life.

Symptomatology: The set of symptoms characteristic of a medical condition or exhibited by a patient.

Compliance: the degree to which a patient correctly follows medical advice.

Prognosis: the likely outcome of an illness.

Adverse effect: a harmful and undesired effect resulting from a medication or other intervention such as surgery

Generics: drugs produced and distributed without patent protection

Floors: the lowest price that can be charged on a commodity

1.11 Organization of the study

The study was structured into five chapters. Chapter one was an introduction into the study giving the fundamentals on which the enquiry was based. It had the following subsections: background of the study, statement of the problem, purpose of the study, research questions, assumptions of the study, significance of the study, scope of the study, limitations of the study, definition of significant terms and the organisation of the study.

Chapter two was literature review. It had the following subsections: introduction, theoretical literature, empirical literature, theoretical and conceptual frameworks and the summary of literature.

Chapter three was research methodology. It had the followinng subsections: introduction, the research design, location of the study, target population and sample size, instruments of data collection, piloting of research instruments, validity and reliability of research instruments, data collection procedure, operational definition of variables and the data analysis plan and presentation.

Chapter four was on data presentation, analysis and interpretation. It had the following subtopics: introduction, chief pharmacists' questionnaire, pharmacy staff questionnaire, pharmacy clients' questionnaire, price indices, relationship between price index and the quality of service and relating price index, service quality score and attitude orientation.

Chapter five was summary of findings, discussions, conclusions and recommendations. It had the following subtopics: introduction, summary of findings, discussion of findings, conclusions, recommendations and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A lot has been written on community pharmacy practice in the world in general and specifically about Kenya. This chapter systematically reviews materials that have contributed to knowledge on the subject. The review begins with a look at the principles and fundamentals of pharmaceutical care in theory which is later supplemented by empirical literature. These two form the basis for the conceptual framework which follows.

2.2 Theoretical literature

Three of the eight millennium development goals are health related. These are the fourth, fifth and sixth goals, dealing with mothers' health needs, children's health needs and ways of tackling the biggest killer diseases namely HIV/AIDS and Malaria (World Health Organization, 2008). This highlights the place of health in development.

Table 2.1: General and health indicators

Total population(2001)	31.3 million
Percentage of urban population(2002)	34
Gross Domestic Product (GDP) per capita (US$)(2001)	453.2
Life expectancy at birth (M/F)(years) (2002)	47/49
Child mortality (M/F)(years) (probability of dying under age 5 years) (per 1000)	199/109
Adult mortality (M/F)(probability of dying between 15 and 59) (per 1000)	560/513
Per capita total expenditure on health in international dollars(2000)	115
Total expenditure on health as percent of GDP(2000)	8.3
Adult literacy rate(2000)	73.6%

Source: World Health Organization Country information for Kenya/ "Selected indicators": 2003

Pharmaceutical care forms an integral part of health care system and quality care contributes to a healthy nation capable of taking part in development ventures. It has been estimated that for the country to meet its health-related Millennium Development Goals (MDGs), the pharmacy workforce needs to grow by 28% annually between 2010 and 2015 (Kombe et al, 2006). Assessing the pharmaceutical situation in a country provides baseline information on whether its population has access to essential medicines that are of good quality, are efficacious and are being used properly. Results for such assessment can be used as a guide by policy makers and managers to develop and define the necessary changes and priority areas that require support for improved health for all. (Ministry of Health, 2003).

2.2.1National Medicines Policy

The Kenya National Drug Policy (KNDP) was formulated in 1993-94 through a series of nation consensus building workshops and adopted by the Government of Kenya in 1994. The goal of the KNDP is to use available resources to develop pharmaceutical services so as to meet the requirements of all Kenyans in the prevention, diagnosis and treatment of diseases using efficacious, high quality, safe and cost-effective pharmaceutical products. The specific objectives of the KNDP aim to: Ensure constant availability of safe and effective drugs to all segments of the population; Provide drugs through the different sectors at affordable prices; Facilitate rational use of medicines through sound prescribing, dispensing and usage; Ensure that the quality of medicines manufactured in Kenya and those imported into Kenya meet internationally accepted quality standards; Encourage self sufficiency through local manufacture of medicines for consumption and export; Ensure that the provision of medicines for veterinary services is consistent with the NDP (Ministry Of Health, 1994).

The United States' Healthcare Reforms bill is an example of drastic measures that can be taken to provide affordable, quality health care for all and reduce the growth in health care spending, and for other purposes (Dingell et al, 2009).

2.2.2 Pharmacy Business in Kenya

The Investment Promotion Act (2004) is the main Government of Kenya legislation with a purpose of promoting and facilitating both local and foreign investments. The Act particularly states the licenses and other related requirements that a local or a foreign investor in Kenya should have. The publication of Sessional paper no. 2 of 2005 on 'Development of Micro and Small Enterprises (MSEs) for Wealth and Employment Creation for Poverty Reduction' is one of the most important current government efforts to develop the MSE sector. The Act sets policies for developing the MSEs. (UNDP, 2006).

Control of the profession of pharmacy and the trade in pharmaceutical products is administered by the Ministry of Health (Ministry of Health), through the Pharmacy and Poisons Board, as provided for by Chapters 244 (The Pharmacy and Poisons Act) and 245 (The Dangerous Drugs Act) of the Laws of Kenya (Ministry Of Health, 2009). Only authorized persons are allowed to run such businesses namely pharmacists or pharmaceutical technologists duely registered. A body corporate/ limited liability company may apply to operate more than one premise (as branches). However the requirements stipulated under section 21 of the Pharmacy and Poisons Act must be adhered to including that in each set of premises there shall be a different superintendent pharmacist working under the supervision of the overall responsible company pharmacist. The premise in which business is run must also be authorized by PPB. (Pharmacy and Poisons Act, chapter 244, Laws of Kenya).

2.2.3 Pharmaceutical Society of Kenya role and objectives

The society issues licenses to pharmacists, as well as ensuring the drug store managers are members of the Pharmaceutical Society of Kenya (PSK) and have sworn allegiance to the pharmacy practitioners' professional oath.

PSK equally plays the role of raising queries as and when they believe its members are committing malpractices.

It ensures standards, which include: Monitoring and advising its members on new disease control programmes; Promotes increased quality training of pharmacy personnel; Ensure proper

distribution of pharmaceutical and non-pharmaceutical products; Undertake pharmacy management.

In 2006, PSK introduced the Continuous Professional Development (CPD) programme. Activities that enhance quality care provision are awarded points as determined by Education Committee and each practitioner must participate in a given minimum to maintain membership. (Pharmaceutical Society of Kenya, 2009)

2.2.4 Parallel Imports

Parallel imports (PI), also called gray-market imports, are goods produced genuinely under protection of a trademark, patent, or copyright, placed into circulation in one market, and then imported into a second market without the authorization of the local owner of the intellectual property right (Maskus, 2001). Parallel trade will only occur when the purchase price for a product is significantly lower in one country compared to the price charged for same product in another country (Wikström et al 2006).

Parallel trade with pharmaceuticals, says Garde (2006) differs from trade with other goods in the sense that it typically only occurs during the relatively short period of time when the patent for the product is in force, before the competition from manufacturers of generic products forces the price down to a level which renders further parallel import of the product economically uninteresting. The price for a pharmaceutical, notes Wikström (2006) may vary quite significantly between countries. The reason for these differences in price can often be found in the fact that the price for a pharmaceutical product in most countries is not set by the manufacturer but rather by the regulatory authorities in each country with the particular purpose that the price shall conform to the diverse subsidy systems for pharmaceuticals that exist within each State.

2.2.5 Price Comparisons of pharmaceuticals

The comparison of prices between different markets, different countries, or different time periods poses methodological challenges (Danzon, 1998). To draw valid conclusions about the average price level for drugs to consumers in different markets, the sample must include a representative market basket of the drugs consumed which can be achieved by taking a random

ample or a stratified random sample. A further requirement for a representative sample of pharmaceuticals is that it should include generics as well as branded originator compounds. Ideally, prices should be compared for products that are identical in all relevant respects in the different markets - the same active ingredient, same manufacturer, same brand name, same dosage form, same strength, and same pack size. (Danzon, 1999). In some situations, preferred approach is therefore to compare the price of the molecule, computed as the volume-weighted average of prices charged by all manufacturers of the compound, including the originator, licensees, and generic manufacturers. Comparisons are also sensitive to the unit of measure used (Danzon and Kim 1998).

2.3 *Empirical literature*

The pharmaceutical care field has attracted the interest of scholars and studies have been done on various aspects of the subject.

2.3.1 Policy review

Kenya has an official National Medicine Policy document last updated in 1994. However no national assessment study has been conducted to evaluate the impact of policy intervention. The existing policy does not specifically cover the regulations of traditional medicines and the sections relevant to addressing current public health priorities, such as HIV/AIDS and malaria, are not adequate (World Health Organization, 2003). In Africa, up to 80% of the population use traditional medicine for primary health care. In industrialized countries, adaptations of traditional medicine are termed "Complementary" or "Alternative" Medicine (Export Processing Zone Authority, 2005).

2.3.2 Legislation/regulation

Pharmacy and Poisons Board is legally mandated to register medicines, inspect and license pharmaceutical manufacturers and retail outlets yet World Health Organization (2003) found out that there are no adequate national guidelines for pharmaceutical inspection process, hence there is insufficient ability to enforce compliance with the laid down Medicines legislation and regulations. The average time taken to finalize registration for market authorization is six months (World Health Organization, 2003).

Kenya as a member of the World Trade Organization (WTO) modified its Intellectual Property Act in 2001 to be compliant with the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs). Kenya now provides a 20-year patent protection for both products and processes. The

Act is significant for the fact that it incorporates all of the public health protections that are TRIPs compliant and that can be used to increase access to affordable medicines, namely compulsory licensing, government use, parallel importation and a provision to speed the introduction of generic

versions once a patent on a medicine has expired. To date, none of these flexibilities has been used by the government to promote greater availability of cheaper essential medicines (Ministry of Health, 2003).

