THE EFFECT OF PRICING ON MARKET SHARE OF SUPERMARKETS IN THE NGAKA MODIRI MOLEMA DISTRICT OF THE NORTH-WEST PROVINCE OF SOUTH AFRICA

ATEBA BENEDICT BELOBO

21994358

A dissertation submitted in fulfilment of the requirements for the degree

Magister Commerci: Marketing Management

in the

Faculty of Commerce

at the

North West University

Mafikeng campus

Promoter: Prof. J.J. Prinsloo

October 2014

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
MAFIKENG CAMPUS

DECLARATION

Academic Administration (Mafikeng Campus)

SOLEMN DECLARATION (for Masters and Doctoral Candidates)

Solemn declaration by student

I _____ declare herewith that the mini-dissertation/dissertation/thesis entitled,

_____

which I herewith submit to the North-West University as completion/partial completion of the requirements set for the _____degree, is my own work and has not already been submitted to any other university.

I understand and accept that the copies that are submitted for examination are the property of the University.

Signature of candidate_____University-number_____

Signed at_____this _____day of _____20__.

Declared before me on this _____day of_____20__

Commissioner of Oaths:_____

Declaration by supervisor/promoter

The undersigned declares:

that the candidate attended an approved module of study for the relevant qualification and that the work for the course has been completed or that work approved by the Senate has been done

the candidate is hereby granted permission to submit his/her mini-dissertation/dissertation or thesis

that registration/change of the title has been approved;

that the appointment/change of examiners has been finalised and

that all the procedures have been followed according to the Manual for post graduate studies.

Signature of Supervisor:_____ Date:_____

Signature of School Director:_____ Date:_____

Signature of Dean:_____ Date:_____

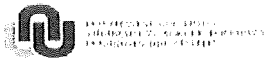
DEDICATION

I dedicate this study to the Almighty God for all academic successes to this moment. I sincerely thank Him for His love and plans in my life.

ACKNOWLEDGEMENTS

- Special thanks to my supervisor, Prof JJ Prinsloo for his guidance and continued support throughout, and his explicit meaningful comments and critiques, to the study.
- I am deeply indebted to Mr. Andrew Maredza for his continuous support and encouragement throughout this study.
- My family Mr. and Mrs. Ateba, Dr. Ateba, my sister Ewokolo and my friend Mbougni Michel.
- I cannot forget the moral support of my mentors Mr. Butuna and Prof. Ambe.
- My endless thanks and gratitude to all supermarkets who participated in this study.
- Special acknowledgement to all the authors and writers whose works provided a firm foundation to my ideas.

DECLARATION FROM ENGLISH EDITOR



DEPARTMENT OF ENGLISH

05 AUGUST 2014

TO WHOM IT MAY CONCERN

RE: EDITING OF THE DISSERTATION OF ATEBA BENEDICT BELOBO

STUDENT NUMBER: 21994358

TITLE: PRICING AS A MARKETING MIX ELEMENT EFFECT ON SUPERMARKETS IN THE NGAKA MODIRI MOLEMA DISTRICT OF THE NORTH WEST PROVINCE OF SOUTH AFRICA

This serves to confirm and certify that the language and grammatical errors in the above-mentioned research study have been corrected. The candidate has been advised on the correctness and usage of English and the necessary amendments have been effected to the best of my knowledge.

Yours sincerely,

P. N. NKAMUA, BA Honours; MA (DEPARTMENT OF ENGLISH)

DECLARATION FROM STATISTICIAN

Mr. A. Maredza
School of Economic & Decision Sciences
Email: Andrew.Maredza@nwu.ac.za
Tel: (+27) 018 389 2810

30 July 2014

To Whom It May Concern

Panel Data Analysis for Master's Dissertation

Declaration

Data analysis was restricted to assisting the student with the preliminary preparation of the data., model construction, estimation of the model, interpretation as well as carrying diagnostic test to check model adequacy. The decision to accept and implement the above rests solely on the candidate.

The name of the Panel Data Analyst who rendered the service to the student has been provided below.

Acknowledged by:

Candidate's Name: **ATEBA BENEDICT BELOBO (21994358)**

Thesis title: **PRICING AS A MARKETING MIX ELEMENT EFFECT ON MARKET SHARE OF SUPERMARKETS IN THE NGAKA MODIRI MOLEMA DISTRICT OF THE NORTH WEST PROVINCE OF SOUTH AFRICA.**

I declare that I have complied with the above conditions:

Signed: MMaredza Date: 30/07/2014

Data Analyst's Name: ANDREW MAREDZA

I declare that I have performed panel data analysis for the above titled dissertation in compliance with the above conditions, as instructed when engaged by the candidate.

Signed: Date: 30/07/2014

Abstract

This study propped up as a result of the lack of awareness on the role of pricing in market share gain or loss among retailers in general. The empirical focus of the study was in the Ngaka Modiri Molema district. The study was performed on the three largest supermarkets in the fast consumer goods retail sector within the Ngaka Modiri Molema district (Pick n Pay, Spar and Shoprite). The research objectives were to:

- To examine the impact of pricing on the market share of the three largest grocery retailers in the Ngaka Modiri district.
- To investigate the type of pricing decisions made by the three largest grocery retailers in the Ngaka Modiri district.
- To examine the challenges face by these supermarkets in making pricing decisions.
- To determine the influence of these pricing decisions on their consumer's behaviour and market share performance.
- To determine the importance of market share for Ngaka Modiri Molema grocery supermarkets.
- To recommend possible pricing decision majors that can be use by Ngaka Modiri Molema retailers to gain market share.

Literature review was done on pricing and market share related issues. The research methods employed were exploratory and a quantitative research design. The population of the study comprised of the three largest supermarkets in the Ngaka Modiri Molema district. Focus was in the Ditsobotla, Mafikeng and Ramotshere local municipalities. The head quarters of each of the focus local municipalities comprised the targeted area for selected participating supermarkets. Purposive sampling was used in selecting participating supermarket stores. Participating employees included the regional and branch managers of each sampled supermarket brand. Data collection involved the selling price index (SPI) and the sales figures for 11 selected items commonly available in the database of the selected supermarkets (Appendix 4). The data analyses employed an ordinary linear simple regression model specification and a panel data analyses technique.

The study revealed that pricing play a major role in market share gain or loss among Ngaka Modiri Molema retailers. Hence, there is need to increase retailers awareness with regards to the mentioned finding. Practical recommendations were made and a pricing decision support system suggested to assist Ngaka Modiri Molema retailers

Re´sume

Ce projet de recherche resulte d'un manque de prise de conscience sur la question de l'importance de l'élaboration des prix de ventes en ce qui concerne les acquis ou les pertes depart de marchés dans le secteur de la revente en general. Le point focal de cette etude est base dans l'espace geographique du district de Ngaka Modiri Molema. Ce projet de recherche met un accent particulier sur les trois plus larges supermarchés de Ngaka Modiri Molema, faisant dans la revente des produits de grande consommation (Pick n Pay, Spar and Shoprite). Les principaux objectifs consistentent donc:

• À examiner l' impact de la détermination des prix sur la part de marché des trois plus grand magazins du district de Ngaka Modiri.

• D' enquêter sur la fixation des prix établie par les trois plus large magazin de revente de Ngaka Modiri.

• D' étudier les difficultés dont font face les magazins en question dans la fixation des prix.

• D' établir l' influence de ces decisions de prix sur l' attitude de la clientèle et les ventes.

• De déterminer l' importance des parts de marché des grand supermarches de Ngaka Modiri.

• De recommander certaines measures de prise de decision a adopter concernant la fixation des prix par les grands magazins de revente de Ngaka Modiri Molema question d'améliorer respectivement leurs parts de marché.

La revue de la littérature en matiére de fixation des prix et part de marché a étè soigneusement faite. Ainsi la méthode utilisée dans cette recherche consiste a un echantillonage quantitative. La population étudiée comprend les trois plus grand supermarchés du district de Ngaka Modiri Molema, plus précisement dans les municipalités de Ditsobotla, Mafikeng et de Ramotshere. Les chef lieux de chaque municipalité choisie comprend des coins a grand intérêt, pour chaque supermarché selectioné. Un echantiollonage resolu est utilisé dans les magazins participants. Parmis les employés participants l' on compte entre autre: les directeurs regionaux et chefs de branches de chaque echantillon par marque de magazin choisi. Les données statistiques ont étè collectée de sources secondaires. Elles comprennent l'index des prix de vente et les figures d' onze produits communement disponible dans la base de donnée des supermarchés choisis (voir appendice 2). L'analyse des données emploie le model ordinaire de simple regression lineaire et la technique d'analyse des données de panel. L'etude révéle que les prix jouent un role majeur dans les acquisitions ou les pertes des parts de marché chez les revendeurs de Ngaka Modiri Molema. De ce fait, il s'y trouve un besoin imminent d' augmenter la prise de conscience au regard des

constatations faites. Des recommendations pratiques ont étè faites et un système de soutient a étè mis sur pied question d' assister les grands magazins de reventes de Ngaka Modiri Molema dans les choix des prix de reventes.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION

Rapsomanikis and Sarris (2009-2010) states that the world has currently experience a dramatic increase in the prices of commodities like maize, rice and wheat. Although the prices of such commodities have now declined, they continue to remain at a significantly high rate compared to the prices pre 2005. Rapsomanikis and Sarris allude that in general, the changes in commodity prices are characterised by the increase or decrease in purchase. This is because these fluctuations in prices present a serious challenge to consumers buying power. Balcombe (2009-2010) indicate that changes in price, either increase or decrease impact on the trading position of producers and retailers in a long-term. Whitehouse and Associates (2007:35) maintain that the Bureau of Marketing Research predicted a slower average growth in the South African fast moving consumer goods market from 2007 due to the economic recession, which generated an indirect decline in consumers' income. Claessen *et al.* (2009) points out that an economic recession like the one in 2008, can affect consumers' consumption by more than one percent after every quarter in any economy. In such situations, consumers become very price sensitive.

Bruweri and Watkins (2010) state that the downturn experienced in 2008 had negative effects on the South African fast moving consumer goods retailers in general. Roger (2003:1-2) argues that this meant retailers had to adopt their marketing mix strategy to changing consumer behaviour tendencies. Pricing has been referred by most researchers to be the key element among all marketing mix elements. As indicated by Lee and Griffith (2004), adjustment of prices to market conditions has a positive influence on the market share and adaptation of the pricing strategy could increase the market share of a business. This study seeks to investigate the degree to which pricing strategies used by the three largest supermarket retailers (Shoprite holdings, Pick n Pay and Spar Group) in the Nkaga Modiri Molema district of the North-West Province (NWP) of South Africa play a role in determining their market share.

1.2 MOTIVATION FOR THE STUDY

Avlonitis and Indounas (2004) indicate that pricing remains one of the least research areas of marketing. Delatolas and Jacobson (2012:2-3) argue that pricing is a complex issue but constitutes an important process that has a large influence on the performance of a business. However, few managers utilize the ability of pricing effectively to increase their business market share. Limited research on pricing strategies and the lack of adequate pricing abilities by retailers may lead to negligence of the importance of price in generating market share.

The limited research on pricing strategies and the lack of awareness on the importance of price in gaining market share motivated the researcher to conduct the study. The researcher saw the need to prove to retailers in the Ngaka Modiri Molema district that price is a valuable tool in gaining market share. Also, a framework that will assist these retailers as a quantitative tool for future pricing decisions was developed.

1.3 BACKGROUND OF THE STUDY

Referring to Mokgele (2012/2013:3), Ngaka Modiri Molema district municipality is one of the four district municipalities in the North-West province of South Africa. It is a category C district bordered by Ruth Mompati district in the west, Bojanala platinum district in the east, Dr Kenneth Kaunda district in the south and Botswana in the north. Mojaki (2012/2013:7) indicate that it is home to nearly 800,000 inhabitants, estimated households over 1,835,000 and its principal towns being Mafikeng, Zeerust and Lichtenburg. Mojaki further indicates that Ngaka Modiri Molema district is made up of five local municipalities namely: Mafikeng, Ratlou, Ramotshere Moiloa, Ditsobotla and Twaing. Figure 1.1 reflects the different local municipalities with reference to areas and demographic size.

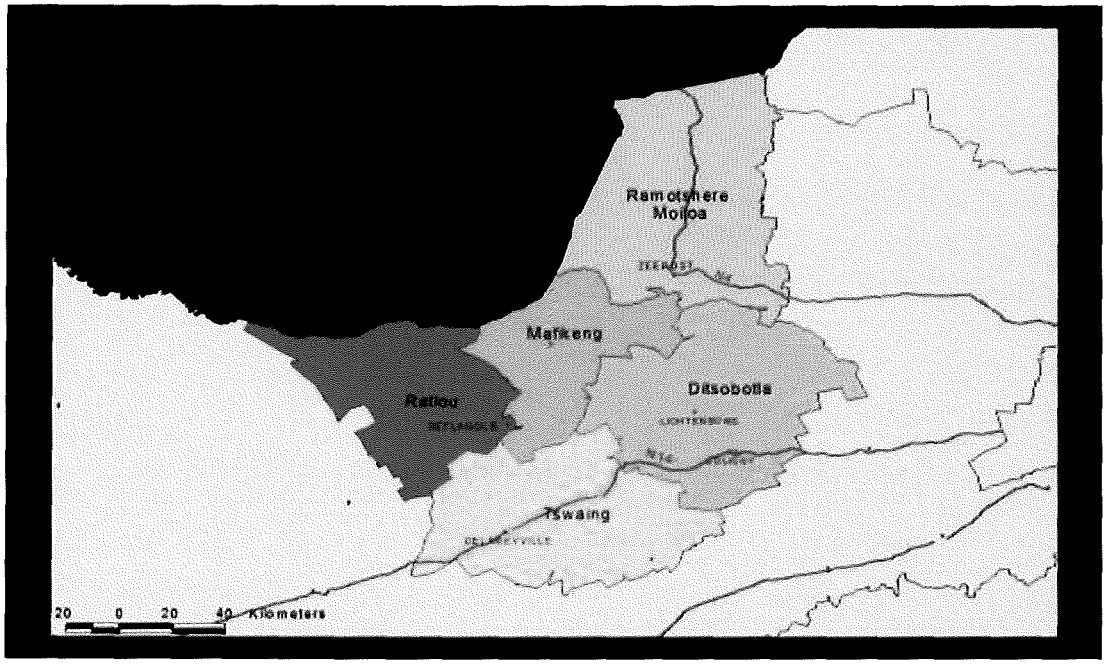


Figure 1.1 Ngaka Modiri Molema municipalities

Source: NMMDIDP (2013/14:6)

1.4 LITERATURE STUDY

In the following section, the development of the marketing mix elements and their contributing role to market share gain in general will be briefly discussed. The role of price in the market and its role as an important tool for market share gain will conclude this section.

1.4.1 Marketing mix

Marketing mix is the set of controllable marketing tools consisting of products, price, place and promotion (Shankar & Chin 2011:1542). Each of these tools is explained below.

- **Promotion**

  Drummond and Ensor (2005:9) indicate that promotion is the way a business creates awareness of its product offerings to its target consumers. Promotion decisions consist of sales promotions, sales force, public relations, direct marketing, word of mouth communication and point of sales displays (Shankar & Chin 2011:1542). Drummond and Ensor (2005:9) contend that a blend of all these elements of promotion can be referred to as the communication mix. Meldrum and McDonald (2007:12) equate promotion to communication because it is all about how businesses communicate with their target

audience or convince them to positively consider their products or services. Effective communication is a two way process in which the sender's intentions need to be received, understood and acted on (Drummond & Ensor, 2005:151).

- **Place**

  Shankar and Chin (2011:1546) define place as activities associated with the distribution of products or services to target consumers. Drummond and Ensor (2005:9) say place is more often described as distribution since it is all about making products available to the target audience. Distribution is defined as the "steps taken to move and store a product from the supplier stage to a consumer stage in a supply chain" (Chopra & Meindl, 2010:86). Chopra and Meindl holds that distribution occurs when raw materials and components are moved from supplier to manufacturer and finished goods from manufacturer to end consumer. Strydom *et al.* (2013:2) specify that the main objective of distribution is aimed at getting the right product and service to the right place, in the right quantity, with the right quality and at the best prices in the market in order to provide time and place utility to consumers.

- **Product**

  Jooste *et al.* (2005:2) define products as offerings to a market to satisfy the need or desire of target consumers. Jooste *et al.* (2010:2) states that a product consists of a multidimensional mix of tangible features and intangible attributes. Products can be broadly defined to include physical objects, services, events, persons, places, organisations, ideas, or mixes of these entities (Mohammadian & Habibi, 2012). Since the primary objective of a product's decision is to satisfy consumer need, Meldrum and McDonald (2007:12) indicate that organisations should always ask them-selves if the product they offer provide relevant and desired benefits to its consumers.

- **Price**

  Venter and Van Rensburg (2009:260) define price to be the amount of money that consumers pay to obtain a product. Kotler and Keller (2012:206) mention that price is the only marketing mix element that produces revenues. For this reason, it is important that pricing decisions should take profit margins into account. For instance, low prices may not generate enough profits for the organisation. Very high prices may drive consumers away, because the amount of money that is demanded in exchange for a product entirely depends on a consumer's means (Shankar & Chin, 2011:1546). Pricing is an important

element of marketing with tremendous potential for an organisation. If mismanaged, this can bring a business to its knees (Meldrum & McDonald, 2007:11).

1.4.2 Marketing mix development

Constantinides (2006) states that the term 'marketing mix' as identified by Neil Borden, was only introduced in the marketing field during the 1960's with twelve controllable marketing elements (product planning, pricing, branding, channels of distribution, personal selling, advertising, promotion, packaging, display, servicing, physical handling and fact finding and analysis). Marketing mix was later reduced to the four-element framework (product, price place and promotion) by Jerome McCarthy in 1964. Goi (2009) indicate that the marketing mix elements (price, promotion, product and place) are the main tools in pursuing the marketing objectives of a business. Goi also mentions that the marketing mix elements are currently seen to be the basis of the five sub-disciplines of marketing management which include consumer, relationship, services, industrial and retail-marketing. However, Moller (2006) asserts that several criticisms about the effectiveness of marketing's 4p's have appeared in recent studies. Some of these researchers have gone as far as rejecting the 4p's and have come up with their own proposed alternative marketing mix frameworks.

The seven marketing mix elements seem to be the most popular of these alternative marketing mix elements as indicated by Goi (2006) and introduced by Booms & Bitner in 1981. The 7p's include all the elements of the 4p's with people, packaging and process being the additional elements. Other researchers like Wood (2008) and Gandolfo (2009) argue that that the 4p's of marketing are the milestone of marketing theories. However, there is a need to review the 4p's paradigm due to the fact that there have been some evolutions in the marketing discipline, especially in commercial marketing where the 4p's cannot effectively adapt to certain aspects. Farshid and Amir (2012) maintain market share responds to elements of the marketing mix (4p's) and that the marketing mix is the most important entity that can affect the market share of a business.