Counterfeit medicines have also posed a challenge. Anti counterfeit bill was drafted in 2008 and passed into law in Kenya in 2009 which covers pharmaceuticals (Ministry of Health, 2009).

2.3.3 Quality control of pharmaceuticals

A National Quality Control Laboratory exists, however, it does not function efficiently. Of all the samples collected within the past one year, less than 20% have been tested for regulatory purposes (Health Action International, 2003).

2.3.4 Access to essential medicines

Based on a rough estimation from core indicators, it is of the opinion that an estimated 30% of the Kenyan population has access to essential medicines. (Ministry of Health, 2003). This is a less figure compared to a 1988 World Health Organization report showing 60-90 % of the population with access. (World Health Organization, 1988).

The percentage of the population within 1 hr walking distance to the public health facility, private health facility and private retail outlet is 50%, 70% and 80% respectively. 60% the public health facility, 30% private health facility and private pharmacy have essential medicines available.

60, 30 and 50% of the population can afford essential medicine at public health facility, private health facility and private pharmacy respectively. (Ministry of Health, 2003).

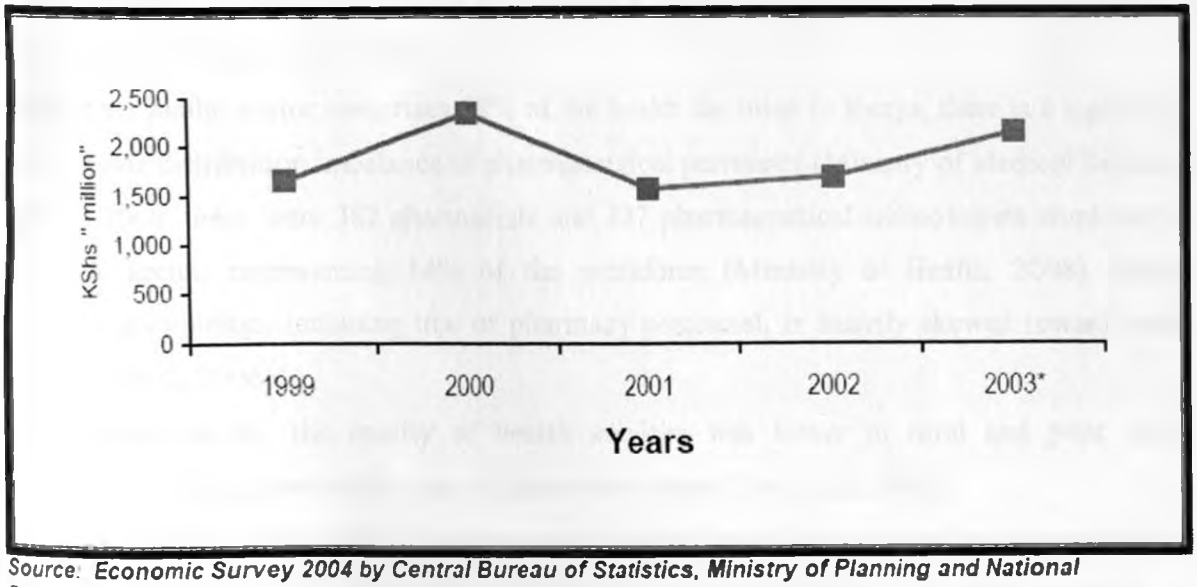
2.3.5 Rational use

Standard treatment guidelines (STG) are produced by the Ministry Of Health but there is no National Medicines Formulary manual. There are no continuing education programs, medicines information centre or public education campaign concerning rational medicines use although there is a government department with a specific mandate to promote rational use of medicines and co-ordinate medicines use policies. All referral hospitals and a few general hospitals have drugs and therapeutics committees. (Ministry of Health, 2003).

2.3.6 Production

The 2002 total annual sales for the 34 local pharmaceutical industries in Kenya was US$ 53,000,000. (Ministry of Health, 2003) Kenya is currently the largest producer of pharmaceutical products in the Common Market for Eastern and Southern Africa (COMESA) region, supplying about 50% of the regions' market. Out of the region's estimated of 50 recognized pharmaceutical manufacturers, approximately 30 are based in Kenya (Export Processing Zone Authority, 2005).

Figure 2.1 Value of principal exports, 1999 – 2003 (Kshs million)



Source: Economic Survey 2004 by Central Bureau of Statistics, Ministry of Planning and National Development

2.3 7 Workforce supply

Both the public and private health sectors are consistently understaffed and shortages are particularly acute amongst pharmacy and laboratory departments. This is due to government economic constraints as well as policies which were advocated by the International Monetary Fund (IMF) to freeze public sector employment (Soren A, 2006). As already observed, it has been estimated that for the country to meet its health-related Millennium Development Goals (MDGs), the pharmacy workforce needs to grow by 28% annually between 2010 and 2015 (Kombe et al, 2006.). Kenya has about eight pharmacists for every 100,000 people (Ministry of Health, 2008). This is a significant improvement from 1998 when the ratio was much lower than 1: 100 000 (Lewa, 1998).

Over the period from 1978 to 2000, the University of Nairobi produced about 25 pharmacy graduates every year. This number doubled by 2005 and rose to about 80 in 2008. In addition, about 40 Kenyan pharmacists trained outside of the country apply for registration each year, half of who are successful. In 2009, Kenyatta University (public) and Mount Kenya University (private) started offering degrees in pharmacy. Their first graduates will be registered in 2014 and it is expected that by 2020 the national pharmacy workforce will be growing steadily and significantly. Universities that wish to establish undergraduate training programs are currently constrained by insufficient pool of trainers with higher degrees in pharmacy, but this will soon change because University of Nairobi has Master's and doctoral degrees in various pharmacy specializations.(Thoithi et al, 2009).

Although the public sector comprises 58% of the health facilities in Kenya, there is a significant public-private distribution imbalance of pharmaceutical personnel (Ministry of Medical Services, 2008). In 2008, there were 382 pharmacists and 227 pharmaceutical technologists employed in the public sector, representing 14% of the workforce (Ministry of Health, 2008). Health workforce distribution, including that of pharmacy personnel, is heavily skewed toward urban areas (Kombe G, 2006).

In the private sector, the quality of health services was lower in rural and poor urban neighbourhoods compared to the more affluent urban areas (Goel et al, 2006).

Until the late 1990s, most public hospitals were unable to retain pharmacists due to poor salaries (Ministry of Health, 2004). Most of the staffing reforms in the public sector can be attributed to the Kenya Health Policy Framework, which includes strategies to improve distribution of health

personnel; promote service delivery and workers' morale; improve training, supervision and ethical practice (Ministry of Health, 1994). Despite considerable improvement in the retention of staff in the health public sector, a human resource mapping exercise carried out in 2004 found that staffing levels in public hospitals did not meet the Ministry of Health staffing norms (Ministry of Health, 2004). In addition, every year about twenty pharmacists apply to migrate and practice abroad especially to Australia, Canada, USA and the UK. The PPB estimated that there were 190 pharmacists who had migrated abroad in the ten years prior to 2006 (International Pharmacy Federation, 2006).

2.3.8 Workforce planning

The Central Bureau of Statistics has no information on pharmaceutical workforce planning in the private sector (Ministry of Planning and National Development , 2004). A comprehensive planning mechanism for pharmaceutical personnel in the public sector has been guided by the Kenya Health Policy Framework. This policy was implemented through the National Health Sector Strategic Plans (Ministry Of Medical Services, 2008). Some of the proposals that had been raised during the formulation of the Kenya National Drug Policy were not implemented in the Kenya National Drug Policy Implementation Plan (Ministry of Health, 1994). These recommendations included: training progression of technologists to pharmacists; post-graduate pharmacy training; improvement of the scheme of service; identification of pre-service and in-service training needs. Nonetheless, some of them have been achieved, largely as a result of the independent efforts. The KNDP is currently under review and it has been renamed the Kenya National Pharmaceutical Policy. It proposes a human resource development plan to improve the supply, skills mix and retention of personnel (Ministry Of Medical Services, 2008).

2.3.9 Business Competitiveness and Generics

Many factors, including initial conditions, history, natural resources, country size, geography and competitiveness strategy, influence business competitiveness in developing countries. Of these, a coherent competitiveness strategy is probably the most critical. In any case, it is the only factor that can be readily influenced (Badrinath, 2004).

Generic medicines play a key role in ensuring the affordability and sustainability of healthcare systems throughout Europe. Encouraging competition in the pharmaceutical market through increasing the use of generic medicines both promotes cost containment and stimulates the

innovation needed to provide added value products (The European Generic Medicines Association, 2007).

The absence of product patents and the relative ease of entry into imitative production means that there are significant numbers of small and medium-sized firms producing generics and copied drugs in countries without product patents. This (pre-patent) structure characterizes (or did characterize) a wide range of countries that have been studied, including Argentina, Brazil, Chile, India, Italy, Turkey, Korea, Egypt, and Lebanon. The Chilean study shows clearly that drug prices fall markedly in the presence of competing products (Coloma, et al, 1987). The real price of Glaxo's aerolin fell by some 52% over the period 1983-1986 as two competing copies came on the market; in the prior five years when aerolin was a monopoly its real price rose by 45%. Moreover, Schut and Van Bergeijk (1986) present evidence that, across a sample of 32 countries in 1975, a standardized pharmaceutical price index is much lower on average in countries without patents than in countries with patents. To isolate the impact of patents they compute the following regression:

$$P = 38.5^{*} + 1.4^{*}GDPPC - 0.6^{*}CONSPC + 7.1DPAT - 15.7^{**}CDP - 11.1IPC$$

where P indicates pharmaceutical price index; *GDPPC* is GDP per capita; *CONSPC* is drug consumption per capita; *DPAT* is a dummy for existence patent protection (either process or products or both); *CDP* is a dummy for pharmaceutical price controls, and *IPC* is a dummy for indirect price controlling measures. The asterisks indicate significant coefficients. Thus, drug prices rise with per-capita income, fall with per-capita consumption volume, fall with price controls, and rise with patent protection. The patent coefficient is insignificant, but this is likely due to the inclusion of process patents and the inability to distinguish between enforced and unenforced product patents, that is, the strength of the legal regime (Maskus, 2001).

2.3.10 Profits versus patient care orientations

It's unfortunate to note that in the United States and United Kingdom community pharmacy practice is geared towards patient care, whereas in Kenya pharmacy practice is economically driven (Parmar, 2008). Indeed, Schommer et al (2007) notes that in the United States, Fifty percent of chain community pharmacy managers indicated that "patient care/contact" was the most appealing aspect of their work. Twenty-two percent indicated that pay/salary also was an appealing aspect of the position. These two orientations are key in determining how a patient is handled in any interaction with community pharmacy staff.

World Health Organization found out that much of the debate surrounding counterfeit medicines to date has focused on how to prevent them seeping into the supply chains of developed-country markets. The majority of counterfeit medicines originate in Less Developed Countries, including most of those that end up in the US and European Union (Morris et al, 2006). This again points to wanting regulation practices in developing countries.

Vogler et al (2008) says that health care including pharmaceutical services is a special commodity and needs regulations. Sufficient number of qualified staff should always be present at an outlet to guarantee quality service. Pharmacy density should also be balanced and monitored closely since generally there is clustering in urban areas and withdrawal from rural areas.

It's also evident that retail pharmacies in rural areas and in low income urban neighbourhoods were associated with suboptimal quality of service (Goel et al, 1996).

2.3 11 Government controls

A study done in the Organization for Economic Cooperation and Development (OECD) member countries shows that Governments may impose volume limitations to control the quantity of a new drug that may be sold (Danzon, 2004). France and Australia both impose price-volume agreements on manufacturers of new medicines (Pharmaceutical Research and Manufacturers Association, 2004)

In 1998, the European Union, in formulating single market legislation for pharmaceuticals, considered profit controls based on negotiations between the Member States and companies

European Commission, 1998). The United Kingdom currently places limits on the profit that a ompany can gain from sales to the U.K. National Health Service (Pharmaceutical Research and Manufacturers Association, 2004).

Many countries impose price "floors" for pharmaceuticals (Danzon, 2004).

The most direct price control method is for governments to set the sales price and prohibit sales t any other price. Alternatively, governments may negotiate favorable prices with manufacturers y leveraging their monopolistic power to set prices below more liberalized prices. Another nethod governments use to control prices is to set the reimbursement price of a new drug at rtificially low levels. Since any price above that is set by the government is borne by the onsumer the reimbursement price functions as the de facto market price. Finally, governments nay regularly cut the reimbursement price of drugs already on the market (Danzon, 2004).

Medicines account for 20–60% of health spending in developing and transitional countries World Health Organization, 2004) compared with 18% in countries of the Organization for Economic Co-operation and Development (OECD, 2007). Up to 90% of the population in leveloping countries purchase medicines through out-of-pocket payments (World Health Organization, 2004) making medicines the largest family expenditure item after food, thus the need for control and consumer protection.

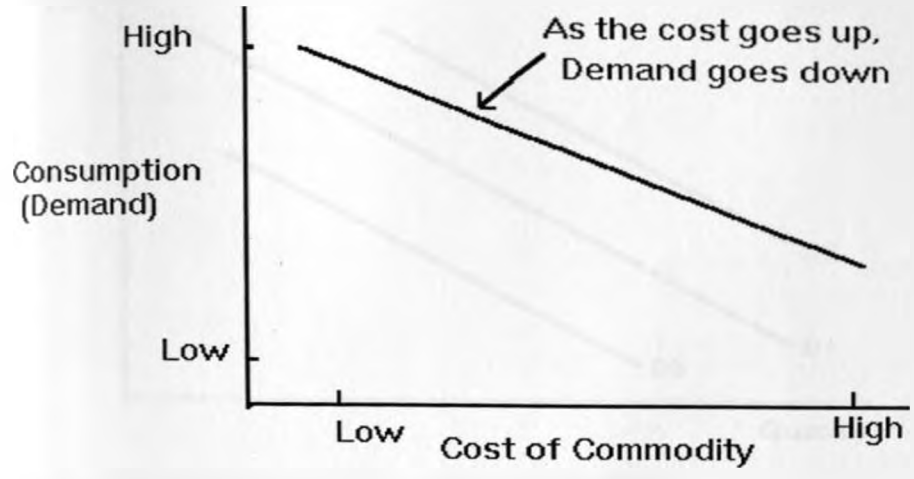
2.4 *Theoretical framework*

2.4.1 The demand curve

The demand curve is the graph depicting the relationship between the price of a certain commodity, and the amount of it that consumers are willing and able to purchase at that given price. It is a graphic representation of a demand schedule. Despite its name, is not always shown as a curve, but sometimes as a straight line, depending on the complexity of the scenario Sheffrin et al, 2003).

Demand curves are used to estimate behaviors in competitive markets, and are often combined with supply curves to estimate the equilibrium price and the equilibrium quantity of that market Crugman at al 2005)

Figure 2.2: **The demand curve**



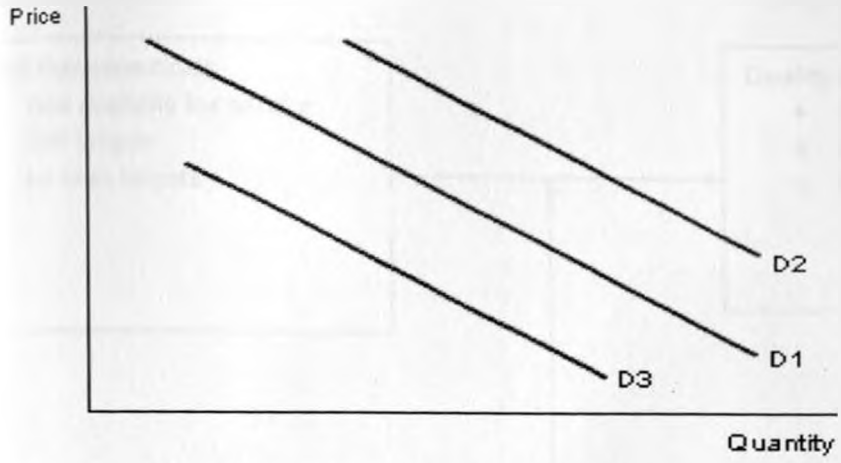
Source: **en.wikipedia.org/wiki/Demand_curve**

2.4.2 Shift in demand

The shift of a demand curve takes place when there is a change in any non-price determinant of demand, resulting in a new demand curve. Non-price determinants of demand are those things that will cause demand to change even if prices remain the same(Case, 1994).

Income is more critical in Africa compared to developed world. When income rises, the demand curve for normal goods shifts out (to the left) as more will be demanded at all price levels. With respect to related goods, when the price of a good rises, the demand curve for substitute goods shifts out, while the demand curve for complementary goods shifts in, vice versa is true (Case, 1994).