1.4.3 Marketing mix development in the Ngaka Modiri Molema district

Information provided by Managers of the selected supermarkets (Shoprite, Pick n Pay and Spar) indicated that centralisation is a primary factor that affects performance. Thus, one can say the high level of centralisation practised by these supermarkets is a clear indication of limited application of the marketing mix elements. Guruprakash and Sohn (2008:9) state that

centralisation impede the ability of departmental stores to appropriately respond to customer needs and improve customer service. According to De Jager (2004:112-113), Pick n Pay and Shoprite (NWP, Potchefstroom) in the Dr Kenneth Kaunda district used the Living Standard Model (LSM) to target consumers. Results obtained include:

- Current market segment targeted by these retailers differ from their actual target market.
- The marketing mix elements in place were not in any way appropriate to what was seen to be the actual market of these retailers.

De Jager's findings indicate a clear misapplication of the marketing mix. He further assumes that an inappropriate marketing mix to wrong target markets is likely to also be the case among supermarkets in other areas of the North-West Province (NWP).

Furrier *et al.* (2007) have stressed that marketing activities has a great impact on the performance of a business in the market place or to achieve its market share. A large number of supermarket retailers in the Ngaka Modiri Molema district can be seen to be offering poor business services. As confirmed by the Southern African Legal Information Institute (SAFLII) (2012) database, there were 14 court cases in the Ngaka Modiri Molema magistrate court in Mafikeng concerning poor customer service during 2012. The inability to structure efficient business plans and objectives by most business enterprises in the Ngaka Modiri Molema district stem from government's failure to implement efficient support programmes for these businesses.

Bafana (2011:7) highlights that the marketing unit of the North-West Province as a whole has registered a number of failures based on internal reasons. Mojaki (2012/2013:22) indicates that the 2012 Ngaka Modiri Molema local government effort to support business enterprises did not meet its set target. Only 6 % growth success after a one million seven hundred thousand rand investment by local government has been acquired. Mojaki further indicates that during the first quarter of the 2012/2103 government calendar, only a one percent growth rate has been achieved, (quarter-two and three), 2 % performance respectively and by quarter four performance dropped back to 1%. This may seem like the government does not actually put enough effort to support trading, which confers with Spaku and Majoki's (2012:17) statement that retail and trade are the fourth largest contributor to the economy of the Ngaka Modiri Molema district.

1.4.4 Pricing in the market

Reviere (2009:1) highlights that the price concept differs whether a person lives in a market economy, planned, command or traditional economy. Because pricing influences the economic actions in a market economy, it is best to discuss pricing concept on a market economy basis. Palley (2004:1-2) argues that in a market economy, the contemporary framework of neoliberalism emphasises the efficiency of market competition, which is based on the microeconomic theory of pricing, the key variable influencing the demand and supply in the market place. Pitner (2007:1) indicates that when understanding price in the market or how it works in business, all is about the demand and supply functions. Pitner (2007:1) further points out that from the supply perspective, the higher the price of a product, the higher the supply, the lower the price of a product, the lower the supply. The demand perspective is connected to consumer behaviour in that, if pricing affects consumers' buying behaviour negatively, the demand curve will slope downward, meaning a drop in purchase behaviour. Alternatively, if pricing is positive, consumer buying power will increase, leading to the demand curve sloping upward, more sales and market performance for the business. From the afore discussion of price influence in the market, this study focuses on showing that price is an important tool for Ngaka Modiri Molema retailers in gaining market dominance. The downward and the upward movement of the demand curve with respect to price is further illustrated in figure 1.2

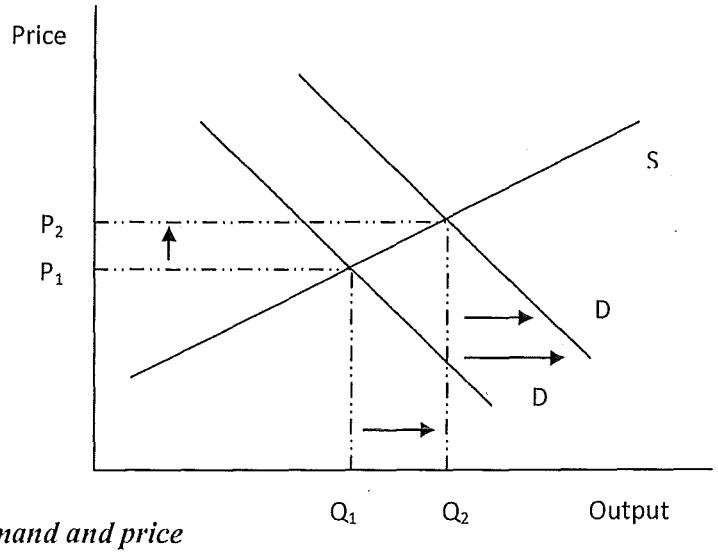


Figure 1.2 Demand and price

Colander (2004:99)

1.4.5 Market and market share defined

Kotler and Keller (2012:30) refer to a market as a physical place where buyers and sellers gather to buy and sell goods. Currently, economists term a market as a collection of buyers and sellers who transact over a particular product or product class. Sellers are viewed as constituting the industry and buyers as constituting the market. Market share is defined as the relative sale of a product in relation to the overall market sales.

According to Venter & Van Rensburg (2009:118), a market share indicates how an organisation is performing relative to its competitors and a market share is calculated by dividing an organisation's share by the total sales of all organisations for a specified product-market (Venter & Van Rensburg, 2009:118).

The market share of any business is considered to be the key element of the business performance. Ernst and Young (2004:39) indicate that the most pressing issue in the South African retail sector is currently the battle for market share. This is due to the rapid growth in the retail sector consequent with relative maturity. Retailers are highly competing against each other to achieve a positive market share position. McGregor (2013:1) indicates that there has been a public battle in the media between Shoprite and Pick n Pay over who has the dominant market share. This indicates how important it is for retailers of fast consumer goods to be market share dominant. However, referring to Derby (2013:2) South Africa's oldest and most enduring retailer, Pick n Pay, has lost a great deal of its market share to rivals like Spar and Shoprite since 2012 as a result of its poor marketing strategies. Derby alludes that Pick n Pay has been struggling to regain its lost position for the past two years.

Mills (2009:63) states that it has become difficult to acquire a dominant market share position amongst fast moving consumer goods retailers, due to the opening of many wholesalers, convenience chains, independent stores and Spaza shops. This tendency leaves only about fifty-four percent of the market share to top retailers (Pick n Pay, Spar, Shoprite and Woolworth). A major phenomenon in South Africa has been the evolution of hypermarkets, which sell large quantities of almost all consumer goods on a self-serve basis. The hypermarkets, located in sub-urban shopping centres/malls, have disrupted the traditional distribution chain by purchasing directly from manufacturers and by-passing major retailers, with low margins achieving high turnover, thereby, placing price pressure on all competing outlets as a means to attract sales and increase market share (The Report South Africa, 2008:5).

New supermarket brands scrambling for market share is also the case in the North-West Province. Dirkie (2011/2012:15) has indicated how supermarket retailers like Choppies Limited (ltd) are performing relatively well. This performance has contributed to its growing market share. Choppies is busy aligning with the North-West government and other blue chip companies to improve its operations. This has made Choppies a faster growing retailer in the North-West province compared to its competitors in terms of market share since its introduction in 2008 into the province. Keeping satisfying consumers loyal is a common tactic to increase sales and market share since supermarkets are often located within close proximity and sell more or less the same products. Thus, each retailer's ability to sell its merchandise sustainably, largely depends on the strength of its marketing mix activities (Marriri & Chipunza, 2009).

1.4.6 Pricing influence on market share in the retail market sector

Lawrence and Lawrence (2008:1) indicate that before 1995, during the civil differences in South Africa, trade protection and other economic bands seriously impeded the South African economy. This made South Africa's economy to depend on external global commodity prices trends to avoid running into an external constraint. Thus, during such period, price had a little role to play in the South African economy. During the period before 1995, a section of the North-West was a separate entity ("Homeland") in charge of its own economic decisions under the presidency of Hon. Lucas Magope. Francis (2002:2-4) indicates that Magope's regime was based on personal rule on all state matters, including trade and commerce which affected the traditional flow of the economy.

According to Du Plessis and Smith (2007:1-2), there has been a lot of growth in the South African economy since 1995, due to the introduction of a more market economy backed by microeconomic variables. Euromonitor International (EI) (2012:8) maintain that presently, supermarket retailers like Shoprite and Spar Group have increased their market share position, due to their ability to implement pricing strategies that will provide commodities to consumers at reasonable prices.

According to Roger (2009:292), a business organisation's market share should increase if those in marketing can deliver more volumes in terms of sales. Venter and Van Rensburg (2011:118), Donaldson (2007:133) and Fok and Franses (2000:3) points out that, there is a positive relationship between sales and market share. Roger also holds that the only way to achieve the objective of increasing market through sales depends on the careful application of

pricing. It should be noted, however, that, market share is obtained in both sales value and sales volume. Thus, Mohr and Fourie (2004:182) explicitly show the influence price has on market share through the concept of price elasticity of demand, which is all about an increase or decrease in sales as price changes. Ferrel and Hartline (2008:234) refer to price elasticity of demand as customers' responsiveness or sensitivity to changes in price and pricing strategies. This concept is further illustrated in figure 1.3

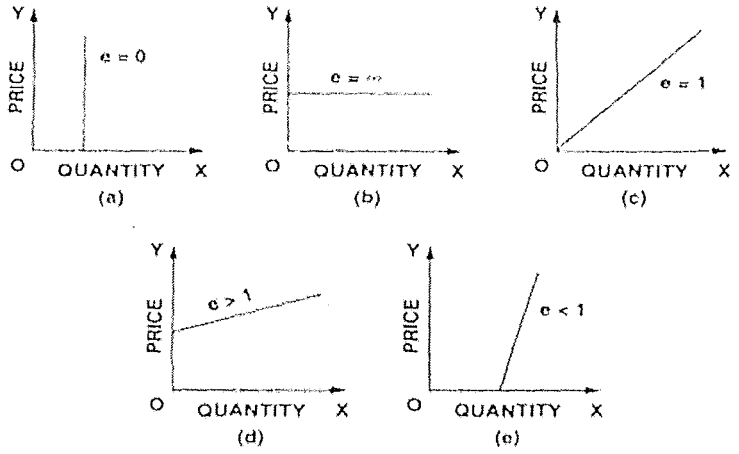


Figure 1.3 Elasticity of demand,

Philip & Fourie (2007:184)

Figure 1.3 (a): Perfectly inelastic demand (ep = 0)

This describes a situation in which change in price shows no change in demand (sales) as revealed in the vertical straight line.

Figure 1.3 (b): Perfectly elastic demand (e = ∞)

Perfect elasticity is experienced when the demand is extremely sensitive to the changes in prices. Price elasticity occurs when an insignificant change in price produces tremendous change in demand.

Figure 1.3 (c): Unitary elasticity demand (e = 1)

This is a case when the percentage change in price produces equivalent percentage change in demand.

Figure 1.3 (d): Elastic (more elastic) demand (e > 1)

This is when the demand for certain commodities are more responsive to the change in price.

Figure 1.3 (e): Inelastic (less elastic) demand ($e < 1$)

This is a situation where the proportionate change in demand is smaller compared to the change in price. It is mostly theoretically concluded that just five different types of price elasticity exist. However, in practice, Mohr and Fourie (2004:183) and Mohr and Fourie (2007:184) indicate that two extreme cases are included which are perfectly elastic and perfectly inelastic. These two cases are often mentioned because they are rarely experienced.

1.5 PROBLEM STATEMENT

Referring to Farshid and Amir (2012), the marketing mix elements (product, price, promotion and place) are the most important elements for a firm to enhance its market share. This statement is supported by the results of a study by Farshid and Amir undertaken within the polymer sheet market in Iran. The outcome showed that the marketing mix elements and their sub-elements are the primary instruments influencing market share gain. Munusamy and Hoo (2008) used a simple regression to determine the relationship between the marketing mix and consumer motives. Their aim was to determine which marketing mix element was the most appropriate for the Malaysian fast consumer good industry. Using Tesco (a supermarket chain) in their study, results revealed that pricing had a direct, either positive or negative impact on consumer behaviour. Pricing thus is being emphasised as a direct influence on market share, even when the other mix elements (place, promotion and product) tested negative amongst respondents.

Although this empirical study focuses solely on the influence of price on market share, the need and importance of price in gaining market share compared to the other mix elements as indicated by Munusamy and Hoo, already establish the relevance for the awareness of price to businesses. According to Axaloglou (2007), the poor application of pricing strategies and the lack of relevant knowledge regarding the role of pricing in expanding market share could have a negative effect on the financial functioning of a business. During the pilot investigation, it was found that price is an important tool for supermarkets in the Ngaka Modiri Molema district in gaining market share over their rivals. Despite the role price has in gaining market share, limited attention is given to price. Using just Tastic rice (2kg) and White star maize meal 5kg, market results for January 2011 for sampled supermarkets in the Ngaka Modiri Molema district were as follows:

Table 1.1 Tastic rice (2kg) and white star maize meal (5kg) supermarkets prices and sales for January 2014

Supermarket	Tastic rice 2kg		White star maize meal 5kg	
	Price	Sales	Price	Sales
Pick n pay	R27.79	1200	R19.99	1742
Spar	R28.92	50	R20.25	1127
Shoprite	R28	1023	R19.39	2262

Based on the evidence provided by Munusamy and Hoo (2008), Axaloglou (2007), Farshid and Amir (2012) as well as indications from the preliminary study done to investigate the effectiveness of price implications on the market share of the Ngaka Modiri Molema district retailers, there seems to be a consensus that retailers in general do not realise the importance of implementing adequate pricing strategies as a basis for gaining market share. Thus, the problem indentified in this study relates to the neglect of the importance of price as a primary tool in gaining market share by Ngaka Modiri Molema retailers. This tendency can contribute to a lack of market share growth and growth in general amongst these retailers.

1.6 RESEARCH OBJECTIVES

1.6.1 Main objective

The primary objective of this study was to examine the impact of pricing on the market share of the top three grocery retailers in the Ngaka Modiri Molema district.

1.6.2 Secondary objectives

In order to achieve the main objective of the study, the following secondary objectives were raised:

- To investigate the type of pricing decisions made by the three largest grocery retailers in the Ngaka Modiri Molema district.
- To examine the challenges faced by these supermarkets in making pricing decisions.
- To determine the influence of these pricing decisions on consumers' behaviour and market share performance.
- To determine the importance of market share for Ngaka Modiri Molema grocery supermarkets.

- To recommend possible pricing decision majors that can be used by Ngaka Modiri Molema retailers to gain market share.

1.7 RESEARCH QUESTION

1.7.1 Primary research question

- To what extent does pricing affect the market share of supermarket retailers in the Ngaka Modiri Molema district?

1.7.2 Secondary research questions of the study was as follows:

- Which pricing decisions are made by the top grocery retailers in Ngaka Modiri Molema?
- What challenges do these supermarkets face in making pricing decisions?
- How does these pricing decisions impact on pricing behaviour and its effects on market share?
- What is the importance of market share for Ngaka Modiri Molema grocery supermarkets?
- How can pricing be better applied by Ngaka Modiri Molema top grocery retailers to improve their market share?

1.8 RESEARCH METHODOLOGY

Wilson (2009:5) refers to methodology as a plan of action that informs and links the methods used to collect and analyse data to answer postulated research questions. The research design to be applied in this study was a quantitative approach.

1.8.1 Population

Bickman and Rog (2009:77) refer to population as the large group to which a researcher wants to generalise his or her sample results. In other words, it is the total group that a researcher is interested in learning more about. The population in this study included the three largest grocery supermarkets in the Ngaka Modiri Molema district. Three towns in the district (Lichtenburg, Mafikeng and Zeerust) were targeted in order to select participating supermarkets for the study. The district marketing managers and branch managers of these stores were the participating employees.

1.8.2 Sampling

A sample according to Smith et al. (2013:162) is a subset of the whole population, actually investigated by a researcher whose characteristics will be generalised to the entire population.

To this effect and according to these researchers, sampling refers to the process of drawing a sample from a population. Researchers sample in order to study the characteristics of the larger group and to understand the characteristics of the larger group. Researchers must carry out a sampling process because factors such as expense, time and accessibility frequently prevent researchers from gaining information from the whole population. For the purpose of this study, a purposive sampling approach was used to select supermarkets and supermarket employees to participate in this study.

Cohen *et al.* (2011:156) refer to purposive sampling as a non-probability sampling method which involves purposive or deliberate selection of particular participants from the sample considered to have the needed or actual information of the study. Purposive sampling was used because just one of each sample supermarkets store was selected as participant based on accessibility of needed data. It was aimed at targeting which supermarket employee was most appropriate in providing the needed information for the study. Only one of each sampled supermarket stores were selected as participant making a total of 3 stores. Employees in the study included the marketing manager of each supermarket brand and the managers of each selected sample store. This gave a total of 6 employees who participated in the study. Data collected from all 3 participating stores were done on a monthly basis from January 2011 to June 2013. This gave the sum of 30 observations per supermarket, amounting to a total of 90 observations.

1.8.3 Data collection method

Data was obtained in this study from both available literature and an empirical investigation. Literature data was obtained through journals, articles, books, magazines and internet sources. Literature data was based on marketing and price, price index, pricing process, ethics of pricing, competitors and their pricing framework, the influence on pricing on sales performance, market share index/matrix, competitors and their market share positions and the importance of market share advantage in the market.

Empirically, data gathering involved the obtaining of the Selling Price Index (SPI) and sales figures for 11 selected items (appendix 4) commonly available in the database of the selected supermarkets (Shoprite, Pick n Pay and Spar). Information obtained was used to determine the relationship between price changes and its impact on market share of the participating supermarket retailers.

1.9 DATA PROCESSING AND ANALYSIS

The model specification of the regression type employed in this study and the analytical technique used to analyse empirical were as follows.

1.9.1 Model specification

The model specification employed in this study was the Panel Ordinary Least Square (POLS) regression method. This is because the main objective of the study was that, price as the explanatory variable is the main factor influencing market share, the dependent variable and fits with the main rule of linear regression.

The formula layout of the POLS regression method is as follows:

Least Square regression is denoted as $y = \beta_o + \beta_1 \chi + \varepsilon$ Formula (1.1)

y = dependent variable or the explained variable.

β_o = the intercept of the equation.

β_1 = the slope coefficient of the price variable.

χ = the independent variable or explanatory variable.

ε = the error tem or the disturbance variable.

In this study, market share was the dependent variable represented by sales figures and pricing the independent variable. Thus, the main aim was to verify if price has a linear effect on market share of the top three fast moving consumer good supermarkets in the Ngaka Modiri Molema district. As the rule of linearity implies, a unit change in χ will have the same effect on y if there is a relationship.