igure 2.3: Shift In Demand

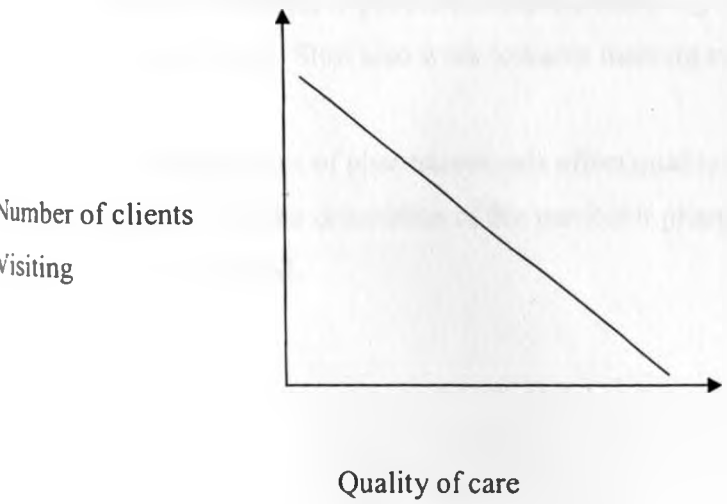


ource: en.wikipedia.org/wiki/Supply_and_demand

.4.3 Quality of care against profits

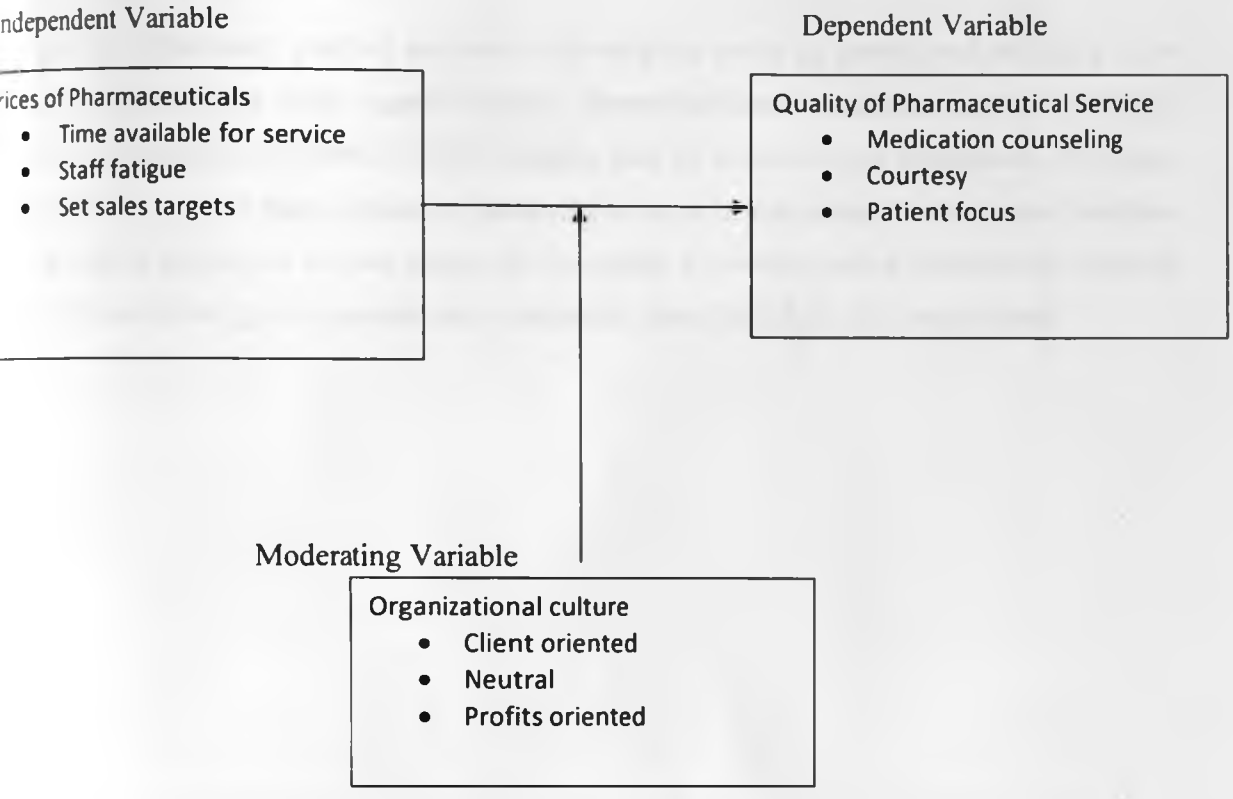
Ve have already seen that in Kenya pharmacy practice is economically driven therefore the etailers want to make more and more profits at any one time (S. Parmar, 2008).

igure 2.4: Care Curve



The overall effect is that the community pharmacies with the lowest prices attract the highest number of clients. Since they want to maximize profits, the more the clients the lesser the time spent serving them thus these clients end up getting poorer and poorer.

2.5 *The Conceptual Framework*



Lower prices of pharmaceuticals leads to higher customer flow. Time available to serve each ustomer is reduced leading to poor medication counseling. Pharmacy staff get fatigued and heir courtesy is reduced. Staff also work towards meeting sales targets shifting the focus from he patients.

The extent to which prices of pharmaceuticals affect quality of pharmaceutical service is nowever influenced by the orientation of the particular pharmacy which could be client oriented, neutral or profits oriented.

.6 *Summary of literature*

he quality of pharmacy practice and care in developing world in general and in Kenya to be pecific is wanting and needs urgent attention. Borrowing from examples from the developed ountries, regulation and control of the industry can be achieved and maintained. There are owever differences in many dynamics between the two extreme economic blocks and therefore udies need to be done in various aspects of the subject to provide policy makers with objective seful information to guide a smooth and a successful transition from the current status.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research design, location of the study target, sample size and sampling procedure, research instruments, validity and reliability of research instruments, as well as data collection procedure and data analysis plan.

3.2 Research Design

The study was a correlational study comprising of attempts to determine whether and to what degree, a relationship exists between the quality of pharmaceutical service and the price indices in respective retail pharmacies. Correlation implies prediction but not causation. The investigator used the Pearson's correlation coefficient to report the results of the study. Survey design was used. The survey method determines and reports the way things are, such as public attitudes, or opinions (Gay, 1976). According to Lockesh (1984) survey research design is used to obtain pertinent and precise information concerning the current status of phenomenon and whenever possible to draw valid general conclusions from the facts obtained. Survey research, according to Orodho (2005), deals with incidence, distribution and interactions of variables. It considers the number of answers to the same question by different people. They also gather information from relatively large cases by employing sampling procedures, hence cutting down on cost. Given the above attributes a survey design was appropriate for this study. As Orodho (2002) advices, it is vital to use a survey design that will provide for collection of the relevant evidence with minimal expenditure of effort, time and money. Care was taken in following the right data collection procedures, to avoid a flawed study. To tap sensitive information known to the respondents, confidentiality was assured.

3.3 Location of the study

The study was conducted in Mombasa, the second largest city in Kenya, is an area of approximately 72 hectares and its coordinates are Lat. 3°55' - 4°10' S Long. 39°35' - 39°45' E thus relatively hot equatorial climate. (UNESCO, 2010).

4 Target population and sample size

arget population consists of all the items or people under consideration in any field of enquiry (Orodho, 02). This study targeted all the 51 registered retail pharmacies in Mombasa. The respondents from ese pharmacies were the just served clients, the staff and the chief pharmacist at the respective harmacy.

ay (1973) asserts that 20 per cent of the population may be required for consideration of study where the opulation is small.

n clients were picked at random from 15 pharmacies giving a total of 150 client respondents. Two harmacy staffs were picked at each pharmacy giving a total of 30 staff respondents. However, all the 15 ief pharmacists were included in the study. This totaled to 195 respondents.

5 Sampling procedure

ratified random sampling was applied so as to include all regions in the city. The main streets were lected from which registered pharmacies were randomly sampled.

6 Data collection instruments

he study was based on primary data. It used the following research instruments (1) Questionnaire for ients; (2) Questionnaire for staff and a price list template. (3) Questionnaire for chief pharmacists. uestionnaires were used as instruments of data collection because of the large number of subjects volved. The questionnaire were administered by the researcher and his research assistants. Mouly 1993) says that the questionnaires normally add more value to research because it allows the selection of representative sample. It can be used in a wide geographical area than most other techniques and cilitates confidentiality, which was key to the study. Questionnaires also enable easy and quick athering of information from respondents.

hava Frankfort-Nachmias (1996) enumerates; low cost, reduction in biasing error, greater anonymity nd considered answers as other advantages of using questionnaires. They contained both closed-ended tructured) and open-ended (un-structured) items. The customer questionnaire was used to collect data on he quality of pharmaceutical care offered and the degree of customer satisfaction. On the other hand the taff questionnaires sought to gather information on the conditions of work environment, constraints they ncounter in customer service and general view of the industry. The chief pharmacist's instruments aimed t finding out the main focus of the ownership or the management of each pharmacy outlet.

3.7 *Piloting of Research Instruments*

Piloting was conducted in one pharmacy in Mombasa. The pharmacy was included in the study sample (Bryman.A et al, 2003).

3.8 *Validity and Reliability of Research Instruments*

According to Koul (1984) validity refers to whether a research tool is really measuring what it is supposed to measure. Uma Sekaran (2006) divides into three namely; content validity, criterion-related validity and construct validity. Validity has to do with how accurately the data obtained in the study represents the variables of the study. The researcher was in constant consultation with the supervisors throughout the study period to ascertain validity. Kidder and Judd (1986) and Uma Sekaran (2006) assert that an instrument can be regarded as having validity if a panel of judges can attest to the validity of the same.

Reliability of an instrument concerns the degree to which a particular measuring procedure gives equivalent results over a number of repeated trials (Orodho 2005). Koul (1984) says that reliability refers to the research tools' consistency in producing similar results on different comparable occasions. To test reliability the split-half technique was employed. According to Mugenda (1999) this technique's major advantage is that it eliminates chance error due to differing test conditions as in the test-retest or the equivalent –form techniques. The data with a high split-half reliability will have a high correlation coefficient.

3.9 *Data Collection methods*

Permission to carry out the study in the identified and selected retail outlets was obtained from the chief pharmacists of the establishments. A formal consent was sought from the respective pharmacies. Once consent is given, the researcher visited the sampled pharmacies. Questionnaires were distributed and the respondents encouraged to answer truthfully as their anonymity would be assured so as to elicit a representative data on the situation in the ground (see appendix I, II and III).

3.10 Operational Definition of Variables

VARIABLE	INDICATOR	MEASURE	SCALE	TOOLS OF ANALYSIS	DECISION
Independent Prices of pharmaceuticals	Price lists	Cost of medicines	Ratio data	Index numbers, standard deviation	Price contributes to quality of care
Dependent Quality of service offered	Customer satisfaction, observation of good dispensing habits	Adherence to standard dispensing steps, customer rating of the service	Ordinal, nominal	Ratio	The degree of customer satisfaction was determined
Moderating Organizational culture	Orientation toward profit making, client welfare or neutral	Frequency of observation	Nominal	Score	Orientation towards profit making contributes to quality of care

3.11 Data Analysis and Presentation Techniques

The Chief Pharmacist and the Staff questionnaires were scored depending on the orientation of the responses. The responses could be neutral, oriented towards client care or oriented towards profit making. The number of responses in each of the three orientations were counted.

The clients' questionnaires were scored according to the merit grid provided. Some simple questions attracted a maximum of one point and a minimum of zero points (see appendix III). There were two categories of questions: objectives questions (6-14) and subjective questions (all the others). The percentage of maximum possible score was obtained for the two categories and for the overall.

ıe price list template gave prices charged in the sampled pharmacies. The items that were ɔmmonly available in all the pharmacies were identified. Of these, ten items representing the ffferent classes of drugs were picked. They were used to calculate the price index per pharmacy. ıe data so partly processes was analyzed using Microsoft Excel and presented in simple escriptive statistics in form of simple tables, graphs and percentages to give visual expression. om these parameters it was possible to extrapolate patterns that reveal the relationship between rvice quality and pricing of pharmaceuticals. This enabled the researcher to discuss the ıdings and draw conclusions.

12 Ethical considerations

ıe study will observe the following ethical standards:

I. Beneficence to respondents.
II. Non-maleficence.
II. Fidelity and trust within the fiduciary investigator/participant relationship
V. Personal dignity of respondents.
V. Autonomy pertaining to both informed, voluntary, competent decision making and the privacy of personal information.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

.1 *Introduction*

his section explains the findings of the study. Data was collected from three different groups of espondents. These are chief pharmacists, pharmacy staff and pharmacy clients. The findings rom the different groups are presented in the different sections of this chapter.

.2 *Response rate*

he questionnaires were administered by the researcher and the response rate was 100%.

.3 *Chief Pharmacists' Questionnaire*

he questionnaire was tested in the pilot stage and found usable. It comprised of questions whose esponses could be neutral (N), oriented towards the welfare of the client (C) or oriented towards rofit making (P). The questionnaire had a total of 17 questions. The number of "N"s , "C"s and P"s per questionnaire were counted and the responses from 15 pharmacies are summarized elow. One questionnaire was used per pharmacy.

Table 4.1: **Chief pharmacists' responses**

Pharmacy code	C	N	P	Inference
BA (Pilot)	3	9	5	Profit oriented
B14	3	9	5	Profit oriented
B13	3	7	7	Profit oriented
B12	5	8	4	Client oriented
B11	4	9	4	balanced
B10	5	7	5	balanced
B9	4	9	4	balanced
B8	3	10	4	Profit oriented
B7	5	7	5	balanced
B6	5	9	3	Client oriented
B5	5	7	5	balanced
B4	2	9	6	Profit oriented
B3	4	7	6	Profit oriented
B2	3	10	4	Profit oriented
B1	4	11	2	Client oriented
Totals	**58**	**128**	**69**	
Mean	**3.866667**	**8.533333**	**4.6**	Profit oriented

4.4 Pharmacy Staff Questionnaire

The questionnaire was tested in the pilot stage and found usable. It comprised of questions whose responses could be neutral (N), oriented towards the welfare of the client (C) or oriented towards profit making (P). The questionnaire had a total of 22 questions. The number of "N"s , "C"s and "P"s per questionnaire were counted. Two respondents were used per pharmacy. An average of the two was calculated and below is the summary.

Table 4.2 **Pharmacy Staff Responses**

Pharmacy code	C	N	P	Inference
BA (Pilot)	3	16	3	Balanced
B14	3	13.5	5.5	Profit oriented
B13	4	11	7	Profit oriented
B12	3.5	12	6.5	Profit oriented
B11	5	12	5	Balanced
B10	4	11	7	Profit oriented
B9	5	12	5	balanced
B8	4	14	4	balanced
B7	2	16	4	Profit oriented
B6	3.5	12.5	6	Profit oriented
B5	6	11.5	4.5	Client oriented
B4	4.5	12.5	5	Profit oriented
B3	5	9	8	Profit oriented
B2	4.5	13.5	4	Client oriented
B1	2.5	17	2.5	Balanced
Totals	**59.5**	**193.5**	**77**	
Mean	**3.966667**	**12.9**	**5.133333**	Profit oriented

The averages of the chief pharmacists and the pharmacy staff were compared giving the picture below.

Table 4.3 **Orientations of chief pharmacist and pharmacy staff**

RESPONDENT	C	N	P	Inference
Chief pharmacists	3.866667	8.533333	4.6	Profit oriented
Pharmacy staff	3.966667	12.9	5.133333	Profit oriented

5 *Pharmacy Clients' Questionnaire*

ne questionnaire was tested in the pilot stage and found usable. It was to gauge the degree of rvice quality at the pharmacy. Each response had a numerical score. The scores were tegorized into three: scores from questions that were objective, scores from questions that were bjective and finally the total score. They were presented as ratios of maximum possible scores d are summarized below.

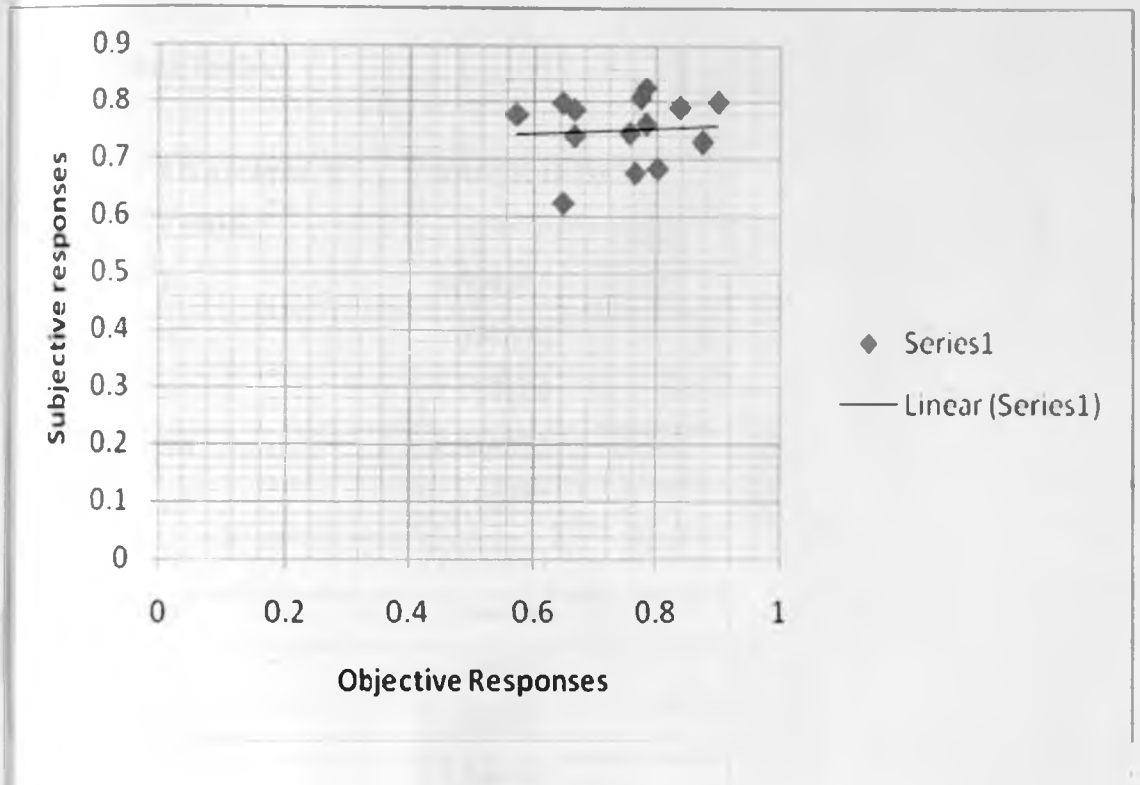
able 4.4 Pharmacy Clients' responses

HARMACY ODE	TOTAL	OBJECTIVE	SUBJECTIVE
1	0.627273	0.645455	0.622727
2	0.758182	0.872727	0.729545
3	0.692727	0.763636	0.675
4	0.798182	0.836364	0.788636
5	0.76	0.663636	0.784091
6	0.705455	0.8	0.681818
7	0.765455	0.645455	0.795455
8	0.723636	0.663636	0.738636
9	0.814545	0.781818	0.822727
10	0.818182	0.9	0.797727
11	0.745455	0.754545	0.743182
12	0.763636	0.781818	0.759091
13	0.756364	0.872727	0.727273
14	0.734545	0.572727	0.775
A(Pilot)	0.798182	0.772727	0.804545
OTALS	**11.26182**		
VERAGE	**0.750788**		

4.5.1 Relationship between Objective Responses And Subjective Responses

Scores on objective questions were plotted against scores on subjective questions to see the relationship between the two. This is presented below.

Figure 4.1 Objective responses versus subjective responses



The Pearson's correlation coefficient was 0.08876.

It's is a weak positive correlation showing that the overall attitude of the clients towards a certain pharmacy is weakly informed by the degree of professional acumen of the pharmacy staff.

4.6 *Price Indices*

The template was tested in the pilot stage and found usable. It was then given to each pharmacy and the prices of the specified items filled. From these prices, price indices were calculated with the recommended price (as per the East African Pharmaceutical Loci, 9th Edition) used as the base. These are presented below.

Table 4.5 Price Indices

PHARMACY CODE	PRICE INDEX
B1	1.368955
B2	1.350370
B3	1.117107
B4	1.346092
B5	1.248453
B6	1.402171
B7	1.244539
B8	1.394078
B9	1.026631
B10	1.346092
B11	1.346092
B12	1.346092
B13	1.346092
B14	1.294659
BA(Pilot)	1.138699
TOTAL	19.31612
MEAN	1.287741

4.7 *Relationship Between Price Index and the Quality of Service*

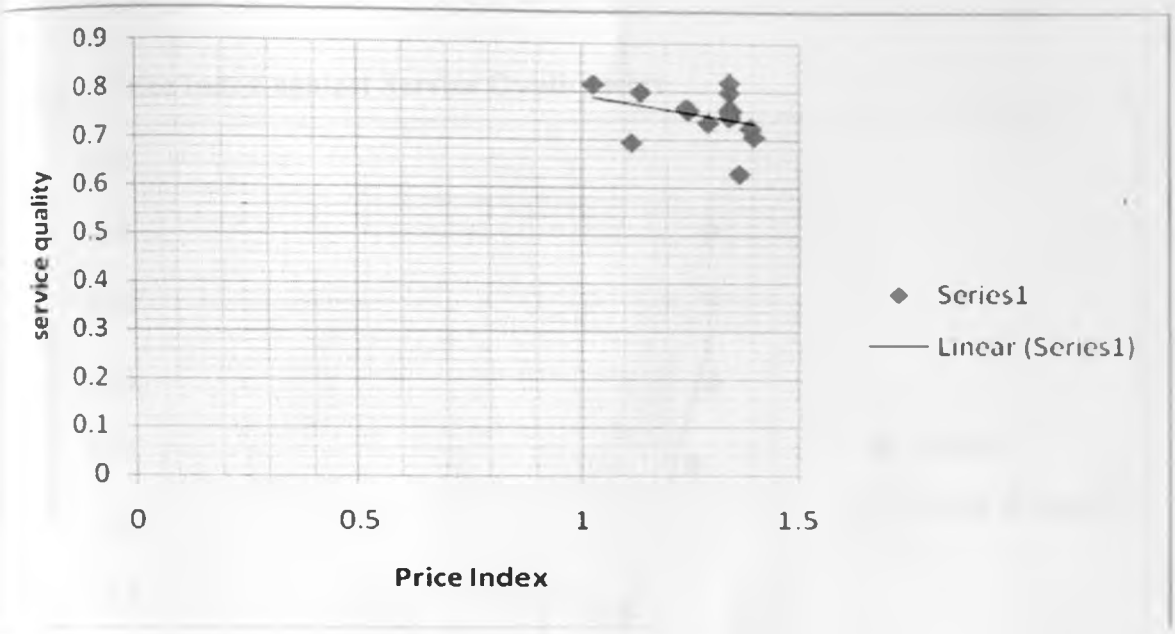
Price indices were juxtaposed against scores on service quality to see the relationship between the two. This is presented below.