1.9.2 Analytical technique

The study made use of a simple panel data analysed through the Eviews software. A panel matrix was appropriate for the study because it allows data analysis across more than one entity since it contains both cross-sections (N) and time period information (t). Findings from the linear regression were represented graphically on a scatter plot graph and a histogram to display the potential relationship between price and market share on top of four supermarket retailers in the Ngaka Modiri Molema district.

1.10 LIMITATIONS

The study was originally designed to investigate the relationship between price and market share for the top four supermarkets (Pick n Pay, Shoprite, Spar and Woolworth). After an extensive and accurate investigation, all Woolworth supermarkets in the district did not provide any of the item categories that were considered appropriate to test this study. For this reason, Woolworth was disqualified as one of the selected samples for this study.

1.11 ETHICAL CONSIDERATIONS

Neuman (2003:116-118) indicates that the researcher has a moral and professional obligation to be ethical, even if participants are unaware of or unconcerned about ethics. The ethical considerations in this study followed Trochim's (2006:42) ideas of a perfect ethical consideration of research. It includes the principle of voluntary participation, requirement of informed consent, principle of anonymity and guarantee of confidentiality. Other ethical considerations included the following:

1.11.1 Gaining access

The researcher obtained a letter of permission from the department of management, North West University, Mafikeng Campus in order to gain access to selected supermarkets. With this letter, the researcher approached participants in the study to seek information.

1.12 CONCLUSION

This presented a detail introduction and background of the study. An organisation of the study is represented as followings.

Chapter One: Introduction

In this chapter, the statement of the problem, the motivation, background, objectives, research questions, ethical considerations of the study were discussed.

Chapter Two: Literature review

Literature review was conducted on pricing issues and its impact on the market share of supermarket retailers.

Chapter Three: Research methodology

In this chapter, a detailed explanation of the research procedure in terms of research design used, research strategy, data collection, sample selection and population was presented.

Chapter Four: Data analysis and presentation

In this chapter, data collected from the previous chapters were analysed according to the objectives of the study and findings from the literature.

Chapter Five: Discussion and recommendations

This chapter reported the findings from the analysis covered in the previous chapter. Conclusions of the study were drawn from the findings and recommendations be made in relation to the outcome of the study.

CHAPTER TWO

THE RELATIONSHIP BETWEEEN PRICING AND MARKET SHARE

2.1 INTRODUCTION

A literature review provides a summary of existing studies on the main subjects of the study and the methods employed by others and their results. The literature review in this study was both theoretical and empirical. Empirical literature provided a summary of what methods were used in this research and the findings, relating it to the theoretical literature.

Theoretical literature explores theories related to the following focus areas; marketing and price, price index, pricing process, ethics of pricing, competitors and their pricing framework, the influence of pricing on sales performance, market share index, competitors and their market share positions, importance of market share advantage in the market.

2.2 MARKETING

Kazmi (2007:6) defines marketing as a means of creating superior value and delivering high levels of customer satisfaction. Kazmi further states that marketers should therefore endeavour to understand customers' needs and wants, carefully study competition, make products available at places convenient to customers, communicate with them effectively and efficiently and finally, offer superior value at a reasonable price. Smith (2002) holds that the focus of marketing is customer needs and wants. Through these, marketers are also obliged to offer solutions to clients, not just tangible goods and services. The researcher further alludes that each element of the marketing mix product, price, promotion and place are the centre in achieving this marketing objective. Smith further points out that price play an important role among all other elements in the marketing mix. According to Weitze and Wensley (2005:267), pricing has received so much attention above the other factors not only due to its key role in business but also because of its interdisciplinary nature.

In the business environment, organisations operate either on profit making or non-profit making bases. Ballasy (200:4) indicates that non-profit making organisations are referred to as savvy marketers as they practise a marketing style called social marketing. Social marketing is oriented on improving the lives of individuals in a specific way. Schindler (2012:365) however, states this does not mean they ignore making high revenue, since more

money make available additional beneficial services. On profit making bases, marketing can be defined as a process and a set of tools used to get things done either to achieve a goal, solve a problem or take advantage of an opportunity (Ballasy, 2004:7). For a marketer to take advantage of an opportunity, a good or service is to be offered to the consumer who has to pay for the good or service. According to Ferrell and Hartline (2008:226), what the customer pays for, include everything the customer must give up such as money, time, effort and all non-selected alternatives. Value is a key component in setting price; the relationship between pricing and value is intricately tied to every element in the marketing programme. Schindler (2012:6) states that the marketing concept points out that price setters should also consider customers' value as a very important element when setting prices. This is because consumers' feeling about the final price charge is also vital.

2.3 PRICING DECISION MAKING

Indounas and Avlonitis (2009) posit that pricing is an important management tool to achieve the objectives of the organisation. Pellinen (2003) also mention that pricing is one of the most important or central management tasks for any business. As earlier indicated by Chattered Institute of Marketing (CIM) (2009:5) pricing is the only function in the marketing mix that generates revenue for a business, all others are cost. According to Dutta *et al.* (2003), businesses without efficient pricing processes may be unable to set prices that reflect the wishes of its target customers. Blyth (2006:448) and Escalana *et al.* (2012:159) indicate that the pricing process involves all the steps in determining the final price for products or services. The researchers further state that a pricing process should involve setting pricing objectives, developing a pricing strategy, determining the demand for various levels, estimate cost, review competitive offerings, select pricing methods, establish pricing policies and determine prices. This is further illustrated in figure 2.1. Referring to Hinterhuber and Liozu (2012), implementing a pricing structure requires a high degree of discipline from any business, and any business can improve its pricing performance so far as its pricing approaches are well-structured.

Figure 2.1 Pricing process,

Blyth (2006:448)

2.3.1 Pricing objectives

According to Snieskiene and Pridotkiene (2010), the process of identifying pricing objectives is the starting point for any organisation or business to achieve its pricing goals. This is because pricing objectives constitutes the basis on which pricing methods and policies are formulated. According to Indounas and Avlonitis (2009), there should be a correlation between the pricing objectives and entire pricing process for better understanding of the overall pricing structure. Avlonitis *et al.* (2005) and Avlonitis and Indounas (2004) holds that pricing objectives can be divided into quantitative and qualitative categories. Quantitative objectives include financial indicators such as profits, sales, market share and cost coverage, while qualitative objectives put more focus on the relationship with customers and competitors, the long-term survival of the business and the achievement of social goals. Avlonitis and Indounas (2004) argue that the main advantage of quantitative pricing objectives relate to the fact that they can be measured easily and straightforwardly, while the main contribution of qualitative objectives lies in the fact that they help organisations in adopting a market orientation towards its pricing decision. Quantitative objectives tend to be regarded as more important than qualitative with particular emphasis placed on profit considerations (Avlonitis & Indounas, 2004).

Avlonitis *et al.* (2005) and Avlonitis and Indounas (2004) also allude that with reference to time frame of attainment, pricing objectives may be divided into short-term and long-term objectives. Short-term objectives are mainly quantitative goals, while long-term objectives are fundamentally qualitative goals. Avlonitis and Indounas (2004) state that most often, an excessive emphasis on short-term objectives may risk the long-term position of a firm in the market. Although Snieskiene and Pridotkiene (2010) points out that there is no single pricing objective that serves as definite benchmark for all situations, Indounas and Avlonitis (2009) point out that, a factor analysis indicates that pricing objectives can be summarised into eight underlying factors placed under a quantitative or qualitative category. Indounas and Avlonitis' classification covers all what others have indicated. The classification is further indicated below.

2.3.1.1 Quantitative objectives

As earlier indicated, quantitative objectives include those objectives that can be seen to be financial indicators. They are further explained as follows:

- **Financial objectives**

It represents the effort to achieve liquidity and satisfactory return assets and potential investments.

- **Achieving satisfactory profits and sales objectives**

This objective is aimed at ensuring adequate financial results in terms of profits and sales and covers the cost of delivery services and products.

- **Market share and capacity-related pricing objectives**

The objective relates to increasing market share and managing the existing capacity.

- **Maximisation of profits and sales objectives**

It is all about achieving maximum financial results by high sales to achieve high profit values.

2.3.1.2 Qualitative objectives

Qualitative objectives were earlier indicated to be elements that put more emphasis on customers and competitors.

- **Stability in the market objectives**

Stability in the market is related to achieving price and sales stability, satisfying distributors' needs, developing the existing market and determining fair prices for customers.

- **Customer – related pricing objectives**

The effort here is to retain existing customers and satisfy their needs without disregarding the acquisition of new customers, the achievement of social goals and long-term survival.

- **Service quality-related pricing objectives**

This objective is out to create prestigious image in terms of quality while differentiating prices across different categories of customers.

- **Competition-related pricing objectives**

It involves avoiding price wars, offering similar prices to match the prices of competitors and discourage the entrance of new competitors in the market.

2.3.2 Developing pricing strategies

Blyth (2006:450) maintains that developing a pricing strategy needs to fit within the overall corporate vision. According to Lamb *et al.* (2009:372), a pricing strategy is simply a statement of what the business or organisation is trying to accomplish with a given product or service at during its life-cycle. Dutta *et al.* (2003) argue that strategists should develop or consider pricing strategies that will create value for the customer to gain a competitive advantage. Garrett (2011:1) holds that pricing is ultimately part of an organisation's system, therefore, it should be aligned to the overall strategic planning and mission of the organisation. This is because an organisation's purpose, self-perception, position in the market and ethics are clearly spelt out in the overall organisation's strategy and are elements that must be incorporated in the pricing strategy. Most common pricing strategies used by business organisations are further discussed below.

2.3.2.1 Cost-plus pricing

Blyth (2006:458) indicates that cost plus pricing works by calculating the cost of producing the product, then adding on the fixed percentage profits to the total. Although this pricing method appears logical and straightforward, it is actually fairly dangerous because it takes no account of the market place. Hinterhuber and Liozu (2012) argue that cost-plus is currently being been criticised for neglecting the market place because aspects related to demand and

competitor are usually ignored. Cant (2005:61) posits that is the most popular among retailers and wholesalers who have to decide on the prices of so many items.

2.3.2.2 Mark-up pricing

According to Blyth (2006:459) mark-up pricing is similar to cost-plus pricing, and is the method used by most retailers. Blyth further states that the only difference from cost-plus is that retailers are usually in close contact with customers and can therefore, develop a good feel for what customers will be prepared to pay for. Secondly, retailers practising mark-up pricing have ways of disposing of unsold stock. It is typically when a retailer buys in stock and adds on a fixed percentage to the bought-in price in order to arrive at the shelf price. Cant (2005:63) argues that the level of mark-up will vary from retailer to retailer depending on the product category because there is usually a standard mark-up for each product category. Retailers use this method because of the number of lines the shop may be carrying, since it may be clearly impossible to carry out market research with customers for every line (Blyth, 2006:459).

2.3.2.3 Customary pricing

Cant (2005:86) indicates that customary pricing is when products and services are priced based on the tradition and the prices of competitors. It can also be referred to as the practice of maintaining the retail price of a product at the same level over long periods (Cant, 2005:86).

2.3.2.4 Price skimming

Kazmi (2007:514) refers to market skimming as the act of charging the highest possible price that a sufficient number of the most desirable customers are willing to pay for. Skimming is best practised under circumstances when consumers are willing to buy the product for its unique advantage and in a case where production cannot be expanded rapidly because of technology difficulties, shortages or constraints imposed by the skill and time required to produce a product (Lamb *et al.*, 20009:373). Kazmi (2007:514) holds that the approach offers efficient profits to pioneers in a product's introductory stage due to the absence of competitors. However, Esclana *et al.* (2012:172) point out that skimming comes with future challenges since competitors may have developed ways to challenge existing organisations in the long-run.

2.3.2.5 Penetration pricing

Penetration pricing means charging a relatively low price for a product as a way to reach the mass market. The low price is designed to capture a large share of a substantial market resulting in lower production cost (Lamb *et al.*, 2009:373). A penetration strategy is effective when the market is highly price sensitive so that a low price produces more market growth, when research development and marketing or when new competitors will quickly enter the market because of its flexibility (Ferrel & Hartline, 2011:247). Penetration pricing may be disadvantageous because it could establish a poor-quality brand image and also difficult to raise prices afterwards (Cant, 2005:83). However, Esclana (2012:172) indicates that is the best way of preventing competitors from entering the market. This advantage makes penetration pricing quite appealing.

Referring to Kehagias and Skourtis (2009), in all product categories (convenience, preference, and shopping speciality), products increase in market share is what smaller organisations desire, whereas, existing organisations maintaining their market share position by preventing new entrance. These researchers point out that pricing decision will involve either an increase or decrease in price. However, in order to achieve pricing goals, organisations pricing strategy are to be guided by their pricing objectives. This is illustrated in figure 2.2.

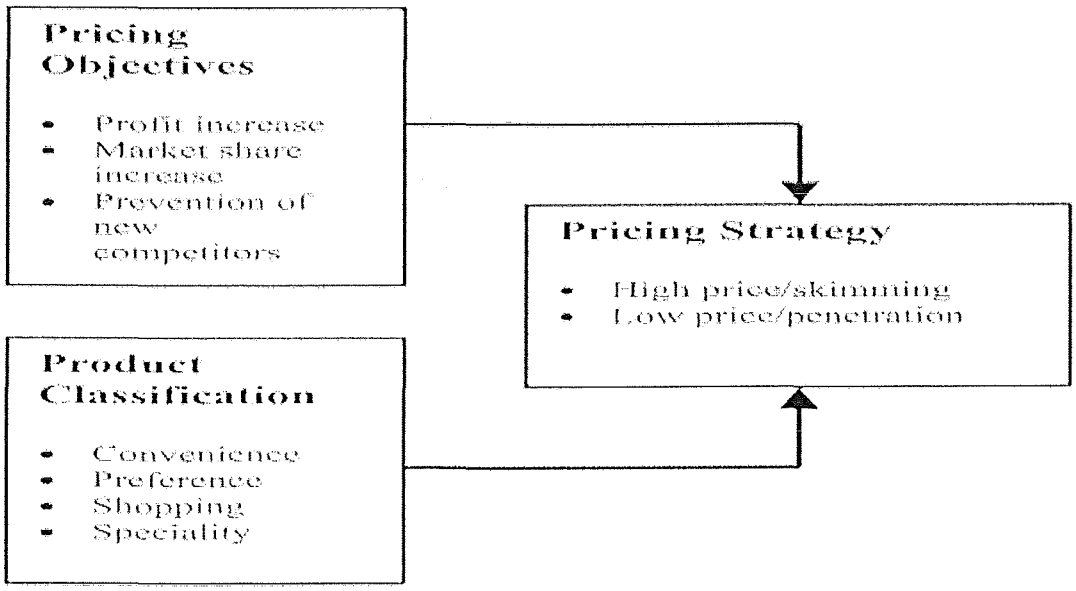


Figure 2.2 Relationships between pricing objectives, pricing strategy and product categories

Kehagias & Skourtis, 2009

2.3.3 Determine demand

Lamb *et al.* (2009:360) define demand as the quantity of goods and services that will be sold in the market at various prices in a given period. The quantity of products or services that will be purchased in a specific period will largely depend on its price. Concurring with Pindick and Rubinfeld (2013:40) this means the higher the price, the fewer goods or services consumers will demand, so too conversely, the lower the price, the more products or service consumers will demand. Kazmi (2007:509) states that the determination of the quantity demanded of goods and services is the responsibility of the marketing department, aided by research personnel's and forecasters with respect to the set price. Kotler and Armstrong (2010:317) maintain that the relationship between the demand for goods and services and price is inversely proportional. This is better illustrated in the figure 2.3.

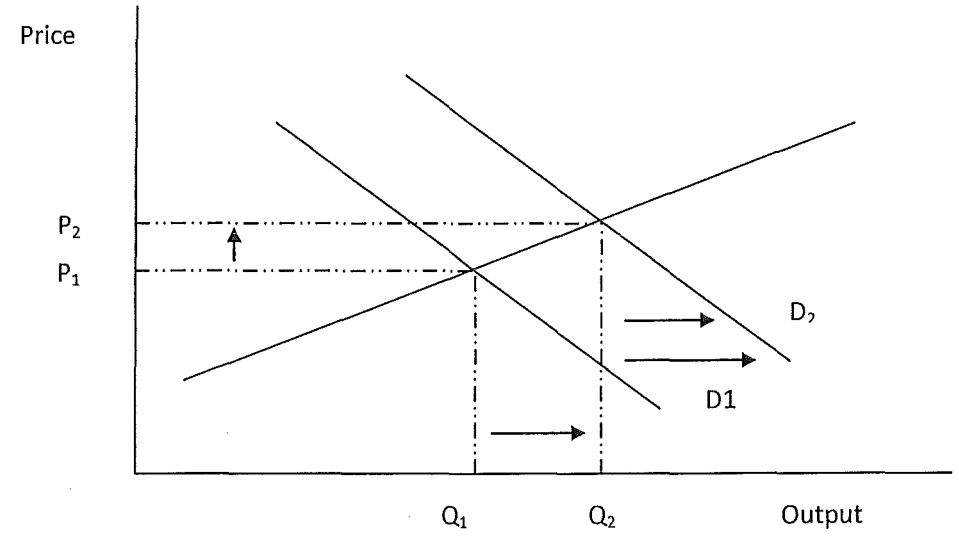


Figure 2.3 Demand price

Mohr and Fourie (2007:138)

In the figure above, Kazmi (2007:509) indicates that the original demand for goods and service is D1, negative behaviour from factors determining demand may lead to increase in price of goods and services from P1 to P2, causing the demand to drop and the demand curve to shift from D1 to D2. However, the supply function can also play a role in the market prices of goods and services. The relationship between price change and quantity demanded is more explicit in theory of Price Elasticity of Demand (PED) illustrated and discussed in chapter one (figure1.3). Colander (2004:132) defines elasticity of demand as consumers' responsiveness or sensitivity to changes in price. Referring to Colander's (2004:133), price elasticity of demand is denoted as:

$$\text{PED} = \frac{\%\ change\ \ in\ quantiy\ \ demanded}{\%\ change\ \ in\ price} \quad \text{Formula (2.1)}$$

The aforementioned formula simply indicates that as changes in price lead to changes in quantity demanded, the total percentage change in quantity demanded is divided by the total percentage change in price to get the price elasticity of demand. Ferrel and Hartline (2011:242) and Lamb *et al.* (2009:365) point out factors that influence price elasticity to include; availability of substitutes, price relative to purchasing power, product durability and other product uses. Kotler and Armstrong (2010:315) states that the seller's pricing freedom depends on the type of market the seller belongs, thus, Jehle and Reny (2011:164) points out that economists recognise four types of markets as follows; pure competition, monopolistic, oligopolistic and pure monopolistic competitions with each of these markets presenting a different pricing challenge. Each of these markets are further discussed below.

2.3.3.1 Pure competition/perfect competition

Concurring with Jehle and Reny (2011:165) a market is where buyers and sellers are sufficiently large in number to ensure that no single one of them acquires the power to determine the market price of goods and services. Colander (2004:242) states that both buyers and sellers are price takers rather than price makers, meaning price is determined in the market by market supply and demand. Cant *et al.* (2010:238) also mention that in a perfect competitive market, products offered by marketers are largely homogenous and prices are the same, these make consumers to purchase from which ever seller they wish.