Table 4.6 Price Index and the Quality of Service

PHARMACY CODE	PRICE INDEX	QUALITY SCORE
B1	1.368955	0.627273
B2	1.35037	0.758182
B3	1.117107	0.692727
B4	1.346092	0.798182
B5	1.248453	0.76
B6	1.402171	0.705455
B7	1.244539	0.765455
B8	1.394078	0.723636
B9	1.026631	0.814545
B10	1.346092	0.818182
B11	1.346092	0.745455
B12	1.346092	0.763636
B13	1.346092	0.756364
B14	1.294659	0.734545
BA(Pilot)	1.138699	0.798182

A plot of the two variables shows the relationship below.

Figure 4.2 Price Index versus Service Quality



The Pearson's correlation coefficient was -0.31906. This low negative correlation shows that working with the entire sample prices and quality of service are inversely proportional assuming linear relationships.

4.8 *Relating Price Index, Service Quality Score And Attitude Orientation*

Pharmacies that had the chief pharmacist and their staff both skewed toward profitability also had the characteristics summarized below, where P/P shows orientations of both the staff and the chief pharmacist towards profitability.

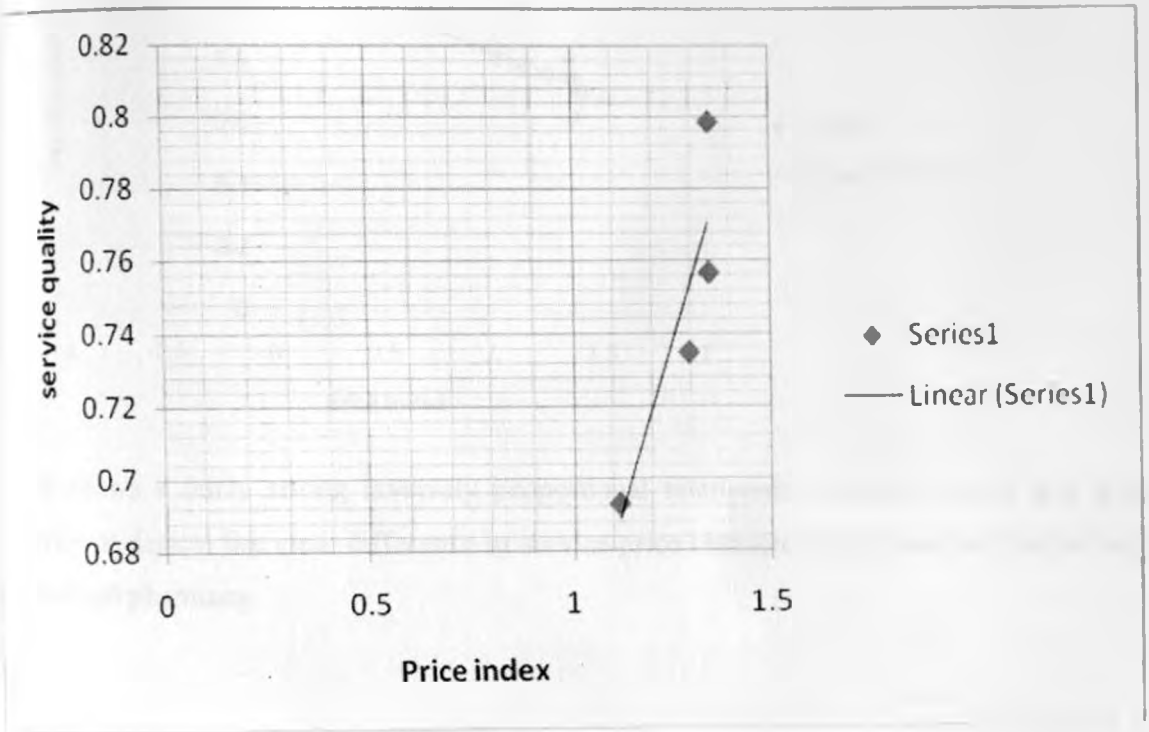
Table 4.7 Influence of orientation on service quality and Price Index

PHARMACY CODE	ORIENTATION	TOTAL QUALITY SCORE	PRICE INDEX
33	P/P	0.692727	1.117107
34	P/P	0.798182	1.346092
313	P/P	0.756364	1.346092
314	P/P	0.734545	1.294659
TOTALS		**2.981818**	**5.10395**
MEAN		**0.745455**	**1.275988**
MEAN OF ENTIRE SAMPLE		**0.750788**	**1.287741**

The averages of the price indices and quality scores are lower for this category of pharmacies than those of the entire sample.

A plot of the relationship above gives the relationship below:

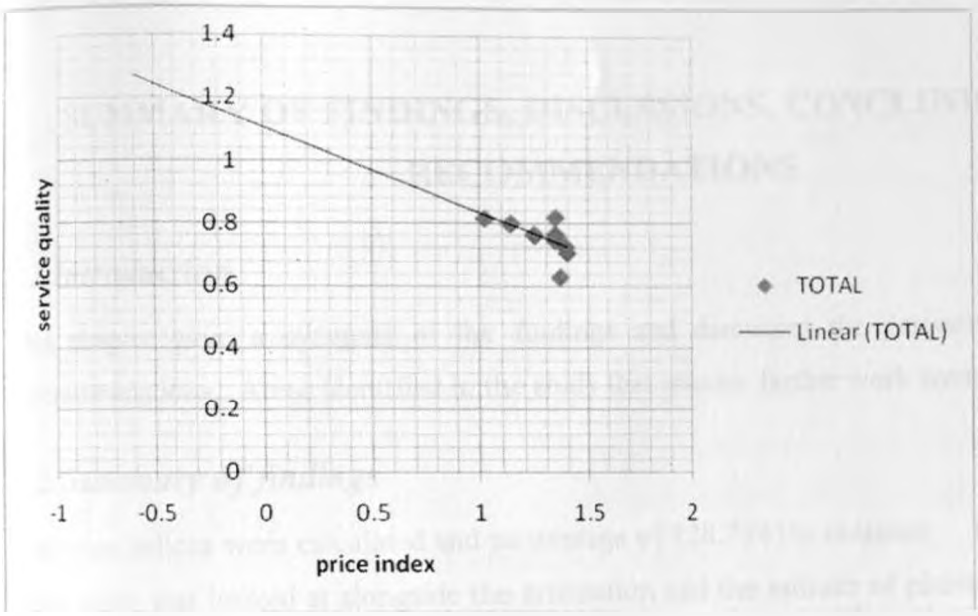
Figure 4.3 **Price Index against Service Quality score**



The Pearson's correlation coefficient was 0.881633. This is a strong directly proportionate relationship between price and quality of service.

A plot of all the other samples excluding the profit oriented pharmacies above gives the following picture:

Figure 4.4 Price Index against Service Quality score



This shows a fairly strong inversely proportional relationship between prices and quality of service. It depicts the clear difference in service-price characteristics based on orientation of the individual pharmacy.

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gave a synopsis of the findings and discusses the derivative inferences and recommendations. Areas identified in the study that require farther work were also specified.

5.2. Summary of findings

The price indices were calculated and an average of 128.7741% obtained (see table 4.5). The price index was looked at alongside the orientation and the attitude of pharmacy staff and chief pharmacists of respective pharmacies. It was noted that pharmacies where both the pharmacy staff and their chief pharmacist were skewed towards profit making had an average price index (127.5988%).

Scores on indicators of quality of pharmaceutical care were obtained (see table 4.4). The average was 75.0788%. The quality of care was looked at alongside the orientation and the attitude of pharmacy staff and chief pharmacists of respective pharmacies. It was noted that pharmacies where both the pharmacy staff and their chief pharmacist are skewed towards profit making had lower quality scores and their average (74.5455%) was lower than that of the entire sample. The relationship between the scores on objective and the subjective ones was investigated. There is a positive correlation (0.08876) all be it small.

From the investigation of the orientation of chief pharmacists and pharmacy staff, both sets of averages showed the same characteristics (see table 4.3). The neutral score was the highest, the profitability tendency score followed and client care tendency came last.

The plot of the price indices against quality of care showed a slight negative correlation (-0.31906).

When the data was filtered to include only pharmacies where both the chief pharmacist and the pharmacy staff gave similar responses skewed towards profitability (see figure 4.3 and table 4.7),

the relationship between prices of pharmaceuticals and quality of service was a high positive correlation (0.881633). This observation was made on 27% of the sample.

5.3 Discussion of findings

The average price index calculated for the entire sample was higher than that obtained for the pharmacies where the orientation of management and staff was skewed towards profitability. As Crugman at al (2005) noted, this was a strategy to make more profits by maximizing sales using lower prices. Lower prices mean lower profit margins and therefore the need for a higher turn over rate compared to pharmacies charging higher prices to make equal profits. The key concern as Dayananda (2002) stated is that measures must be taken to ensure that sales far surpass the break even point. Caution to ensure quality assurance in the process needs to be taken.

Service quality was investigated under two headings: objective aspects and subjective aspects. The two aspects were positively correlated. This implied that clients based their satisfaction and thus choice of pharmacy on the definitive process of pharmaceutical care. But since the correlation was weak (0.08876), implying low public awareness of quality pharmaceutical service as Ministry of Health (2003) found out, other factors such as pricing were likely to be influential in a client's choice of pharmacy.