2.3.3.2 Monopoly/imperfect competition

Jehle and Reny (2011:170) define this type of market to be a market where there is a single seller of a product or service for which there is no close substitutes in consumption, and the entry into the market is completely blocked. Depken (2006:170) states that barriers preventing entry into a monopoly market can be either legal or natural. Legal barriers to entry are laws passed at local, regional or national level that makes it illegal to enter the market and compete. Natural barriers on the other hand, are those that can be caused by geographical or technological factors. Colander (2004:267) indicates that monopolists use the general rule that any organisation must follow to maximise profit which is to produce the quantity at which Marginal Cost (MC) = Marginal Revenue (MR). That quantity determines the price a business will charge for its goods or services.

2.3.3.3 Monopolistic competition

According to Jehle and Reny (2011:177), monopolistic competition is a situation where relatively large groups of businesses provide differentiated products and services that consumers view as close substitutes for one another. Within these circumstances, each business enjoys a limited degree of monopoly power for its particular product variants, though the markets for different variants are closely related. Jehle and Reny (2011:177) mentions that the demand for a product depends on its own price and the prices of all other variants. This means an organisation's profit depends on the prices of all other variants being the change between revenue and cost.

2.3.3.4 Oligopoly

According to Depken (2006:200), oligopoly is a market structure in which a few firms compete with each other, typically in a strategic fashion. Oligopoly models explicitly recognise that the decision of one business organisation likely impacts the decision of others. Jehle and Reny (2011:174) indicate that oligopoly can be sub-divided into Cournot and Bertrand oligopolies. The Cournot model involves firms that sell output on a common market, where market price depends on the total output sold to all firms in the market. The price of goods and services will approach marginal cost as the number of competitors grew. Sunil and Steenburgh (2008:6-8) highlights three main approaches to which demand can be better applied, with any of the marketing functions. These approaches are as follows:

- **Decision calculus approach**

Decision calculus provides means of applying price and demand through managerial judgement. When an organisation does not have historic data and cannot afford either due to lack of money or time.

- **Experiment approach**

Experiments provide a useful way to experience consumer response to a certain price. It is all about gauging consumer response to new prices which have not been implemented before by the organisation.

- **Economic approaches**

This is achieved by using academic studies that have built models to understand the effectiveness of demand and price. An example is the elasticity of demand theory.

2.3.4 Cost

Jehle and Reny (2011:135) define business cost to include all expenditures incurred in acquiring the inputs used to produce a good or service. Ferrel & Hartline (2011:237) maintain that the cost of producing and marketing a product is mostly used as the benchmark in setting the selling price of products. Kazmi (2007:511) concurs by indicating that the purpose of price setting for a business is to set a price to cover costs involved in a product's or service production, selling, distribution and ultimately to obtain some desired level of profit for its effort and risk. Kazmi (2007:511) also states that it is important that prices must exceed average unit cost to earn a profit. Cant *et al.* (2010:236) states that the costs involved in providing a good or service for consumers, include fixed, variable, marginal and total cost. Kotler and Armstrong (2010:308) indicate that fixed cost constitutes costs that do not vary with production or sales. Examples of fixed costs include bills for rent and salaries. Boukhari (2007:7) adds that, fixed cost also includes activities like expenditures for fielding a sales force and carrying out an advertising campaign. Kazmi (2007:511) also points out that average fixed cost can be obtained by dividing the fixed costs by the total number of units produce.

Lamb et al. (2009:365) define variable cost as those costs that change with changes in the level of production, like the cost of material. Kazmi (2007:511) also say that an average variable cost can be obtained by dividing the total variable costs by the number of units produces. According to Kazmi (2007:512), total variable cost is the sum of total fixed cost and total variable cost. Average total cost is obtained by summing up average fixed cost and average variable cost.

Pindyck and Rubinfeld (2013:236) holds marginal cost also known as incremental cost, as the increase in cost that results from producing one extra unit of output. Ferrel and Hartline (2011:237) state that the most popular ways of associating cost and price is by means of profit maximisation and break even analysis. These two elements are further discussed in the following section.

2.3.4.1 Profit maximisation pricing

Lamb *et al.* (2007:367) state that profit maximisation occurs when marginal revenue equals marginal cost. As earlier indicated that marginal cost is the change in the total cost associated with a one unit change in output, so too is marginal revenue the extra revenue associated with

selling an extra unit of output. Jehle and Reny (2011:135) point that if the aim of a business is to maximise profit, it should choose the least costly, or cost-minimising production plan for every level of output to be able to set its prices rightly without affecting the prevailing market price.

2.3.4.2 Break even analysis

According to Cant (2005:55) break-even analysis should be used in the pricing process because it determines whether the business will be able to break even or shield all its costs with a particular price. Kotler and Armstrong (2010:312) add that break-even analysis can be used to determine the sales volume needed at a certain price to cover costs. The level of sales at which total revenue equals total cost is called the break-even point. Ferrel & Hartline (2011:237) maintain that a business must look at the feasibility of selling more than the break-even point in order to make a profit. Lamb *et al.* (2009:368) indicate that an advantage of break-even analysis is that it provides a quick estimate of how much profit can be made if higher sales volumes are produced. Break even analysis can be denoted as:

$$\text{Break even quantity} = \frac{Total\ fixed\ cost}{Price - variable\ cost} \qquad \text{Formula (2.2)}$$

2.3.5 Reviewing competitors offerings

Blyth (2006:457) states that understanding competitive offerings and prices by rivals is an important issue that a business should not neglect. This is because assessment of competitor's reaction of either increasing or decreasing price may determine a better pricing strategy to be adopted. Kotler and Armstrong (2010:319) reveal that for a business to better analyse its competitors, it is to answer four essential questions which include: Firstly, the business should ask, how does the business market offerings compare with competitors' offerings in terms of customer value? If consumers perceive that one business' products and services provide greater value, the firm may charge a higher price. Alternatively, if consumers perceive less value relative to competing products, the business should either charge lower prices or change customer perception to justify a higher price. Secondly, a business should ask how strong are current competitors and what are their current pricing strategies? If the business faces a large number of smaller competitors charging high prices relative to the value they deliver, it might charge lower prices to send weaker competitors out of the market. Thirdly, the business should ask, how does the competitive landscape influence customer price sensitivity? Customers will be more prices sensitive if they see few differences between

competing products or services. They will buy which ever products or services at the lowest price. Finally, the last question should be the decision about what price to charge relative to those of competitors? A business should always charge prices whether high or low to give customers superior value for that price. However, Blyth (2006:465) states that businesses with a larger market share will commonly be leaders in all pricing decision-making.

2.3.6 Pricing method

Blyth (2006:458) states that there are three methods of pricing an organisation can use which are: cost-based, competition-based and customer-based pricings. Each of these pricing methods will be further discussed below.

2.3.6.1 Cost-based pricing

Schindler (2012:21) defines cost-based pricing as the method that entails that the selling price of items should be greater than what it costs to produce or acquire the item. Cost-based pricing uses the information supplied by the management accounting system of the business to determine prices. This means that, among other things, the fixed and variable component of the product or service must be determined (Esclana, 2012:171). According to Kazmi (2007:515), cost-based pricing does not take into consideration factors such as supply and demand, competitors' prices and they are not necessarily connected to pricing policies or objectives. Blyth (2006:458) points out that the cost-based method contains two pricing strategies which are: cost-plus and mark-up pricing strategies. Schindler (2012:27) declares that the main advantage of cost-based pricing is because of its simplicity, based on the fact that the idea of starting with cost is intuitive and cost-based prices are relatively easy to calculate.

Another advantage is that cost-based pricing stems from the common practice of using standard mark-up or margin levels in an industry or for a particular type of product. This is because applying a standard mark-up or margin reduces the need to carry out research on competitors' prices (Schindler, 2012:27). Cant (2005:60) adds that cost-based pricing leads to more stable prices over time since prices are set dependent on internal factors of the organisation such as labour cost and availability of raw materials. However, Cant (2005:60) highlights some limitations of cost-based pricing as follows: ignoring consumer demand prices could be set at unrealistic levels and a high cost organisation can set prices higher than what customers are willing to pay. Schindler (2012:27) states that such may lead to few items

being sold as a result of the high prices leading to low profits made. Cant (2005:60) also adds that alternatively, low cost organisation can set price levels well below than what consumers are willing to pay. The result of this could be a level of total profits far lower than could otherwise have been made (Schindler, 2012:27).

2.3.6.2 Competition-based pricing

Competition-based pricing pushes the costs and revenues as secondary considerations and the main focus is on competitors' prices. This pricing acquires more importance when different competing brands are almost homogeneous and price is the major variable in the marketing strategy (Kazmi, 2007:516). Cant (2005:84) points out that there are two aspects of competition that influences an organisation's pricing. The greater the number of competitors, the closer to perfect competition and less autonomy an organisation has in price setting. Another competitive factor is the product's perceived value in the market. In other words, the more differentiated an organisation's product is from competition, the more its pricing (Cant, 2005:84). Referring to Blyth (2006:465), a competition-based organisation can play around two decisions as follows: a meet-the-competition decision which has an advantage of avoiding price wars, thus, maintaining profitability. Another decision is the "undercut-the-competition" which is common among retailers with little control over the promotion of the products they stock. However, Blyth (2006:465) adds that the danger of starting price wars when using an undercut decision can affect total profits.

2.3.6.3 Customer-based pricing

Rather than starting with costs or competitors' prices, the price setting process in a customer-based pricing begins with thinking about the customer's needs, especially the ability of the seller's product to satisfy those needs (Schindler, 2012:30). According to Ferrel and Hartline (2011:248), businesses that use value-based pricing or approaches set reasonable low prices but still offer high-quality products and adequate customer service. Many different business types use value-based pricing. It is currently widely embraced by the retailing sector (Ferrel & Hartline, 2011:248). Cant (2005:74) adds that this pricing strategy considers all the marketing mix variables before the price is set. However, Hinterhuber and Liozu (2012) point that it is a mistake to assume that customers will immediately recognise and pay for truly innovative and superior product. The researcher further suggests that since value created by a product is the main element to satisfy customers' needs and wants, there needs for a careful selection for each value creating ways needed to satisfy customers.

2.3.7 Establishing pricing policies/practices

Ahmetoglu *et al.* (2010:5) posit that pricing policies or practices are used to advertise products or services to consumers during a time period of about a week to a month, to increase benefits from a product or service. A rich literature on sales has shown that this short-term strategy has positively been beneficial for organisations sales performance during such periods (Ahmetoglu, 2010:7). Commonly used pricing policies by most retailers will be discussed in the following sections.

2.3.7.1 Discounts

According to Kazmi (2007:518), discounts is the reduction of the list price that the seller offers to the buyer for either giving up or providing some marketing function themselves in a purchase. Lamb *et al.* further point out that the base price of a good or service is commonly lowered through the use of discounts. A summary of the most common discount tactics are as follows:

- **Quantity discount**

Lancastar and Reynolds (2005:143) indicate that quantity discount occurs in situations where a customer may buy goods in large quantities, a reasonably lower price may be charged for goods purchased in bulk than that charged to smaller purchases. Lamb *et al.* (2009:375) point out that quantity discounts can further be divided into cumulative and non-cumulative quantity discount. Cumulative discount is a reduction from list price that applies to the buyers total purchases made during a specific periods, it is intended to encourage customer loyalty (Lamb *et al.,* 2009:375). A non-cumulative discount is a deduction from the list price that applies to a single order rather than to the total volume of orders placed during a certain period. It is intended to encourage orders in large quantity (Lamb *et al.*, 2009:375).

- **Seasonal discount**

It encourages customers to purchase earlier than present demand requires. This can help fluctuate sales to stabilise (Kazmi, 2007:518). Kotler and Armstrong (2010:335) add that seasonal discounts allow the seller to keep production steady during the entire year.

- **Cash discount**

It is the price reduction offered to a buyer in return for prompt payment. Prompt payment saves the seller carry finance charges and invoicing expenses and allows the seller to avoid bad debts (Lamb *et al.,* 2009:375).

- **Functional/trade discount**

This discount is offered by the seller to trade-channel members who perform certain functions, such as selling, storing and keeping records. Manufacturers may offer different functional discounts to different trade channels because of the varying services they perform, but manufacturers must offer the same functional discount within each trade category (Kotler & Armstrong, 2010:335).

2.3.7.2 Allowances

Kotler and Armstrong (2010:335) state that allowances can be divided into trade-in and promotional allowance. Trade-in allowance is when price reduction is given for turning in an old item when buying a new one (Kotler & Armstrong, 2010:335). Promotional allowance is payment to a retailer for promoting the manufacturer's product (Lamb *et al.,* 2009:375).

2.3.7.3 Promotional pricing

Kotler and Armstrong (2010:337) state that in promotional pricing, the seller will temporarily price products below list price and sometimes, even below cost to create excitement and urgency on consumers. The most commonly used promotional pricing tactics are as follows:

- **Rebates**

According to Lamb *et al.* (2009:375), a rebate is the amount of cash refund to the purchaser for purchasing a product or service during a specified period. Lamb *et al.* adds that the advantage of using it is that, rebates are temporary inducement that can be taken away without altering the basic structure.

- **Loss leader pricing**

Esclana (2012:171) maintains that loss leader pricing is an attempt used by the seller of a product or service to price at or below cost in order to attract customers. In such situations, the business hopes that the customers will also buy high-margin products and thereby increase the sales volume and profits of the organisation. Lamb *et al.* (2009:377) remark that this type of pricing commonly appear on newspaper adverts of supermarkets, speciality and

departmental stores. Cant (2005:87) mentions that this tactic is commonly used by new stores with the objective of encouraging customers to visit more often.

2.3.7.4 Special pricing

Lamb *et al.* (2009:376) state that special pricing are very unique tactics that defy categorisation. Special pricing is use for stimulating the demand for a specific product or to increase store patronage. Special pricing alternatives are as follows:

- **Bait**

Ahmetoglu et al. (2010:23) argue that rebates are deceptive because during the bait, consumers are enticed with a price discount but end up acquiring subsequent purchases more expensive. Also during a bait, there may be few products available or indeed no items available at the discount price.

- **Odd-even pricing**

According to Cant (2005:77) odd-even pricing refer to prices that end in odd numbers or prices ending just under round figures. The reason is that marketers have assumed that there is a psychological response to odd prices that differs from the response to even prices (Cant 2005:77). Lamb *et al.* (2009:378) point out that most retailers like supermarkets, use odd-number pricing because consumers perceive it to be the lowest possible price, thereby, encouraging them to buy the products or visit the store again.

- **Price bundling**

According to Lancaster and Reynolds (2005:142), bundling is defined as the sale of two or more products in a single package at a discount. The bundle is considered to be far cheaper compared to adding together the price of individual items in the bundle, if sold separately. Cant *et al.* (2010:256) state that bundling can be divided into pure bundling and mixed bundling. An organisation using pure bundling offers its products only as part of a bundle. Alternatively, mixed bundling is mostly used by organisations that provide electronic services. Lamb *et al.* (2009:378) argue that a related tactic to bundling is unbundling, which is all about reducing the bundle of services that comes with a product.

- **Two-part pricing**

Kazmi (2007:517) maintains it is a method common with service providing organisations that charge a fixed price for providing the basic service plus a variable usage rate. Lamb *et al.*

(2009:378) state that people who use a service, most often pay a higher total price. Thus, two-part pricing can increase seller's profits by attracting consumers who would not pay anything high, even for unlimited use. Cant *et al.* (2010:256) note that in the case of a product, once a buyer pays the set price of a product, any subsequent purchase is done at a discount.

- **Price lining**

Price lining means that marketers set a limited number of different specific prices, called price points for items in a product line (Cant, 2005:78). Marketers insist that lining is a good tactic because it is a good way to maximise profits. Lamb *et al.* (2009:377) state that price lining reduces confusion among the seller and the customer. Price lining also presents certain drawbacks, especially if costs are continually rising. Rising cost may cause issues like stocking low quality products, changing prices of products and sellers accepting lower profit margins whilst holding quality and prices constant (Lamb *et al.*, 2009:377).

2.3.7.5 Geographic pricing

This is a price where the selling organisation often quotes prices in terms of reduction or increases, based on transportation cost or the actual physical distance between the seller and the buyer (Ferrel & Hartline, 2011:252). Lancaster and Reynolds (2005:114) indicate that organisations that deal with imports should expect geographic pricing, both international and locally. Geographic pricing commonly used by organisations are as follows:

- **Free on board pricing (FOB)**

According Lamb *et al.* (2009:375) FOB is a price tactic that requires the buyer to absorb the freight cost from the shipping point. Kotler and Armstrong (2010:106) states this pricing entails, that the responsibility of paying freight is passed on to the customer at the point of purchase, making it very expensive in the case of distant customers. Cant (2005:106) also maintains, if an organisation wants to minimise freight cost in terms of distant, it can adopt a freight-absorption pricing approach. Using this strategy, the seller might reason that if it can get more business, its average cost will fall and more than compensate for its extra freight cost (Kotler & Armstrong, 2010:339).

- **Uniform-delivered pricing**

Lamb *et al.* (2009:376) states that if a business aimed for total cost, including freight, to be equal for all purchasers of identical products, the organisation will adopt uniform delivered pricing. This pricing tactic involves that the seller pays the actual freight charges and bills as

every purchaser, identical, flat charge, irrespective of where the goods are transported from. Kotler and Armstrong (2010:339) maintain the advantage of this method of pricing is that it is easier to administer and allows organisations to advertise prices internationally.

- **Zone pricing**

According to Kotler and Armstrong (2010:339), zone pricing is a pricing policy where the selling organisation sets up two or more zones of its customers' base. All customers within a given zone pay a joint total price and the more distant a zone, the higher the price charged. In this case, customers within a given price zone receive no price advantage from the firm.

- **Base-point pricing**

With base-point pricing, the seller designates a location as a base point and charges all buyers the freight cost from that point, regardless of the city from which the goods are shipped (Lamb *et al.,* 2009:376). Some businesses set up multiple base-points to create more flexibility (Cant, 2005:106).

2.3.7.6 Psychological pricing

Psychological pricing approach occurs when consumers' purchases are based more on feelings or emotional factors than rational, such as love, affection, prestige and self-image. This is because technological advancement is making product differentiation difficult, thus businesses attempt to differentiate their offers, based on non-functional product attributes such as image and lifestyle (Kazmi, 2007:514). Psychological pricing include the following:

- **Reference pricing**

According to Ferrel and Hartline (2011:250), reference price is when the actual price is used as a benchmark to the internal or external price. In this situation, all customers use the internal reference price, or the internal expectation for what a product should cost. Ahmetoglu *et al.* (2010:116) state that reference pricing can be practised on three perspectives, as follows: comparing advertised price to a price the retailer formerly charges for the product, comparing advertised price to a presumably charged price by other retailers in the same trade area, and finally comparing an advertised price to a manufacturer's suggested retail price. Ferrel and Hartline (2011:250) indicate that reference price also involves fake referencing which are prices that are compared to either an original or recommended price, which may not be accurate or verifiable.

- **Prestige pricing**

Esclana (2012:172) states that a prestige price is used to indicate the quality or prestige of a product or service. Ferrel and Hartline (2011:247) argue that organisations use prestige pricing in situations where it is difficult to objectively judge the true value of a product. In such a situation, the retailer may use higher prices to indicate a better quality. Cant (2005:77) criticised this tactic on the grounds that consumers mostly make poor rational decisions on prestige priced products, because during the purchase consumers lack all the information needed to figure out whether the price they pay is good value for money.

2.3.7.7 Dynamic pricing

Kotler and Armstrong (2010:339) state that dynamic pricing is all about matching prices continuously to meet the needs and characteristics of individual customers and situations. Rohani and Nazari (2010) argue that these changes are made in response to the marketplace's demand. Referring to Sahay (2007), it is a very profitable policy that can reallocate demand to more appropriate times and manage a limited supply base. Rohani and Nazari (2012) state that dynamic pricing concepts helps a business to sell the right inventory to the right consumers at the right time and the right price.

2.3.8 Determine prices

Kazmi (2007:520) posits that after the pricing process have been produced and the pricing objectives well directed to satisfy the needs and wants of target customers, the final price can be set. Esclana (2011:175) mentions that the prices retailers commonly set as final price for consumers is mostly the list price. Garrett (2011:5) adds that this is because after the pricing processes, an organisation would have first-hand information like: what customers are willing to pay?, what is likely to be demanded by them?, what are competitors' products pricing, how they compete? and finally the resultant costs, revenues and profits arising from specific price. Garret also states that it is not an easy task to determine the final price because markets are often volatile. Thus, prices might need to be reviewed and changed frequently. Esclana *et al.* (2012:162) however, state that the final price for a product or service should be determined by the demand as well as the supply of the product or service.

2.4 OTHER ELEMENTS INFLUENCING PRICING DECISIONS

Researchers such as Garrett (2011:1), Esclana (2012:159) and Kotler and Armstrong (2010:305) points out that the pricing process can be referred to as elements influencing pricing decisions, but there are also other factors influencing pricing decisions in the business environment. Alkali and Isa (2012) define a business environment to be factors or variables, both inside and outside the organisation that may influence the continued success of an organisation.

2.4.1 Internal factors

Esclana (2012:160) defines internal factors influencing pricing as an organisation's uncertainties surrounding its internal pricing capabilities. Boukhari *et al.* (2007:5) indicate that internal factors can be controlled and even altered by an organisation. Stucki (2009:4) maintains, despite an organisation's best efforts to succeed, the way people relate to processes will be the final determinant of an organisation's success in any organisational function. Internal factors influencing pricing decisions are as follows:

2.4.1.1 Marketing objectives and marketing strategy

According to Kotler *et al.* (2005:24), marketing objectives refer to the goals that an organisation wishes to attain through its overall marketing programme. For instance, Kotler and Armstrong (2010:313) states that if a business marketing objective may include increased current profit maximisation, market share leadership and customer retention, its pricing strategy should be towards attracting new customers or retaining existing ones, setting lower prices to prevent competition and to keep customers loyal.

Kotler *et al.* (2005:71) indicate that marketing strategy integrates the process of analysing market opportunities, selecting target markets, developing marketing mix and managing the marketing effort. Price, of course, is one of the key marketing mix decisions and since all marketing mix decisions must work together, the final price will be impacted by how other marketing decisions are made. For instance, marketers selling high quality products would be expected to price their products in a range that will add to the perception of the product being at a high-level (Boukhari *et al.*, 2007:6). Indounas and Avlonitis (2009) advise that the overall marketing objectives and strategy should be incorporated in the pricing strategy.

2.4.1.2 Organisational structure and organisational culture

Referring to Indounas and Avlonitis (2009), organisation structure determines the manner and extent to which roles, power and responsibilities are delegated, controlled and co-ordinated and how information flows between levels of management while an organisation's culture is a system of values and beliefs shared by people in an organisation. In most cases, the marketing department champions this role but presently, most organisations solely rely on cross-functional collaboration or top management decisions when setting prices (Indounas & Avlonitis, 2009). Kotler and Armstrong (2010:315) allege that most organisations that consider pricing to be a key factor for their business performance, have departments to set the best prices. These departments can either report to marketing or top management.

2.4.1.3 Product life-cycle

Esclana *et al.* (2012:160) state that as a product moves through its life-cycle, it influences setting of price because the demand for the product and the competitive conditions tend to change with the change in the product life cycle. Wong and Ellis (2007) indicate that a product's life cycle is a framework that classifies the evolution of the product or service through the introductory, growth, maturity and decline stages. Lamb *et al.* (2009:369) maintains that in the introductory stage, management usually sets high prices to recover its development costs as quickly as possible and then, gradually lowers them, by the growth stage, prices generally begin to stabilise due to three main reasons: first, competitors have entered the market increasing the available supply, secondly, the product has begun to appeal to a broader market and finally, because the economies of scale naturally lowering costs. During the maturity stage, prices decrease as competition increases and inefficient, high-cost organisations drop out of the market.

Wong and Ellis (2007) argues that during the decline stage, the overall market sales begin to fall. Products are withdrawn from the market or organisations reduce their expenditure to cut costs. Sychrova (2012) however, points out that a product or service's life cycle appropriately involves five stages consisting of development, introductory, growth, maturity and decline stages. Sychrova further states that none of these stages should be neglected since they are all involved in every product or service's life span and prices are set according to the cost incurred at each stage in the product's life cycle.

2.4.2 External environment

Alkali and Isa (2012) consider the external environment to constitute the initial conditions faced by entrepreneurs in any economy. Boukhari *et al.* (2007:7) state that the external environment is very complex and organisations may have little or no control over it. External factors that commonly influence the pricing decisions of organisations are as follows:

2.4.2.1 Economic conditions

According to Kotler and Armstrong (2010:320), economic conditions such as recession and inflation strongly impact on pricing decisions because they affect both consumers' perception of a product or service price and value or cost of producing a product. Esclana (2012:163) argues that economic crisis leads to increase in price sensitivity on the part on customers. Economic conditions will influence pricing decisions based on the type of product or service a retailer sells. Lamb *et al.* (2009:379) reveal ways in which better pricing decisions can be made during recession and inflation as follows:

- **Recession**

During recession, value pricing and bundling are the best pricing tactics to build market share. This is because value pricing emphasises to customers that they are getting good value for money while bundling gives customers the perception that an offering has a greater value. Lamb et al. also indicate retailers can use pruning which involves taking out unprofitable items from the product line.

- **Inflation**

During inflation, cost-oriented or demand-oriented tactics can be used. Cost-oriented tactic is the culling of items with low profit margin. Quotation or escalator pricing can also be used, this involves not setting prices on products until the item is either completed or delivered. Demand-oriented tactics uses either price shading which involves using discounts for one or more products, or making a product or service more price inelastic.

2.4.2.2 Demographic/psychological conditions

Ellickson and Misra (2008) points that marketing literature confirm demographics to be an important factor, influencing pricing decisions. They further suggest that most pricing models are built based on spatial discrimination. Indounas and Avlonitis (2009) argue that individual demographic factors such as age, income, marital status and education will greatly influence

the final price. Jayne and Dipboye (2004) state that demographic diversity is an important factor for any organisation since it unleashes creativity and innovation by striving to satisfy different consumers, which also enhance the competitiveness of an organisation. Psychological characteristics such as consumer's lifestyle and values will also impact on the buying decision.

2.4.2.3 Social environment

According to Kotler and Armstrong (2010:320), it is important for an organisation to take social concerns into consideration, before setting prices, because short-term sales, market share and profits are usually tempered by broader societal considerations. Ndagijimana and Musonera (2012:6) are of the believe that the social environment in which an organisation operates relates to terms of the society's basic values, perceptions and preferences which all impact on a business's pricing practice. For instance, cross-cultural differences among countries affect specific pricing policies. High prices are taken as indicators of quality in western countries: this is in contrast to less developed countries, where high prices might be seen as taking advantage of customers (Kotabe & Helsen, 2004:550).

2.4.2.4 Laws or legislations

Kotler *et al.* (2005) state that regulations concerning pricing practices are other important elements affecting pricing decisions. These laws or bills limit the organisation's pricing practices. Esclana *et al.* (2012:163) maintain that legislations instituted by the government sometimes exert an influence on the final price that costumers are to pay. Price regulations can come from any level of government and vary widely in their requirements. For instance, in some industries, government regulations may set price ceilings, ('how high price may be set') while in other industries, there may be price floors, ('how low price may be set') (Boukhari et al., 2007:8). Mohr and Fourie (2004:162 &168) argue that both the maximum or minimum price can be either set below or above the equilibrium price, depending on the situation at hand. Referring to Bond and Goldstein (2012:1), efficient government intervention depends on effective knowledge on organisation activities and information on economic conditions. Without these, appropriate policies will not be made. It is important to follow government policies because what began in many organisations as an effort to meet governmental and legal requirements has evolved into a strategic priority aimed at positioning organisations, more competitively in the market place (Jayne & Dipboye, 2004).

2.4.3 ETHICAL PRICING

William Sauser (2005) in Sinha and Mishra (2011) refer to business ethics to be generally the extent to which a person's behaviour measures up to such standards as the law, organisational policies, professional and trade association codes, popular expectations regarding fairness and what is right, together with a person's own internal moral standards. Referring to Ferrel and Hartline (2011:255), pricing is the most monitored and regulated marketing activity. It is certain that a difference in price can create a significant competitive benefit, any effort to insincerely give one organisation an edge over another is subject to legal or regulatory intervention. Venter and Van Rensburg (2009:347) state that the most common legal and ethical issues in pricing include price discrimination, price fixing, predatory pricing and deceptive pricing. Each of these ethical issues are further explained in the following section.

2.4.3.1 Price discrimination

Venter and Rensburg (2009:347) consider price discrimination to be when a dominant organisation without any justifiable reasons, charges different prices to buyers of equivalent transactions. According to Ferrel and Hartline (2011:255), price discrimination is illegal except when the price difference has a basis in actual cost differences in selling products to one customer relative to another. Cant *et al.* (2010:253) argue that discrimination can either be customer-based, time-based or value-based. Customer-based discrimination is offering better offers to bigger buyers compared to smaller buyers. Time-based discrimination is all about offering low prices during poor business seasons.

The objective is to attract customers who might not have considered consuming the product or service. Value-based discrimination is when, due to minor modifications to a product or service, it attracts a new market segment to which an organisation can apply a discriminatory price that is disproportionate to the added value (Lancaster & Reynolds, 2005:147). There are two ways to defend price discrimination: Firstly, it is to base the difference on the lower costs of doing business with one customer compared to another. These costs savings must be documented, and the price reduction should not exceed the amount of savings. Secondly, the other defence occurs when one consumer receives a lower price offer in order to meet the price of a competitor (Ferrel & Hartline, 2011:255).

2.4.3.2 Price fixing

Price fixing is an agreement between two or more organisations on the prices they will charge for their products or services (Lamb *et al.,* 2009:374). Ferrel and Hartline (2011:255) states that such collaborations between organisations is illegal and offenders can be punished with heavy fines and prison terms. Venter and Van Rensburg (2009:347) suggest that in South Africa, price fixing could lead to market divisions and collusion tendering. Market division occurs when organisations distribute customers between themselves, or divide products and zones in order to avoid competing with each other in a particular market. Collusion tendering occurs when collaborating competitors decide in advance who will deliver the lowest price offer. These acts work against the benefits of competitive economic process such as efficiency, choice and innovation.

2.4.3.3 Predatory pricing

Lamb *et al.* (2009:374) consider predatory pricing practice as the act of charging low prices for products and services with the aim of driving weak competitors out of business or market. After these competitors must have been taken out of the market, the organisation immediately raises prices again. Ferrel and Hartline (2011:257) state that predatory is illegal but very difficult to deal with in a court of law. The researcher further specifies that the challenge in predatory pricing is to prove that the act was wilfully intended to ruin weaker competitors out of the market.

Venter and Van Rensburg (2009:349) explain why predatory pricing is difficult to prove is because it exercises all the signs and indicators of competition like ruthless rivalry, low prices, companies exiting and survivors expanding. However, authorities are now using two key tests of cost and recoupment to differentiate between predatory pricing and competition (Venter & Van Rensburg, 2009:349). Cost or price test is to determine if an organisation has set its prices below a certain measure of cost, usually marginal cost or average variable cost. Recoupment test is to determine if an organisation has been able to raise prices after an episode of pricing at predatory levels, in order to recoup its losses.

2.4.3.4 Deceptive pricing

Ferrel and Hartline (2008:257) maintain deceptive pricing occurs when an organisation advertises a sale price as a reduction below the normal price, when it is not the case. This is so because the organisation will not sell the product or service in any meaningful quantities

and the sale price period may be excessively long. Mullikin and Petty (2011) argue that deceptive prices are not ethical because most often, consumers make their purchase when a retailer is assured that the deal is a bargain. The use of bargain assurance creates two main public policy concerns as follows: Firstly, consumers select a price offering because the bargain assurance may mislead the degree to which the offering represents a bargain. Secondly, the use of bargain assurance partially substitutes for actual price competition, which public policy steadfastly recognise as beneficial to consumers (Mullikin & Petty, 2011). However, Eriksson and Simpson (2007) mentions that after carrying out an effective investigation on deceptive, pricing their finding revealed that retailers practicing in deceptive pricing tend to offer cheaper prices than honest price setters. Thus, there is actually very little gain from deceptive pricing.

2.5 PRICE INDEX

According to Hill (2004:24), price index is a measure of the proportionate or percentage changes in a set of prices over time. Price index can also be used to measure differences in the price levels between different cities, regions or countries at the same point in time. Since the price of different goods and services do not all change at the same rate, price index can only reflect their average movement. Such changes affect the real purchasing power of consumers. Even though price has been indicated by most researchers to be very important, Dutta *et al.* (2003) argue that very little research has been done to investigate how businesses set or change prices. Two major price indices influencing an economy and its business sector consist of the Consumer Price Index (CPI) and the Retail Price Index (RPI). The CPI and the RPI will be further discussed in the following sub sections.

2.5.1 Consumer price index defined

CPI measures the changes in the prices of goods and services that households consume. Such changes affect the real purchasing power of consumers (Hill, 2004:1). It can also be defined as a monthly or quarterly price index compiled and published by an official statistical agency that measures changes in the price of goods and services acquired or used by households. The exact definition may vary from country to country (Stat S.A CPISMM, 2009:28).

2.5.2 Consumer price index and price setting

According to Aucremanne and Dhyne (2004:6), price setting is very heterogeneous, both across and within product categories, even among sellers of homogeneous products. CPI has

been indicated by most researchers, to be the main influence of price changes in an economy. Klenow and Willis (2007) have indicated CPI influence on price changes does not only depend on the current CPI situation. According to these researchers price changes by businesses may not only reflect the CPI most recent price innovations, reason that older CPI weight innovations can also lead to such changes since macro elements can have a long- term shock effect in an economy. Officer (2013:4) proved this by merging old CPI series to new series in the United States of America (U.S.A) from 1774 to 2012, to investigate if there is a link between an old and new CPI series in an economy. The investigation turned out positive, indicating there was a consistency, meaning CPI is chain indexes even though the chains occur discretely.

2.5.3 Consumer price index as the benchmark of all prices by using the Time Change Le'vy Model

Referring to Carr and Wu (2004), the Time Change Le'vy Model shows that the activities of a dependent and independent variable follows a Brownian motion with respect to time. This is because time changes come with uncertainties in the future which may affect the performance of all business functions, either positively or negatively. United State Agency for International Development (USAID) (2009:2) indicates that inflation is the main element that leads to increase in prices in an economy with an after effect of drop in consumers' buying power. Beltski (2006:18) further describes the reaction of price to time change as a Brownian motion by considering a continuous trading economy, where the uncertainty in the economy is characterised by the complete probability space (Ω,F,Q), where Ω is the state space, F is theσ -algebra representing measurable events and Q is a risk neutral probability measure. Information evolves over the trading interval $[0,T]$, $T < \infty$, according to the augmented, right continuous, complete filtration $\{Ft\}t\in[0,T\ ]$ generated by the standard Brownian motion$\{WI\ (t)\}t\in[0,T\ ]$, under the risk neutral probability measure Q , in R initialised at zero.

2.5.4 South African consumer price index

South Africa considers CPI to mean a current social and economic indicator that is constructed to measure changes over time in the general level of prices of consumer goods and services that households acquire, use, or pay for. The index aims to measure the change in consumer prices over time. This may be done by measuring the cost of purchasing a fixed basket of consumer goods and services of constant quality and similar characteristics, with the products in the basket being selected to be representative of households' expenditure

during a year or other specified period. Such an index is called a fixed-basket price index. The index also aims to measure the effects of price changes on the cost of achieving a constant standard of living (i.e. level of utility or welfare). This concept is called a cost-of-living index (Stat S.A CPISMM, 2009:1). Figure 2.4 indicates South African's CPI from January 2000 to December 2012.

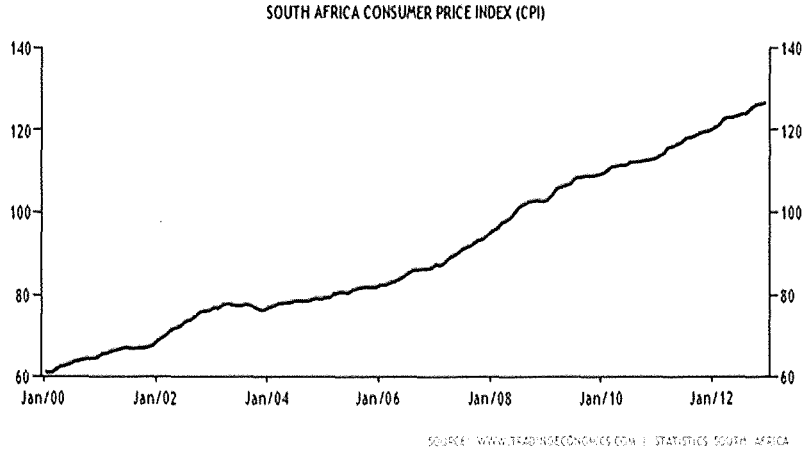


Figure 2.4 South Africa's CPI 2002 to 2012

Source: ***www.tradingeconomics.com / statistic South Africa***

Figure 2.4 indicates that South Africa's CPI has been constantly rising in recent times. Historically, from 1960 to 2013, South Africa's CPI average has thirty four point five-four index points, reaching an all-time high of one hundred and twenty-six point seventy index point in December 2012.