The average percentage score of service quality in pharmacies where the orientation of management and staff was skewed towards profitability was lower than that calculated from the entire sample. This agreed with earlier findings that indeed the chief concern of these establishments was profit making and that quality of service was merely collateral (Parmar, 2008).

The fact that pharmacy staff and their chief pharmacists had a similar orientation towards profitability indicated the management's effectiveness in passing their attitudes to their staff. Since many of the staff intended to open their own pharmacies in future, the induction cycle may continue if nothing is done (Parmar, 2008).

By excluding the aspect of profit-client care orientation a somewhat unclear picture of the relationship between pricing and the commensurate quality of pharmaceutical care was obtained. By classifying data in accordance to these biases clearer relationships were obtained. Where the staff and the management were profit oriented, the correlation was a strong positive. A significant 27% of pharmacies in Mombasa were in this category. They compromised service

quality in the process of maximizing profits. They offered reduced prices with the aim of attracting clients as stated by Badrinath (2004) but were not taking necessary measures to ensure that results were achieved without compromising service quality as defined by Hepler, (1990) and Cipolle (1998).

For all the other pharmacies (excluding the profits oriented category above), the correlation between pricing and the commensurate quality of pharmaceutical care was a fairly strong negative one (-0.59601) indicating a clear cut difference in price-service quality characteristics. Where as in the previous category lower prices corresponded to lower quality of service, this category gave a more competitive package of fairly low prices corresponding to high quality of service thus making the findings of Parmar (2008) accurate but not comprehensive.

5.4 Conclusion

One out of every four retail pharmacies in Mombasa is mostly concerned with profitability. They are using low prices as a strategy to maximize profits. This strategy is not complemented by quality assurance measures.

The result is that the higher the tendency towards profitability and thus the lower the prices of pharmaceutical products, the lower the quality of pharmaceutical care offered and vice versa.

Another important aspect is that the chief pharmacists were effective in imparting their attitudes and orientations to their staff. There was a general agreement on tendency toward profitability in both groups. This means that this culture is assured of propagation down the generations.

Therefore, one out of every four residents of Mombasa seeking pharmaceutical services from retail pharmacies in the city is at risk of receiving substandard care both now and in the years to come if this problem is not effectively addressed. This is of great impact on morbidity and mortality.

5.5 Recommendations

Immediate measures should be taken by the Pharmaceutical Society of Kenya to ensure that its members adjust accordingly in line with the professional code of ethics.

In the short term, the Pharmacy and Poisons Board should tighten its regulation of the industry as provided for by the Pharmacy and Poisons Act. All the perpetrators of the vice should be brought to book and duely punished.

Since mostly poorer clients are the biggest victims, economic empowerment will be a long term solution. With a good economic growth and good government revenue, the United States "Health Care Reform Bill" model could be adopted. This will ensure that all persons have medical cover and can therefore afford care at good health facilities regardless of price.

Kenya has about eight pharmacists for every 100,000 people (Ministry of Health, 2008). It has been estimated that for the country to meet its health-related Millennium Development Goals (MDGs), the pharmacy workforce needs to grow by 28% annually between 2010 and 2015 (Kombe et al, 2006). Measures need to be taken to ensure this is done. This will further positively impact service quality.

The United States' Healthcare Reforms bill is an example of drastic measures that can be taken to provide affordable, quality health care for all and reduce the growth in health care spending, and for other purposes (Dingell et al, 2009). Kenya could borrow from the document. This will empower clients to be able to seek quality service as opposed to being preoccupied with costs.

Kenya has an official National Medicine Policy document last updated in 1994. However no national assessment study has been conducted to evaluate the impact of policy intervention(World Health Organization, 2003). More frequent reviews will ensure appropriate adjustments with the changing social economic environment.

Pharmacy and Poisons Board is legally mandated to register medicines, inspect and license pharmaceutical manufacturers and retail outlets yet World Health Organization (2003) found out that there are no adequate national guidelines for pharmaceutical inspection process, hence there is insufficient ability to enforce compliance with the laid down Medicines legislation and regulations. The appropriate guidelines need to be developed and duely qualified inspectors deployed to use them in quality assurance and control.

A National Quality Control Laboratory exists, however, it does not function efficiently(Health Action International, 2003). This body needs to have its services optimized in terms of volumes and speed.

Based on a rough estimation from core indicators, it is of the opinion that an estimated 30% of the Kenyan population has access to essential medicines. (Ministry of Health, 2003). This is a less figure compared to a 1988 World Health Organization report showing 60-90 % of the population with access. (World Health Organization, 1988). There is therefore need for

the government to better project health needs and appropriately adjust all systems to cater for the future.

There are no continuing education programs, medicines information centre or public education campaign concerning rational medicines use although there is a government department with a specific mandate to promote rational use of medicines and co-ordinate medicines use policies (Ministry of Health, 2003). This was evident in the low correlation between scores on objective versus subjective aspects of service quality. Public education needs to be enhanced which will be of great impact in health seeking behavior.

The 2002 total annual sales for the 34 local pharmaceutical industries in Kenya was US$ 53,000,000. (Ministry of Health, 2003) Kenya is currently the largest producer of pharmaceutical products in the Common Market for Eastern and Southern Africa (COMESA) region, supplying about 50% of the regions' market. Out of the region's estimated of 50 recognized pharmaceutical manufacturers, approximately 30 are based in Kenya (Export Processing Zone Authority, 2005). Since majority of counterfeit medicines originate in Less Developed Countries, including most of those that end up in the US and European Union (Morris et al, 2006), tighter regulatory standards will boost Kenya's image internationally and this will positively impact our economy.

The Central Bureau of Statistics has no information on pharmaceutical workforce planning in the private sector (Ministry of Planning and National Development , 2004). This needs to be urgently addressed since many health services are provided by private practitioners.

Retail pharmacies in rural areas and in low income urban neighbourhoods were associated with suboptimal quality of service (Goel et al, 1996). The PPB needs to tighten controls in these areas. On the other hand, measures need to be taken to ensure that essential medicines are available in these areas.

Governments may impose volume limitations to control the quantity of a new drug that may be sold (Danzon, 2004). France and Australia both impose price-volume agreements on manufacturers of new medicines and the United Kingdom currently places limits on the profit that a company can gain from sales to the U.K. National Health Service (Pharmaceutical Research and Manufacturers Association, 2004). Many countries impose price "floors" for pharmaceuticals (Danzon, 2004). Since these aspects have benefited

recipients of pharmaceutical services in respective countries, Kenya could tailor its regulation borrowing from them.

5.6 Suggestions for Further Research

This study could be extended to cover both rural and urban pharmacies within the country. The impact of the compromise on quality could also be quantified in monetary terms. This will highlight the economic impact the current situation and will also provide policy makers in the Ministry of Medical Services with useful data.

The effect of the economy on one hand and the effect of information on the other hand in their effect on health seeking behavior could also be studied in the Kenyan context.

This study only dwelt on legal pharmacies. The effect on service quality of illegal pharmacies whose prevalence is alarming could also be studied. This will give a more realistic picture of the retail pharmacy sector as a whole.

The study was done in community pharmacies only. The same could be done in hospital pharmacies in private and public sector.

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APPENDICES

APPENDIX I

INTRODUCTION LETTER TO THE CHIEF PHARMACIST

SAMUEL KARUGU MUCHEMI
UNIVERSITY OF NAIROBI
MOMBASA EXTRA MURAL CENTER
P.O. BOX 83732
MOMBASA

THE CHIEF PHARMACIST

Dear Sir/Madam

RE: AN INVESTIGATION OF THE RELATIONSHIP BETWEEN PRICES OF PHARMACEUTICAL PRODUCTS AND THE QUALITY OF PHARMACEUTICAL CARE

I am currently a student at the graduate school of University Of Nairobi, pursuing a Master's degree in Project Planning and Management. As part of this program, I am carrying out a research on the above mentioned topic. As such I humbly request you to allow me to conduct this study in your facility.

The questionnaires are meant for this research only. Therefore the responses will be treated with confidentiality. No names shall be included in the questionnaires.

Thanks.

Yours faithfully,

SAMUEL KARUGU MUCHEMI

APPENDIX II

CHIEF PHARMACIST QUESTIONNAIRE

Kindly answer the following questions. Do not write your name on this questionnaire. The researcher would like to assure you that the information gathered will be held with utmost confidentiality. Please be as honest as possible and answer the questions appropriately by putting a tick ( ) against the appropriate statement or by filling in the blank spaces provided.

1. How is the organization doing? How would you rate it out of 5?

   1 [ ]

   2 [ ]

   3 [ ]

   4 [ ]

   5 [ ]

2. Which best sums up your business at present?

   Steady Growth [ ]

   Rapid Growth [ ]

   Steady Decline [ ]

   Rapid Decline [ ]

   Steady T/Over [ ]

3. Which one of the following aspects about your business would you say is doing really good?

   Customer service [ ]

   Profit making [ ]

   Social responsibility [ ]

   Data management [ ]

4. Which one of the following aspects about your business would you say NOT doing really good?

   Customer service [ ]
   Profit making [ ]
   Social responsibility [ ]
   Data management [ ]

5. How can it be improved? (the answer to question 4 above)

   _____

6. Why are you practicing community pharmacy?

   A calling [ ]
   Dream career [ ]
   Prestigious career [ ]
   Profits [ ]
   Default [ ]

7. For how long have you been practicing it?

   _____

8. How can you describe the community pharmacy situation in Kenya in general?
   Service oriented [ ]
   Profits oriented [ ]

9. What is the bigger challenge affecting community pharmacy practice?

   Poor regulation by PPB [ ]
   Poor economy [ ]

10. What can be done about it?

_____

_____

_____

11. What is one thing that would make you most concerned about an employee?

Lateness [ ]

Conflict between employees [ ]

Dispensing errors [ ]

12. Is the pharmacy and poisons board doing enough to regulate the practice in the country?

Yes [ ]

No [ ]

13. Mention one area that PPB is doing real good

_____

14. Mention one area that PPB needs to improve

_____

15. Is pharmacy training in the country competitive enough?

Yes [ ]

No [ ]

16. In the Kenyan situation, how would you describe pharmacy? (Choose one option)

As a profession [ ]

As a calling [ ]

As a trade [ ]

17. If you became the chair of the Pharmaceutical Society of Kenya, what would be your first priority?

_____

APPENDIX III

INTRODUCTION LETTER TO PHARMACY STAFF

SAMUEL KARUGU MUCHEMI
UNIVERSITY OF NAIROBI
MOMBASA EXTRA MURAL CENTER
P.O. BOX 83732
MOMBASA

TO PHARMACY STAFF

Dear Sir/Madam

RE: **AN INVESTIGATION OF THE RELATIONSHIP BETWEEN PRICES OF PHARMACEUTICAL PRODUCTS AND THE QUALITY OF PHARMACEUTICAL CARE**

I am currently a student at the graduate school of University Of Nairobi, pursuing a Master's degree in Project Planning and Management. As part of this program, I am carrying out a research on the above mentioned topic. As such I humbly request for your responses on the items of this study.