2.5.5 Developments in the South Africa's consumer price index

The South African CPI originated in 1917, covering large urban areas only. Smaller urban areas were only included in 1997. The CPIX (CPI excluding interest rates on mortgage bonds) was introduced for the first time in January 1997, together with the current list of nine provinces. During January 2000 the rural and total country indices were introduced. A direct collection methodology that entailed collecting prices on goods, directly from retail outlets, was piloted in July 2004. This direct collection methodology was rolled out region by region. Since January to June 2006, the CPI has been compiled using the prices of goods from the direct collection methodology in metropolitan (primary) areas and in other urban (secondary) areas respectively (Stat S.A CPISMM 2013:1a).

The International Labour Organisation (ILO) is the authoritative body for the methodology of price statistics and compilation of CPI. The ILO is supported by other organisations like the United Nations Statistic Division (UNSD), the International Monetary Fund and the World Bank. The ILO manual for CPI is the main reference for all statistic offices for CPI concepts and definitions. The manual provides the theory and conceptual framework for CPI and guidelines for compilation. For this reason, Statistics South Africa (Stats S.A) has committed itself to the adoption and use of methodology that is in line with the ILO to obtain an internationally accepted best practise (Stat S.A CPISMM, 2013:1-2b).

Klenow and Willis (2007) maintain that CPI changes will dominate individual business organisations decisions about when and how much to change prices. Fenwick and Astin (2009:1) point out that the CPI in a country will constantly react to major economic activities like production, consumption and intermediate outputs. In South Africa, the CPI can be said to have a significant role for price setting for all urban and rural areas in the country. This brings us to the concept of RPI.

2.5.6 Retail price index (RPI) defined

The RPI measures the average price change on the basis of changed expenditures of maintaining the consumption pattern of households and the consumption pattern of households and the composition of the consumer population in the base or reference period (Office of National Statistics (ONS), UK, 2012:6). The retail price includes all the expenses the retailer incurs and all mark-ups.

2.5.7 Relationship between consumer price index and retail price index

Evans (2012:1) argues that in other countries like the United Kingdom (UK), the RPI was the first ever published document by ONS as a measure for price monitoring in 1949. It was only in 1996 that the CPI was introduced as a measure for evaluating pricing in the UK. Evans (2012:1-2) further adds that the two indices are the same because they both tract the changing cost of a fixed basket of goods overtime. The researcher however, moots that the only difference between RPI and CPI is that the indices measures price change for different target populations. This difference between the RPI and the CPI is called the formula effect. Referring to Miller (2011:5), the formula effect states that the RPI measure price change by a form of arithmetic mean, known as the ratio of average price while CPI does it on a geometric mean. Recently, CPI price observations and sampling weights were used to obtain

estimates of retail price levels for various categories of consumer commodities. Hill (2004:24) argues that the CPI is first of all, estimated using elementary price indices from estimates made from elementary aggregates of CPI. An elementary aggregate consists of expenditures on a small and relatively homogenous set of products defined within the consumption classification used in the CPI.

To get final indices for CPI and RPI, statistical offices usually select a set of representative products within each aggregate and then collect samples of their prices from a number of different outlets. The elementary aggregates serve as strata for sampling purposes. The prices collected are typically not prices observed in actual transactions but prices at which the products are offered for sale in the different retail outlets for several months, since CPI measure is out to measure the level of price change in an economy. Once prices are collected in the sample outlets, the most appropriate formula is used to estimate the actual price index. After this process, a country's CPI is produced and established to form the strata or bases of all prices. After the CPI is established, the retail prices of consumer products are averaged using the CPI as the strata (Hill, 2004:24).

Fouche and Wilkinson (2012:27) states that growth in the Fast Moving Consumer Goods (FMCG) retail sector in South Africa is closely correlated to the overall economic happenings in South Africa. Economic Analysis Unit Gauteng Province (EAUGP) (2012:20) holds that the global crisis has rendered the overall economic condition in South Africa tougher, with continuous rise in inflation rates since 2008, causing increase in CPI levels, which also means increase in what consumers pay as price (RPI) for commodities. Els (2013:1) posit that food prices, especially, were expected to reach ten percent by the third quarter of 2013. This general increase in price levels has greatly affected consumer purchasing power, causing a general drop in retail sales. EAUGP (2012:20) also mentions that the South African retail sales reached its peak of 11 percent growth rate during 2009 before diminishing to a negative 3.7 percent also in 2009. The retail sales performance level from January 2004 to March 2013 is reflected on figure 2.5.

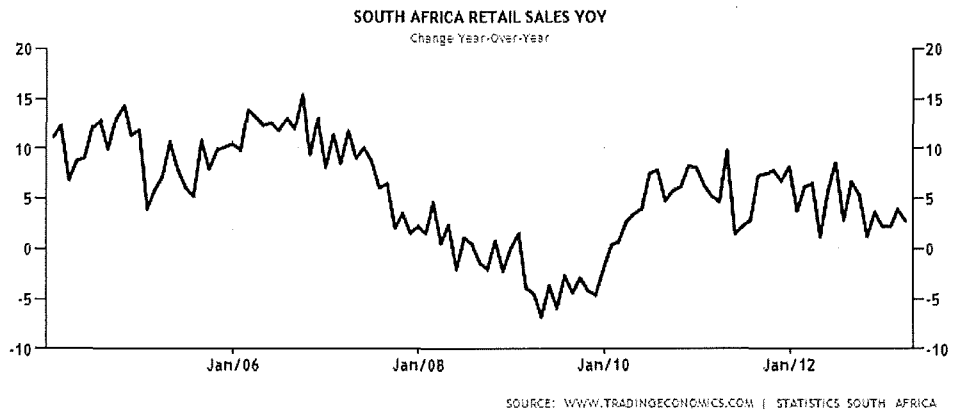


Figure 2.5 South Africa's retail sales, 2006 to 2012

Source:www.tradingeconomics.com/Statistics South Africa

Historically, South Africa's retail sales have mostly dropped than increased. It went to an all-time high of 15.40% in April 2006 and to an all time drop of negative 6.80 in April 2009.

2.6 MARKET SHARE

As earlier indicated, a market share indicates how an organisation is performing relative to its competitors and is also calculated by dividing an organisation's share by the total sales of all organisations for a specified product-market (Venter & Van Rensburg, 2009:118). Market share can further be categorised into absolute or relative market share. According to Simon (2009:52), absolute market share is the percentage of the entire market share while relative market share is an organisation's own market share divided by the market share of its strongest competitor. Bolger *et al.* (2008) indicates that organisations should take note of over-confidence effect. This is a situation where an organisation believes that absolute advantage over a competitor for a certain factor, represent a market leader or comparative advantage. Mohr and Fourie (2004:421) explicitly give an example of a German motor car manufacturer where they may be producing more cars in fewer hours than their South Africa counterpart, but incur higher costs, compared to the same number of cars South Africa can produce in more hours.

2.6.1 The relationship between price and market share

Authors like Nierop *et al.* (2011), Babatunde and Olutunla (2006) and Fok and Franses (2000:3) suggest that the relationship between price and market share is based on how change in price and price policies may lead to an increase or decrease in sales, affecting the market

share negatively or positively respectively. Fok and Franses (2000:3) indicate that determining market share from sales performance assumes a multiplicative specification to relate explanatory variables such as prices effect on current sales. This is further explained by the following formula:

$$S_{i,t} = \exp(\mu_i + \varepsilon_{i,t}) \prod_{j=1}^{I} \prod_{k=1}^{K} \exp(x_{k,j,t})^{\beta_{k,j,i}},$$ Formula (2.3)

In this equation, εt = (ε1;t;…;εI;t)′˜N(0; Σ) and k;j;t denote the k-th explanatory variable (for example, price) for brand j at time t and βk;j;i is the corresponding coefficient for brand i. The normality assumption for the error terms is not strictly necessary, although with this assumption, the least-squares estimates are the maximum likelihood estimates.

2.6.2 Price relationship with sales and consequent effect on market share

Moutinho and Chien (2008:162) point out that even though in recent decades other factors are also now playing a role in influencing consumer behaviour or decision to make a purchase, price still remains the most important element determining a business sales, profitability and market share. Wiid (2012:6) said consumers will always attach a certain value for the product they want to buy and these values are always reflected in the price of the product. The influence of price on sales and its consequent effect on market share can be analysed on the consumer decision model. Plessis and Rousseau (2007:260) refer to the consumer decision making model as the primary decisions consumers make whether to purchase or not, to spend or save their money when engaged in a particular buying situation.

Plessis and Rousseau (2007:263) and Egan (2007:54) specify that the decision to make a purchase involves problem recognition, information search, evaluation, decision, purchase and post-purchase evaluation. If price is applied in the consumer decision model, it will be as follows: available income compared to offered price by the retailer to satisfy the need, information on different price offers, evaluating the best price offer, purchasing the product with the best price and if there is value for the price paid. According to Khan (2011:43), the consumer behaviour model is a good determinant to identify cause and effect relation in the market. Skitmore and Smyth (2006:7) say that generally, consumer behaviour influences price setting, because product prices are set based on available data about consumers'

perceptions and experiences about various prices of a product. The consumer decision making model is illustrated in figure 2.6.

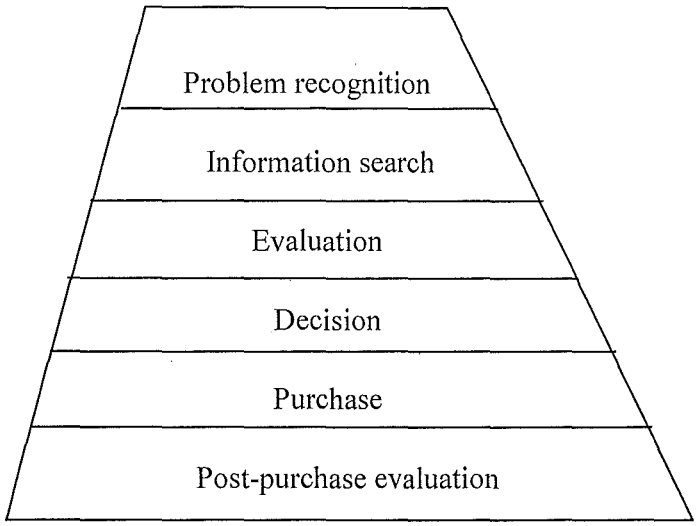


Figure 2.6 buying model,

Egan (2007:54)

Referring to Plessis and Rousseau (2007:269), repeat purchase of a product or service will depend on the post purchased experience by the consumer. If for example a consumer experience good value for the price paid, it may lead to repeat purchase of the product or service. Scheer (2010) points out that in South Africa, consumer increase knowledge and expertise of industry and store prices, have led to repeat purchase or loyalty to certain store brands. This is because consumers are always interested in better offers by competitors.

2.6.3 Market share development

Roger (2009:123) argues that improving market share by an organisation relies on its business potential. The researcher is in accord with Roger that, achieving a positive market share depends on the price and sales volume of each item on an organisation's product line with respect to the following factors indicated in figure 2.7.

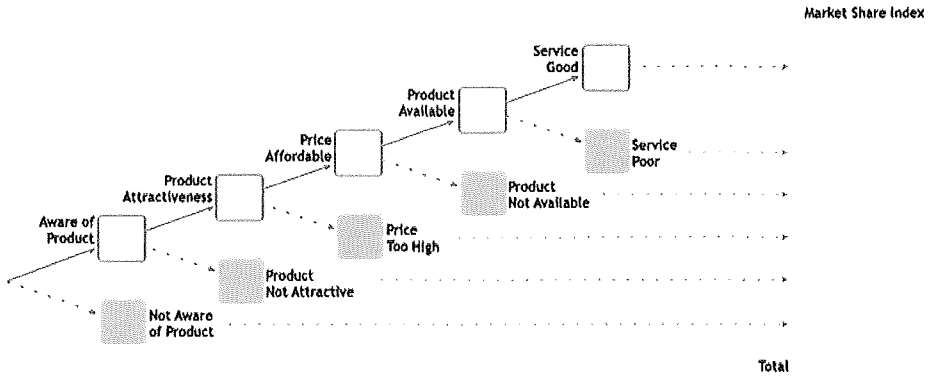


Figure 2.7 Market share index,

Roger J. Best (2009:122)

Fok and Franses (200:4) suggest that the most appropriate method to establish a proper relationship between sales and market share is the naive and simulation techniques. Detailed illustrations of these techniques by Fok and Franses are as follows:

2.6.3.1 Naïve technique

The naïve technique holds that, the market share of a brand i and t, denoted as Mit, is broader defined as:

$$M_{i,t} = \frac{S_{i,t}}{\sum_{j=1}^{I} S_{j,t}}. \qquad \text{Formula (2.4)}$$

This expression is called a naive expectation because it is not possible to obtain market shares value directly from sales information. A further complication is that it is also not trivial to obtain a forecast of Si;t+1, as the sales model is defined in logs, and also well known that exp(E[logX])= E[X]. Therefore, forecasts of log sales cannot simply be transformed to sales forecasts using the exponential function. The naive method can obtain approximate confidence intervals by using the delta tactic defined as follows:

$$\begin{aligned} \mathrm{Var}\left(\frac{S_{i,t+h}}{\sum_{j=1}^{I} S_{j,t+h}}\right) &= \mathrm{Var}(f_i(S_{1,t+h}, \ldots, S_{I,t+h})) \\ &= \left(\frac{\partial f_i}{\partial \log S_{t+h}}\right)' \mathrm{Var}(\log S_{1,t+h}, \ldots, \log S_{I,t+h}) \left(\frac{\partial f_i}{\partial \log S_{t+h}}\right), \end{aligned} \qquad \text{Formula (2.5)}$$

2.6.3.2 Simulation-based method

Simulation is done by using the estimated probability distribution of sales to generate artificial realisations of the sales. Based on each of these realisations of all brands, the market shares can be calculated. This is achieved by using the following formula:

$$\varepsilon_{t+1}^{(l)} = (\varepsilon_{1,t+1}^{(l)}, \ldots, \varepsilon_{I,t+1}^{(l)})' \text{ from } N(0, \hat{\Sigma})$$

$$S_{i,t+1}^{(l)} = \exp(\hat{\mu}_i + \varepsilon_{i,t+1}^{(l)}) \prod_{j=1}^{I} \prod_{k=1}^{K} \exp(x_{k,j,t+1})^{\hat{\beta}_{k,j,i}} \prod_{j=1}^{I} \prod_{p=1}^{P} S_{j,t+1-p}^{\hat{\alpha}_{p,j,i}} \quad \text{Formula (2.6)}$$

In the above formula, the index l denotes the simulation iteration. For every draw of "(l)t+1, the corresponding realisation of the sales is calculated, S(l)i;t+1. With a simulated realisation of the sales, the corresponding realization of the market shares can be calculated as:

$$M_{i,t+1}^{(l)} = \frac{S_{i,t+1}^{(l)}}{\sum_{j=1}^{I} S_{j,t+1}^{(l)}}. \quad \text{Formula (2.7)}$$

2.6.4 Advantages of a good market share position

Referring to Nissan (2003), past literature has long confirmed market share to have a better relationship with relative advantage. Bode and Scharafi (2007) state that it is important to have a strong market share position in the market because organisations with a better market share have an edge over their competitors in formulating or executing business strategies. Some of the advantages of a strong market share position are as follows:

2.6.4.1 Customer relationships and loyalty

Liu and Yang (2009) points out that the competitive position of an organisation will determine its level of consumer loyalty because consumers often link value with respect to an organisation's status. Gaunaris and Stathakopoulos (2004) say that brand loyalty reflects the possibility of a consumer to rebuy an organisation's product. This can also lead to relationships since an emotional and normative attachment is established between consumer

and the brand. Kanagal (2009) argues that a retailer's relationship with consumers has become so important that organisations' profitability recently been associated more with satisfying existing customers. Gehrig *et al.* (2009:1) mentioned that new consumers can be targeted by aggressive price offers that can induce them to terminate already existing customer relationships. Etro (2007:8) adds that competitors with strong market share positions can act independently from weak rivals, like being aggressive in their pricing strategies. According Luarin and Lin (2003), relationship will lead retailers to offer better deals to consumers thus, leading to better trade leverage and more strength of an organisation's market share.

2.6.4.2 Innovation and product development

According to Lee and Kim (2013) organisations with a bigger market size are more opportune to come up with innovative ideas because innovative capabilities depend on an organisation's strengths. Hunt and Arnett (2006) indicates innovation can either be proactive or reactive and each occur under the following circumstances. Proactive innovation occurs when the market research department identifies a previously unserved market segment and tailors a market offering for it or when an organisation engages in continuous process improvements. When proactive innovative activities successfully produce innovations that contribute significantly to efficiency/effectiveness, firms will be rewarded by marketplace positions of competitive advantage. Reactive innovation occurs when inferior financial performance signals firms that their comparative disadvantage in resources has resulted in their occupying marketplace positions of competitive disadvantage.

Veyzer (2003) holds that innovation is vital for organisations on the following grounds, (1) rapid technological changes quickly render certain products obsolete, (2) there is the tendency by competitors to copy a successful product which can neutralise an innovative product's advantage. Dovey and White (2005) points out that product innovation should not be assigned to one department. This is because product innovation demands the integration of many actors of different knowledge and expertise in order to develop a higher technological product. Sarin and O'Connor (2009) posit that if innovation of a new product is to be successful, support is needed from the entire organisational structure. Venter and Rensburg (2011:188) states that an organisation can perform better only when accumulated knowledge is utilised. Simon (2009:42) specifies that innovation is an outstanding engine of growth since

it will lead to revenue increase from increased volume sold giving an organisation an advantage over rivals.

2.6.4.3 Benefits from strategic alliances

Todeva and Knoke (2005) argue that international business literature has acknowledged a number of positive outcomes for organisations that actively engaged in strategic alliances. Kotler and Keller (2012:163) maintain organisations with a strong market position, like market leaders penetrate into different markets due to their strength. Holmberg and Cummings (2009) states that strategic business alliances are a critical component for any organisation to better succeed in an industry, but it should be noted that too many strategic alliances fail to meet their business partners' objective. However, effective alliance should reflect the desire of the parties to create a solid foundation for their relationship based in order on trust and mutual interest to achieve a positive atmosphere among partners.

2.6.4.4 Market control

Helfat and Lieberman (2002) indicate that the capabilities of an organisation's entrance into a competitive industry and its possibility of survival depend on strengths. According to Drummond and Ensor (2012:197), an organisation's control over a market comes as a result of its dominant market share. Venter and Rensburg (2011:184) mention that an organisation with a strong market position will have an efficient access to resources as compared to its rivals. Hunt and Arnett (2006) indicates that the marketing practice holds firm on the basis of the R-A theory which emphasises that organisations competency rely on available assets. This leads to an increase in the availability of resources. Sunil and Steenburgh (2008:2-3) adds that the marketing function requires a large amount of resources to meet its demand.