The questionnaires are meant for this research only. Therefore the responses will be treated with confidentiality. No names shall be included in the questionnaires.

Thanks.

Yours faithfully,

SAMUEL KARUGU MUCHEMI

APPENDIX IV

STAFF QUESTIONNAIRE

Kindly answer the following questions. Do not write your name on this questionnaire. The researcher would like to assure you that the information gathered will be held with utmost confidentiality. Please be as honest as possible and answer the questions appropriately by putting a tick ( ) against the appropriate statement or by filling in the blank spaces provided.

1. How do you like the work here? How would you rate it out of 5?

   1 [ ]

   2 [ ]

   3 [ ]

   4 [ ]

   5 [ ]

2. Which best sums up customer flow at present?

   Steady Growth [ ]

   Rapid Growth [ ]

   Steady Decline [ ]

   Rapid Decline [ ]

   Steady T/Over [ ]

3. What one aspect about this business would you say is doing really good?

   Profit making [ ]

   Social responsibility [ ]

   Data management [ ]

   Employee treatment [ ]

4. What one aspect about this business is NOT doing very well?

   Profit making [ ]
   Social responsibility [ ]
   Data management [ ]
   Employee treatment

5. How can it be improved? (the answer to question 4 above)

   _____

   _____

6. Why are you working in a community pharmacy and not any other place?
   A calling [ ]
   Dream career [ ]
   Prestigious career [ ]
   Profits [ ]
   Default [ ]

7. For how long have you been practicing it?

   _____

8. Do you plan to open your own community pharmacy in the future?
   yes [ ]
   No [ ]

9. Why?

   _____

10. How can you describe the community pharmacy situation in Kenya in general?

_____

_____

Service oriented [ ]

Profits oriented [ ]

11. What is the biggest challenge affecting community pharmacy practice?

Poor regulation by PPB [ ]

Poor economy [ ]

12. What can be done about it?

_____

_____

_____

13. Do you sometimes work overtime?

Yes [ ]

No [ ]

14. Are you paid for it?

Yes [ ]

No [ ]

15. What is one thing that is most likely to make your employer fire you?

_____

16. Is the pharmacy and poisons board doing enough to regulate the practice in the country?

Yes [ ]

No [ ]

17. Mention one area that PPB is doing real good

_____

18. Mention one area that PPB needs to improve

_____

19. Is pharmacy training in the country competitive enough?

Yes [ ]

No [ ]

20. In the Kenyan situation, how would you describe pharmacy? (Choose one option)

As a profession [ ]

As a calling [ ]

As a trade [ ]

21. If you became the chair of the pharmaceutical society of Kenya, what would be your first priority?

_____

_____

22. If you were the owner of this business, what is one thing that you would do differently?

APPENDIX V

INTRODUCTION LETTER TO THE CLIENTS

SAMUEL KARUGU MUCHEMI
UNIVERSITY OF NAIROBI
MOMBASA EXTRA MURAL CENTER
P.O. BOX 83732
MOMBASA

TO THE CLIENTS

Dear Sir/Madam

RE: **AN INVESTIGATION OF THE RELATIONSHIP BETWEEN PRICES OF PHARMACEUTICAL PRODUCTS AND THE QUALITY OF PHARMACEUTICAL CARE**

I am currently a student at the graduate school of University Of Nairobi, pursuing a Master's degree in Project Planning and Management. As part of this program, I am carrying out a research on the above mentioned topic. As such I humbly request for your responses on the items of this study.

The questionnaires are meant for this research only. Therefore the responses will be treated with confidentiality. No names shall be included in the questionnaires.

Thanks.

Yours faithfully,

SAMUEL KARUGU MUCHEMI

APPENDIX VI

CLIENT QUESTIONNAIRE

Kindly answer the following questions. Do not write your name on this questionnaire. The researcher would like to assure you that the information gathered will be held with utmost confidentiality. Please be as honest as possible and answer the questions appropriately by putting a tick ( ) against the appropriate statement or by filling in the blank spaces provided.

1. How satisfied on a scale of 1 to 5 where 1 represents "Extremely dissatisfied" and 5 represents "Extremely Satisfied," are you overall with the service you received?

   1 [ ]
   2 [ ]
   3 [ ]
   4 [ ]
   5 [ ]

2. How satisfied are you with the courtesy of the staff?

   1 [ ]
   2 [ ]
   3 [ ]
   4 [ ]
   5 [ ]

3. How satisfied are you with the helpfulness of the staff?

   1 [ ]
   2 [ ]
   3 [ ]
   4 [ ]
   5 [ ]

4. Did the staff show interest in you as a valued customer? Rate it out of 5?

   1 [ ]

   2 [ ]

   3 [ ]

   4 [ ]

   5 [ ]

5. How satisfied are you with the relevant knowledge of the staff you dealt directly with?

   1 [ ]

   2 [ ]

   3 [ ]

   4 [ ]

   5 [ ]

6. Did you come with a prescription?

   Yes [ ]

   No [ ]

7. Did they confirm that the prescription was actually yours/for the right person?

   Yes [ ]

   No [ ]

8. Did they explain to you when and how to take the drugs?

   Yes [ ]

   No [ ]

9. Did u understand?

   1 [ ]

   2 [ ]

   3 [ ]

   4 [ ]

   5 [ ]

10. Did they tell you of side effects to expect?

    Yes [ ]

    No [ ]

11. Did you understand?

1 [ ]

2 [ ]

3 [ ]

4 [ ]

5 [ ]

12. Did they tell you of any interactions with other medicines, drinks or foods? (Did they tell you of what things to avoid when taking these medicines?)

Yes [ ]

No [ ]

13. Were you served by the person you needed?

Yes [ ]

No [ ]

14. How satisfied are you with the time taken to serve you? Did you wait too long?

They are very slow [ ]

They are slow [ ]

They are fast [ ]

They are very fast [ ]

15. How likely are you to recommend this pharmacy to a friend or relative? Would you say the chances are …

Excellent [ ]

Very Good [ ]

Good [ ]

Fair [ ]

Poor [ ]

16. How would you rate the overall quality of your relationship with this pharmacy, considering all of your experiences with them? Would you say it is …

Excellent [ ]

Very Good [ ]

Good [ ]

Fair [ ]

Poor [ ]

17. How would you rate your level of satisfaction with this pharmacy in regards to price?

Excellent [ ]

Very Good [ ]

Good [ ]

Fair [ ]

Poor [ ]

18. Is this your first time in this pharmacy?

Yes [ ]

No [ ]

19. If no, why did you come again?

---

20. How likely are you to repurchase products and services from this pharmacy? Would you say the chances are …

Excellent [ ]

Very Good [ ]

Good [ ]

Fair [ ]

Poor [ ]

21. How does this pharmacy compare to other pharmacies you know?

The best [ ]

Good [ ]

Fair [ ]

Poor [ ]

APPENDIX VII

PRICES OF COMMODITIES

ITEM	PRICE
1. Caps Amoxil 250mg, GSK	
2. Tabs Augmentin 625mg, GSK	
3. Caps Ampiclox 500mg, GSK	
4. Caps Floxapen 250mg, GSK	
5. Tabs Zinnat 250mg, GSK	
6. Inj Rocephin 1g, Roche	
7. Tabs Triokit , Syner-med	
8. Tabs Septrin 480mg, GSK	
9. Tabs Flagyl 200mg, Sanofi	
10. Tabs Coartem (24s), Novartis Pharma	
11. Tabs Duocotecxin (8s), Holley-cotec	
12. Tabs Diflucan 200mg, Pfizer	
13. Tabs Actal Tums, GSK	
14. Caps Eso-KIT, Cipla	
15. Tabs Buscopan Plus, Boehringer Ing	
16. Tabs Zantac 150mg, GSK	
17. Tabs Dulcolax 5mg, Boehringer Ing	
18. Tabs Zentel 200mg, GSK	
19. Tabs Lanoxin 0.25mg, GSK	
20. Tabs Inderal 40mg, Astrazeneca	
21. Tabs Apresoline 25mg, Novartis Pharma	
22. Tabs Aldomet 250mg, MSD	
23. Tabs Xatral 10mg, Sanofi	
24. Tabs Adalat 20mg Retard	
25. Tabs Lasix 40mg, Sanofi	
26. Tabs Aldactone 100mg, Pharmacia	
27. Tabs Ascard-75, ATCO	
28. Tabs Doloact MR, Ochoa	
29. Tabs Betapyn, Adcock	

30. Tabs Valium 5mg, Roche	
31. Tabs Tegretol 200mg, Novartis Pharma	
32. Syr Trimetabol 150ml bottle, J. Uriach & Cia	
33. Inj Syntocinon 5 IU, Novartis Pharma	
34. Tabs Diamicron 30mg, Servier	
35. Tabs Glucophage 500mg, merck	
36. Tabs Rhizin 10mg, Recon	
37. Tabs Ventolin 4mg, GSK	
38. Candid – B cream, Glenmark, 15g tube	
39. Xtraderm cream, Ochoa, 20g tube	