2.6.4.5 Brand identity or corporate image

According to Hoeffler and Keller (2003), building a strong brand has become an important priority to target customers. This is because organisations achieve a good number of benefits as a result of a strong brand. Ailawadi *et al.* (2003) maintain that marketers have long indicated the benefit of a brand that accrues from marketing activities like cash flow, image and market share. Balakrishnan and Mahanta (2004) argue that there is nothing that travels faster about a retailer compared to stories of bad product or service performance as well as a well performing retailer. A "brand's personality" stage mark an important transition phase since not all brands evolve into consumer icons, especially if the consumers do not relate to,

or believe in, or they sense some inconsistencies with brand's communication (Wee & Ming, 2003). Sherrington (2003:21) specifies that a brand's personality provides a richer source of competitive advantage than any functional feature can do.

2.6.4.6 Low cost and profitability

According to Drummond and Ensor (2012:196), organisations with a dominant position in an industry easily achieve economies of scale. Mohr and Fourie (2004:243) define economies of scale as a situation when costs per unit of output fall as the scale increases, leading to low cost in production. Mohr and Fourie (2004:268) hold that profitability occurs when an organisation produces at the lowest unit cost. Armstrong and Green (2007) confirm that 48 econometric studies have identified a positive and correlated relationship between market share and profitability. Simon (2009:52-53) agree that profitability will improve market share but the hypothesis that a large market share automatically leads to higher profitability is the biggest management misunderstanding of present times because a good market performance is no guarantee for profitability.

2.7 CONCLUSION

This chapter broadly discussed and reviewed important and relevant literature to the study. The review was done in two phases as follows: elements that influence pricing decision and the impact of pricing on market. Main subjects discussed in the first phase included marketing and marketing mix, different pricing methods, strategies and policies as well as unethical pricing. Finally, the influence of the price indices as the main determinant of pricing was also elaborated. The main subjects discussed in the second phase included the relationship between price and market, the importance of sales performance of a product to market share and the advantages of being market share dominant. From literature gathered it was revealed that, there are numerous options for a retailer to make pricing decisions. Due to the different options in pricing decision, it can be possible for different sellers to develop their own unique pricing characteristics. Based on the literature gathered, it could be concluded that pricing decisions made by a retailer will greatly impact on its business market share gain or lost and retailers in general are not aware of this.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Rajasekar *et al.* (2006:2) define research methodology as a systematic way to solve a problem scientifically or the procedures that researchers use to go about their work of describing, explaining and predicting phenomena. Wilson (2009:5) refers to methodology as a plan of action that informs and links the methods used to collect and analyse data to answer postulated research questions. Existing secondary data and literature review were used in analysing the research questions in order to obtain a detailed result of the relationship between price and market share in the Ngaka Modiri FMCG market.

3.2 RESEARCH DESIGN

According to Creswell (2009:3), research design is a plan and procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis. It is simply the plans for addressing the research objectives or problem and developing a framework to answer the research problem. Punch (2009:112) specified that research design situates the researcher in the empirical world and connect the research questions to data. This therefore shows that research design is a basic plan for a research project. The research design used in this study was mainly a quantitative approach.

Quantitative research essentially refers to the application of systematic steps of scientific research, while utilising quantitative properties in the study (Edmonds & Kennedy, 2013:20). In this approach, the occurrences of behaviour are counted, correct answers or errors are also counted and any other types of measures are recorded (Drew *et al.*, 2008:20). A quantitative study provides a chance for numerical interpretation of findings.

Within this design the parameters of an exploratory strategy was used. Marshall and Rossman (2011:69) consider exploratory research to be a study that involves investigating little understood phenomena by identifying or discovering important categories of meaning and to generate suggestions for further research. An exploratory research strategy was considered due to limited research done on the identified problem within the specified geographical area.

3.2.1 Population

Bickman and Rog (2009:77) refer to population as the large group to which a researcher wants to generalise his or her sample results. In other words, it is the total group that a researcher is interested in learning more about. The population of this study included the three largest grocery supermarkets in the Ngaka Modiri Molema district. Referring to Mokgele (2012/2013:3) Ngaka Modiri Molema district municipality is one of the four district municipalities in the North-West province of South Africa. It is a category C district, bordered by Ruth Mompati district in the west, Bojanala Platinum district in the east, Dr. Kenneth Kaunda district in the south and Botswana to the North. Bogapane (2012) indicates that it is home to over 800,000 inhabitants and divided into five local municipalities namely: Mafikeng, Ratlou, Ramotshere Moiloa, Ditsobotla and Tswaing. Statistics South Africa

This study's empirical focus was on Ditsobotla, Mafikeng and Ramotshere Moiloa. These focus municipalities represent almost 80% of the total population of Ngaka Modiri Molema district. The three municipalities were targeted since the researcher aimed at selecting only supermarket stores with a large client base, as reflected in the focus municipalities. The headquarters of each focus local municipality comprised the target area for selecting participating supermarkets. These towns included Lichtenburg, Mafikeng and Zeerust. These towns are also the headquarters of Ditsobotla, Mafikeng and Ramotshere Moiloa municipalities respectively. All selected supermarkets for this study experienced a sales turnover above 15,000 product units (regardless of brand or trademark) and client base above 10,000 monthly. Community Survey (Stat SACS) (2009:6-7) gives a detailed break down of the different Ngaka Modiri local municipalities in terms of population size and household distribution as shown in figure 3.1

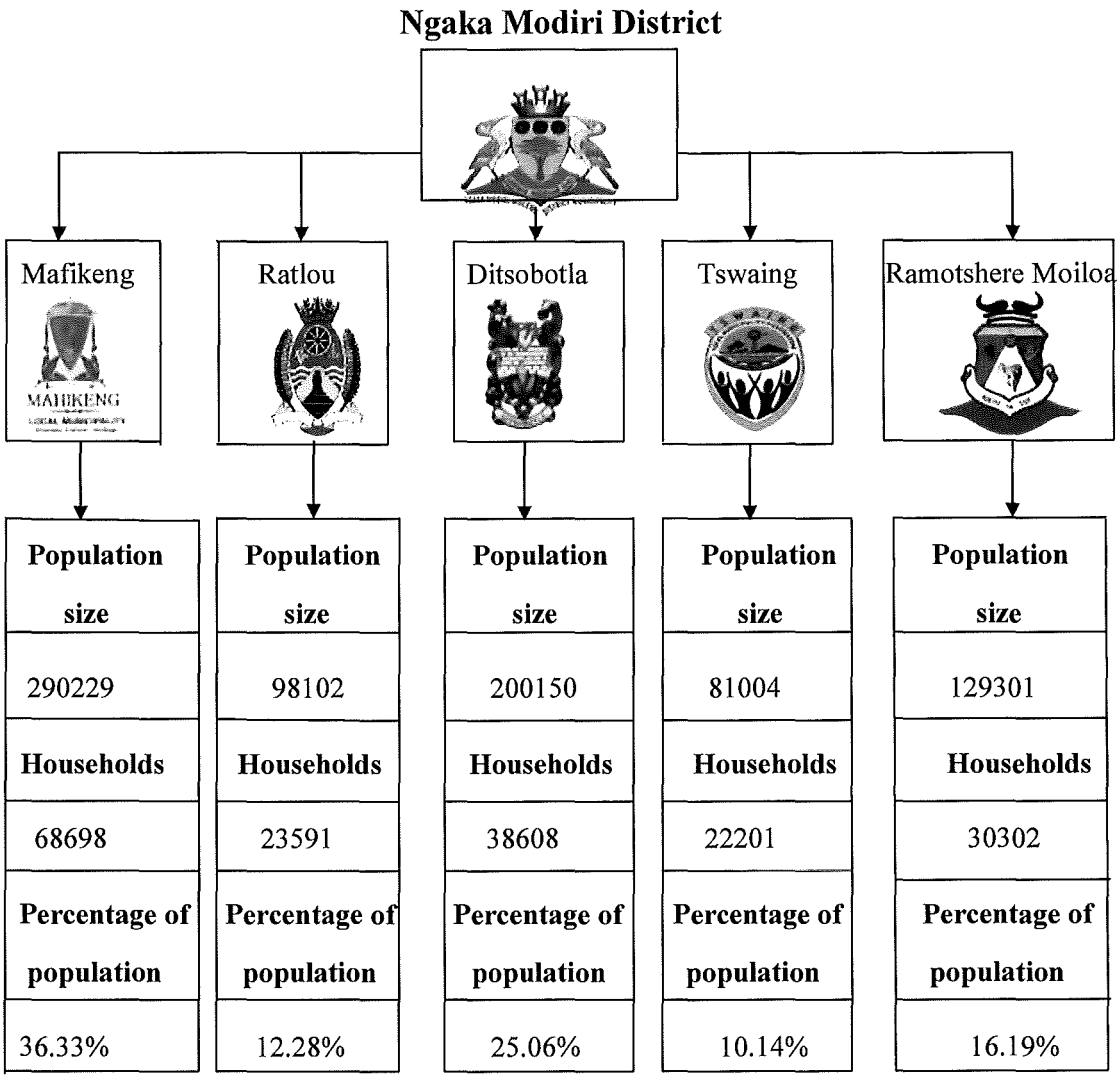


Figure 3.1 Ngaka Modiri municipalities

Source: Stat SA (2009)

3.2.2 Sampling

According to Smith *et al.* (2013:162), a sample is a subset of the whole population investigated by a researcher whose characteristics will be generalised to the entire population. Smith *et al.,* states sampling refers to the process of drawing a sample from a population. Researchers sample in order to study and understand the characteristics of the larger group. Researchers must carry out a sampling process because factors such as expense, time and accessibility frequently prevent researchers from gaining information from the whole population. No sampling strategy is guaranteed to be the best for a researcher to actually answer research questions (Maxwell, 2012:95). Despite this, data can be collected from the

subset of the total population in such a way that the knowledge gained is a true reflection of the total population (Cohen *et al.,* 2011:143). Therefore, the best approach is the one that fits into the research context and the research objectives (Maxwell, 2012). For the purpose of this study, the researcher made used of purposive sampling based on which supermarkets had access to reliable information for this study.

Cohen *et al.* (2011:156) refer to purposive sampling as a non-probability sampling method which involves purposive or deliberate selection of particular participants from a sample relevant to the study. This approach was employed in order to enable the researcher to select supermarkets with qualified reliable and applicable information. One single supermarket store was selected from each sampled supermarket brand in this study. Participating employees included the regional marketing manager and the branch manager of each supermarket brand. Thus, two employees participated from each supermarket brand. A total of six employees from various sampled supermarkets participated in the study. Figure 3.2 gives a visual representation of the sample.

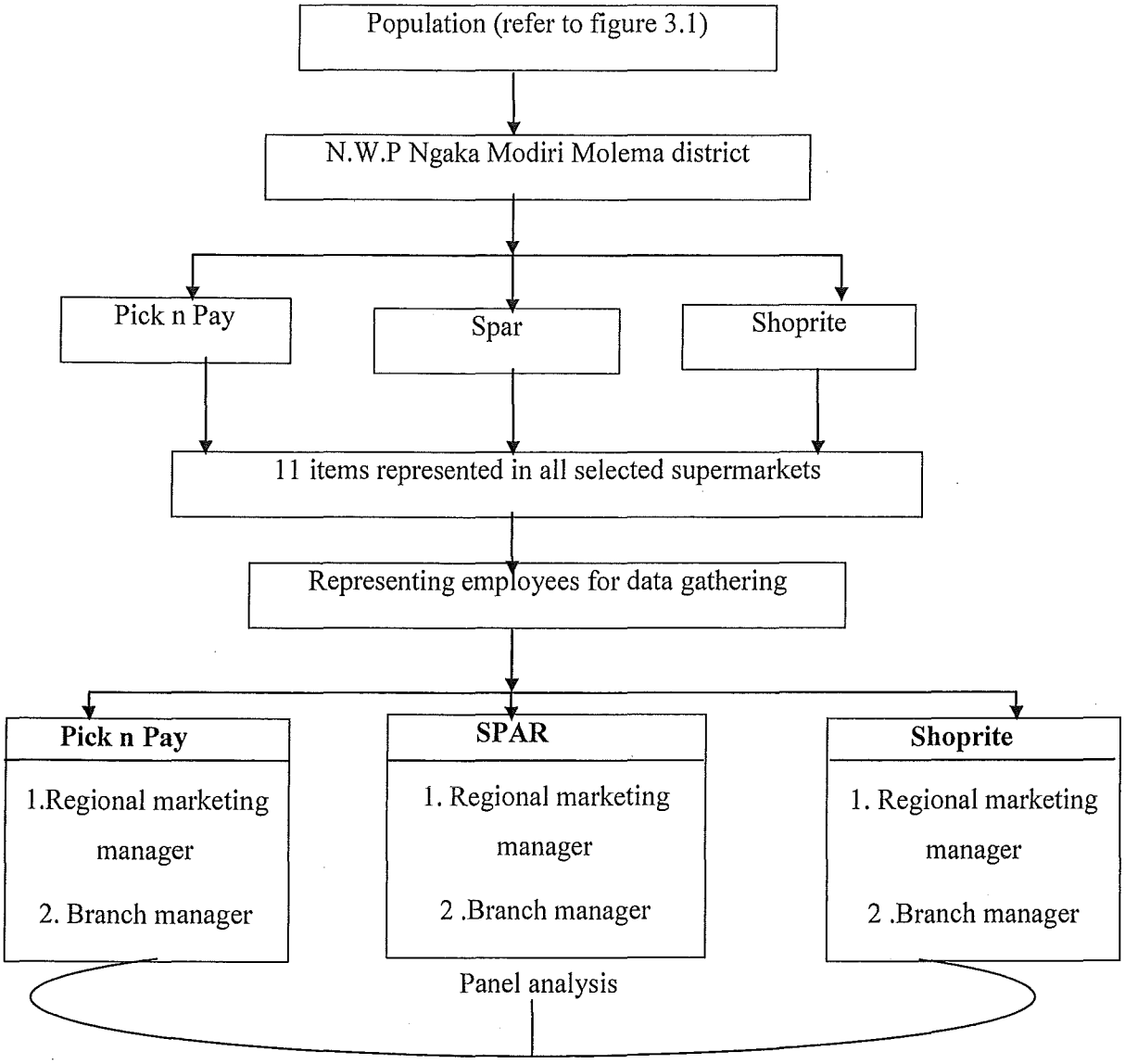


Figure 3.2 Sample representation

3.3 DATA SOURCING

Data for the empirical investigation was collected from secondary sources. The data gathering process involved obtaining the SPI and turnover rate (sales) for 11 selected items commonly available in the database of the selected supermarkets (Shoprite, Pick n Pay and Spar). In order to have access to valuable data, the researcher contacted the regional marketing manager of all participating supermarkets. This was because policy holds that permission must be granted from the head offices of these supermarkets in order to have access to information at any branch of a supermarket. Access to data was made possible through the help of a letter signed from the office of the head of department. The contents of the letter identified the researcher as a master's student in the faculty of Commerce and

Administration at the North-West University, Mafikeng Campus. The letter also bore the researcher's request. A copy of the letter was sent to all the regional marketing and sales managers of participating supermarkets. The regional marketing managers then gave permission to branch managers of selected participating stores to provide the researcher with specified information from their database. Information obtained was used to determine the relationship between price changes and the impacts on market share of the participating supermarket retailers. Figure 3.2 illustrates the data sourcing process.

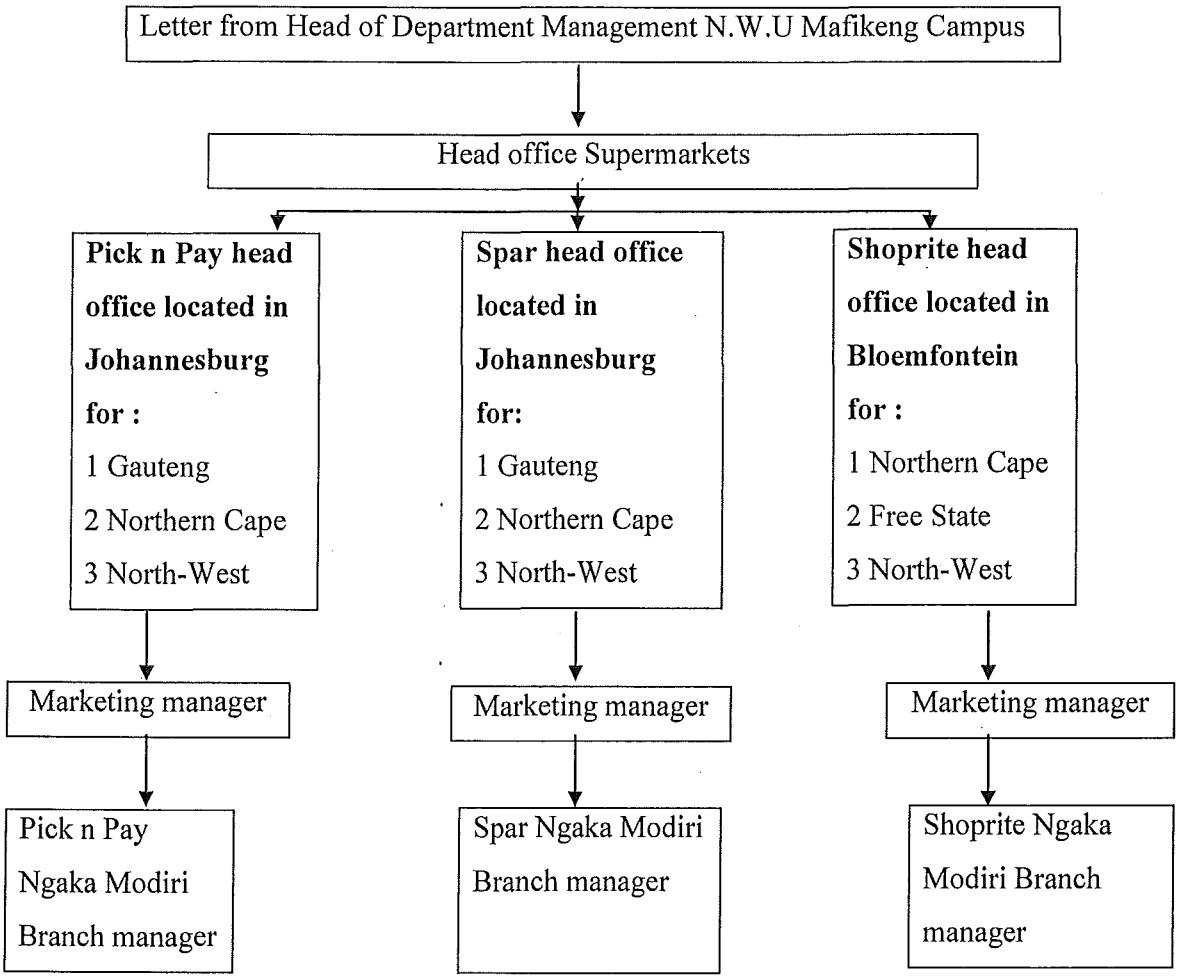


Figure 3.3 Summary of data sourcing

3.3.1 Data description

Data was collected from the point-of-sales application of the database of the three participating super market stores. Data collected from all 3 participating stores were done on a monthly basis from January 2011 to August 2013. The total number of observations collected per supermarket was 32, the number of months were from January 2011 to August

2013. Therefore 96 observations were collected in total, 32 from each of the 3 supermarkets. The variables from the data collected included SPI and the turnover rate (sales) for 11 selected items from the participating stores over a period of 2 years and 8 months (Appendix 4). Originally, the researcher presented a list of 20 items (Appendix 2B) for which information was to be collected from each participating store. After careful examination of the data collected, the researcher could only identify 11 items with complete information for the indicated time period from all cross sections (participating supermarkets). The SPI was used to monitor the continuous change in the pricing of items in supermarkets and also monitor the impact of these price changes on consumer purchase tendencies.

The data collected for all 11 items showed that the price for each item changed on an average more than twice a month. In order to get the monthly prices for a product, the researcher summarized the prices for each item and considered the average as the actual monthly price for products. Thus, the monthly average price for a particular item was used as the SPI for an item per month in this study. The monthly sales figures for selected items were then used as estimation for market share for each supermarket. The 11 items that were selected for testing the regression were as follows: White star maize meal (5kg), Tastic rice (2kg), Coke light (2litres), Lays potato chips (250g), Axe deodorant (250ml), Colgate triple action tooth paste (100ml), Stuyvesant cigarette (pack), Sasko bread (700g), Chicken braai cut pack (5kg), Golden apples (1kg) and Nutriday yogurt (6×100g). A summary of all the variables that were represented in the data are summarised in table 3.1.

Table 3.1 Summary of variables

Variable	**Definition**
Selling Price Index(SPI)	Monthly selling prices for 11 selected items were obtained from participating supermarkets.
Sales (MSV)	Monthly sales for each selected item were also obtained from supermarkets to represent market share.

3.4 MODEL SPECIFICATION

A model specification is a standard that lays requirement against other specifications by using a set-theoretic description of those specifications based on their structure as organised sets of criteria, those that are to be tested (requirements) and those that are not tested (recommendations). All specifications, formally or informally, create an abstraction of the things to which they apply in order to provide a context for stating requirements. This standard is considered one of its own standardisation targets and thus a subject of its own requirements (Whiteside *et al.,* 2008:9). The model specification adopted in this study was the POLS linear regression. According to Wooldridge (2006:25), the formula layout of the POLS regression model is as follows:

Least Square regression is denoted as $Y_{it} = \beta_0 + \beta_1 X_{it} + \varepsilon_{it}$ Formula (3.1)

Where:

Y = dependent variable the equation is trying to predict.

β_o= the intercept of the equation.

β_1 = the slope coefficient.

X = the independent variable that is used to predict the dependent variable.

ε = the error term or the regression residual variable.

Following from the indications mentioned, Wooldridge's specification from formula 3.1 was adjusted to fit the context of this study as follows:

The model specification (relationship between the dependent - market share, and the independent variable - pricing) of this study was then equated as:

$MSV_{it} = \beta_0 + \beta_1 P_{it} + \varepsilon_{it}$ Formula (3.2)

With reference to formula (3.2) indications represented are as follows:

Market Share Value (*MSV)*= the dependent variable that the model is trying to predict.

β_o= the intercept of the equation.

β_1 = the slope coefficient of the price variable.

Price (P) = the independent variable used to predict the dependent variable.

ε = the error term or the regression residual variable. It represented all other variables such as quality and advertising that could have an effect on the market share other than the independent variable (P).

i = all the cross section (supermarkets) that participated in the study.

t = the time period under study (January 2011 to August 2013).

Formula 3.2 is a variation of the original model (formula 3.1). The objective of this study was to determine relationships between the dependent and independent variables. Based on this, POLS seem best suited in determining the mentioned relationships.

3.5 ANALYTICAL TECHNIQUE

The analytical technique used in this study was based on the panel data analysis. The researcher used a panel of the three largest fast consumer goods retailers in the Ngaka Modiri Molema district to establish the relationship between their pricing and its effect on market share gain or loss. A panel data refers to pooling of observations from a cross-section of households, countries or business organisations and following them over several time periods (Baltagi, 2008:1). In other words, panel data are repeated observations over time for the same set of cross sectional units (lee, 2006:12). In a panel data equation as in formula (3.2), the cross-section variables are denoted as (i) and the time periods as (t).

A panel data analysis was best suited for this study because it takes an organisation's specific heterogeneity into consideration. A second reason is that due to the repeated cross section of observations, panel data are better suited to studying the dynamics of change. Lastly, panel data analyses are very effective in evaluating strategies or policies in organisations. It was thus clear that the researcher could effectively achieve the objective of the study by employing a panel data analysis. This objective was to investigate the degree to which constant changes in pricing decisions by the three largest FMCG retailers in the Ngaka Modiri district impact on their market share gain or share loss. In order to run the linear regression, three panel data tests were run. These tests involve the panel unit root tests,

3.5.1.2 Im, Pesaran and Shin test (IPS)

Baltagi (2009:57) states the IPS test suggests an alternative testing route based on averaging the unit root ADF test statistics for each individual cross-section. Baltagi (2008:278) further indicated that this means the null hypothesis assumes that each series in the panel has a unit root denoted as $H_0 : \rho_i = 0$ for all i while the alternative hypothesis permits some of the individual series to have a unit root denoted as $H_1 : \rho_i < 0$ for i = 1,2,..,N_1 and $\rho_i = 0$ for i = $N_1 + 1,...,N$. The IPS test was necessary because it could provide simulated critical values for the different cross-sections N, and series length T.

3.5.1.3 Combining ρ- value (Fisher Chi-square) test

Asteriou and Hall (2011:445) indicate that the Fisher test was introduced by Maddala and Wu in 1999 in their attempt to improve the deficiencies in other panel unit root tests. Baltagi (2005:244) indicates that the Fisher test takes the following form:

$P = -2\sum_{i=1}^{N} ln\, P_i$ Formula (3.4)

In the equation (3.4), P_i is the probability limit value from regular ADF unit-root tests for each cross section i. Since $-2\ln\rho_i$ has a x^2 distribution with degrees of freedom; the ρ statistics will follow a x^2 distribution with $2N$ degrees of freedom as $T_i \rightarrow \infty$finite N. Baltagi (2005:245) argues that the combining ρ- value test have many advantages in testing unit root for panel data when compared to other panel unit root tests. Baltagi further mentions these advantages as follows: the cross-sectional dimension, N, can either be finite or infinite, each grouping can have different types of non-stochastic and stochastic elements. The time series dimension, T, can be different for each i and finally, the alternative hypothesis can tolerate some groups to have unit roots whereas others may not. Due to the superiority of this test over other panel data unit root tests, it was important that this test was run.

3.5.2 Poolability test

Poolability testing involves the selection of the most appropriate panel data model for a panel study. According to Gujarati and Porter (2009:594) and Asteriou and Hall (2011:417-419), there are the three main models for panel data poolability test. These panel data models include: the common constant or pooled model, the fixed effects model and the random effect model. Gujarati and Porter (2009:594) indicate that the pooled model assumes that the regression coefficients are the same for all cross sections. Baltagi (2008:14 &17) states that

similar characteristics in the behavioural relationship between price and market for three sampled supermarkets δ (Pick n Pay, Shoprite and Spar). On the other hand, the alternative hypotheses, $H_1 = \delta 1 \neq \delta 2 \neq \delta 3 \neq = 0$ assumed that, each sampled supermarket, δ, had its own specific or unique characteristics with regards to its relationship between price and market share. After these assumptions were made, The F test and the Chi-square test were used to determine which model tested positive for the study.

After the poolability test, the model estimation was done. The model estimation involved estimating the model specification of the study using the considered panel data model from the poolability test. The model assumption was that a decrease or an increase in the price of a product by Ngaka Modiri Molema retailers will lead to market share gain or loss respectively. Thus, the model assumption represented in formula (3.1) was individually estimated for each tested item for every sampled supermarket through a fixed effect model.

3.5.3 Diagnostic tests

Brooks (2009: 43) maintains that diagnostic tests are required in a panel analysis because they show that estimation techniques like the POLS linear regression may have ignored a series of desirable elements. Brooks also says that the diagnostic test also tries to confirm if coefficient estimates from regressions are justifiable or fairly conducted. In this study, the diagnostic test was conducted to ensure reliability of results from linear regression. The diagnostic tests conducted in this study included the normality, serial correlation and heteroscedasticity tests. The estimation results are based on the assumption that the residuals are normally distributed, there is no serial correlation and heteroscedasticity in the residuals. Violation of these assumptions invalidates the obtained results. This tests will be discussed in the following sub sections.

3.5.3.1 Normality test

The Bera-Jargue (J-B) test was used in testing for normality in this study. The J-B test uses the property of normally distributed random variables so that the entire distribution is characterised by the first order two moments- the mean and variance. The third and fourth moments of the distribution are known as its skewness and kurtosis respectively (Brooks, 2009:57). Brooks further mentions that the skewness measures the extent to which the distribution is not symmetric regarding its mean value and kurtosis measures how much the estimates of the distribution are. The assumption in this test is that the null hypothesis is

normally distributed against the alternative hypothesis and that other distributions are present. Referring to Cameron (2005:238), the J-B test combines the skewness and the kurtosis according to the following formula:

$$\text{J-B} = n[(S^2/6) + \{\left(K - \frac{3)^2}{24}\right\}\} \quad \text{Formula (3.6)}$$

Cameron elaborated on the equation (3.6) in which n is the sample size, S the skewness and K the kurtosis. If skewness slopes to the right or the left, then the distribution is not normally distributed. Kurtosis measures how steeply values are rising to the most likely value in the distribution curve. According to Gujarati (2003:148) under the J-B test, if the computed ρ *value* is sufficiently low, the alternative hypothesis should be accepted that residuals are not normally distributed. On the other hand, if ρ *values* are reasonably high, the normality assumption is not rejected. Thus the null hypothesis is accepted that residuals are normally distributed.

3.5.3.2 Test for serial correlation

Serial correlation implies that the value of the error term from one time period depends in some systematic way on the value of the error term in another time period (Studenmund, 2011:304). Ignoring a serial correlation when present, will present consistent but inefficient estimates of the regression coefficients and biased standard errors (Baltagi, 2008:92). The Correllogram Q-Statistics test was used in testing for serial correlation in this study. Referring to Nopiah *et al.* (2010) the Correllogram Q-Statistic test, aim at sensing the presence of serial correlation for a specified order in the autocorrelation tested lags. Gujarati and Porter (2009:434) highlighted out that the advantage of the Correllogram Q-Statistic test is that it detects the presence of higher order serial correlation.

In this study two hypotheses were developed in testing for serial correlation. H_0: $\rho = 0$ and $H_1 : \rho \neq 0$. The hypothesis H_0 was to test that there was no serial correlation while the alternative, H_1, on the other hand assumed that there was serial correlation. Panels were tested for serial correlation because econometrics generally established the OLS to be inconsistent in the presence of lagged dependent variables and serially correlated errors. Even though Wooldridge (2006:415) holds that most of such assumptions are false, it was necessary to test for serial correlation to prove the precision of coefficient estimates.

3.5.3.3 Heteroscedasticity

Baltagi (2005:99) states the heteroscedasticity test assumes that the regression disturbance or disturbances are homoskedastic with the same variance across time and individuals. Wooldridge (2006:278) further elaborates that the test for heteroscedasticity investigates whether or not heterogeneity exists among estimates. In this study the White's cross section test for heteroscedasticity was used. The White test detects heteroscedasticity by running a regression with the squared residuals as the dependent variable. To this effect the right-hand side of the secondary equation includes all the original independent variables or variable, the squares of all the original independent variables or variable and the cross products of all the original independent variables or variable with each other (Studenmund, 2011:350).

Referring to Asteriou (2011:127) the white's cross section test was employed in this study because it does not assume any determination of heteroscedasticity. Thus, two hypotheses were formulated for testing heteroscedasticity. These hypotheses include: H_0:$\sigma_i^2 = \sigma$ which is the null hypothesis assuming homoscedastic errors and H_1 : *not equal for all* i, is the alternative hypothesis assuming heteroscedastic errors. Born and Breitung (2012:16) maintains that the disadvantage with most test statistics for heteroscedasticity is that they are not robust against time independent heteroscedasticity. To overcome such an occurrence, an unbiased estimator of serial correlation coefficients were constructed in order to apply backward and forward transformations by assuming a 16 difference, such that series can agree with the null hypothesis.

3.5.4 Forecasting of model estimation

It was important that forecasting be done in order to be aware of the possible future happenings with respect to the identified problem of this study. Forecasting was done for each model estimation linear regression result. Issler and Lima (2008:11) point out that the most important element in forecasting is that data to be used for forecasting must be stationary in order to ensure a well-behaved forecast combination. Baltagi (2006:21) argue that forecasting outcomes are always faulty with non-stationary data. Issler and Lima (2008:7) mention that there has been limited attention with respect to forecasting on panel data studies. This is because econometricians consider forecasting as a time-series experiment and forecasting is easily applicable for studies with few samples like the case of time-series studies. As samples get larger, forecasting also gets hopelessly large and large samples are

mostly the case with panel data studies. Referring to Kunst (2012:5), forecasting was necessary for this study since it may assist Ngaka Modiri Molema FMCG retailers in:

- predicting the future,
- future pricing decision making, and
- evaluation of pricing policies.

All the indicated econometric tests were effectively run on the Eviews software. All the rules as required or as indicated by each test was effectively applied in the data analysis process.

3.6 ETHICAL CONSIDERATIONS

Neuman (2003:116-118) indicates that the researcher has a moral and professional obligation to be ethical, even if participants are unaware of or unconcerned about ethics. Briggs and Coleman (2007:245) argues that for both ethical and objectivity purposes, it is vital to ensure that participants are absolutely clear about their rights to an explanation of the aims, procedures purposes, consequences of the research, publication possibilities and the right to decline to take part, or to withdraw at any stage. The subjects need to be competent to make these decisions, act voluntarily and make their decisions based on the fullest possible information. Ethical considerations according to Trochim (2006), were grouped into three main ethical themes. These three themes include gaining access, validity and reliability.

3.6.1 Gaining access

The researcher was issued a letter of permission by the Department of Management, North-West University, Mafikeng Campus to request access to selected super markets. With this letter, the researcher approached the participants in the study to seek information. All participants agreed to sign the consent form and also agreed to take part in the study. According to Creswell and Clarke (2007:113-114), researchers require permission to collect data from individuals and sites. This permission can be gained at three levels: from individuals who are in charge of sites, people providing the data and their representatives. Whether a study is qualitative or quantitative, permission from individuals in charge is necessary.

3.6.2 Validity

Maxwell (2012, 134 &137) explains validity as describing and interpreting what a researcher found in a research study. The findings should be in line with the indications provided by the

participants, with nothing added or removed. Therefore, one way of establishing validity in any research study is to take the findings back to the subjects' verification. In this study findings were taken back to the participants to verify if what was captured from data base was in line with indications from the findings. Truthfulness, fairness and honesty in this study was established through the validation of data by participants themselves. Findings were also validated by reviewing literature on the subject. As Conway and Powell (2010:60) point, validity is an important key to research because research is considered valid only when conclusions are true and dependable.

3.6.3 Reliability

Gratton and Jones (2010:92) explain that reliability generally refers to the degree of consistency of a result that is obtained. Babbie (2010:150) also defines it as a matter of whether a particular technique yields the same outcome when applied repeatedly to the same sample. Neuman (2003:184) adds to his definition of reliability the issue of dependability. Dependability of data was established by the researcher by ensuring that the process by which data was collected was very accurate.

3.7 CONCLUSION

In this chapter, the research design, population, sampling, data sourcing, data description and model specification were discussed. The chapter also described the analytical technique used in this study. Ethical considerations were also discussed. The next chapter deals with the presentation and interpretation of data for the test regressions in this study.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

This chapter presents the data analysis and interpretation of results from the empirical findings. Alexander (2012:1) defines data analysis as systematically collecting, transforming and analysing of data in order to present meaningful conclusions. Interpretation means relating the results and findings of a study to an existing theoretical framework or model and showing whether these results are supported or not by existing theories. It also entails the mentioning of rival explanations or interpretation of the empirical data and showing what levels of support the data provide for the preferred interpretation (Mouton, 2002:109).

4.2 DATA ANALYSIS PROCESS

Myers *et al.* (2010:15) state that data analysis consists of stages. These stages include the exploratory phase where measures like means and medians are calculated and an inferential phase where parameters are estimated and hypotheses tested. Data analysis was done in four stages for all the panel tests in this study (unit root or stationarity test, poolability testing, model estimation testing and the diagnostic test). These stages include:

- systematic arrangement of the dependent and the independent variables for each year in a horizontal for each tested item for all supermarkets (see appendix 5),
- pooling (importing) data as panels into the e-views software,
- estimating the regressions of the dependent and the independent variables, and
- testing hypotheses to determine the outcomes of each panel test.

Tests were run in a systematic order as follows: the unit root tests, poolability and the model estimation tests, normality, serial correlation and heteroscedasticity tests. The model estimation was the primary test since its outcomes determined if the problem statement of this study held grounds or had any implications. Regression estimates from the model estimation were also used to test for normality, serial correlation and heteroscedasticity. It should be noted that in the analysis process, sampled cross-sections (supermarkets) and 11 tested items were given individual codes to be able to identify variables during the analysis. Table 4.1 and

4.2 are summary tables indicating the codes used for each individual cross section and item respectively.

Table 4.1 Summary of cross section codes

Supermarket brand	Code
Pick n Pay	PP
Spar	SP
Shoprite	SH

Table 4.2 Summary of item codes

Items	Price code	Quantity code
White star (5 kg)	P1	Q1
Tastic rice (2kg)	P2	Q2
Coke (2 litres)	P3	Q3
Lays potato chips (125g)	P4	Q4
Dark temptation axe spray (100ml)	P5	Q5
Sasko bread (700g)	P6	Q6
Chicken braai cuts (2kg)	P7	Q7
Golden delicious apples (1kg)	P8	Q8
Nutriday yogurt	P9	Q9
Colgate triple action (100ml)	P10	Q10
Stuyvesant cigarettes (pack)	P11	Q11

4.3 INTERPRETATION OF RESULTS

Results were interpreted according to the outcomes from regressions. Results were accurately interpreted without any bias to avoid any possibility of fallacy in the analysis. All the panel data tests as indicated were done strictly and all procedures followed. The p value is the most important element from regression results. This is because it determines the probability of whether the null or the alternative hypothesis is rejected or not. If the p value is > 0.05, the null hypothesis is not rejected. Likewise, if the p value is < 0.05, the null hypothesis is to be rejected and the alternative hypothesis accepted. However, the mentioned rule is different for both the normality and serial correlation test. For normality and serial correlation, the aim is

to have a p value that is greater than 0.05 in order to conclude that regression residuals are normally distributed and not serially correlated. Alternatively, if results are < 0.05, then regressions are not normally distributed and there is the presence of serial correlation. Results from each test are all presented in this chapter. It should also be noted that results were rounded up to three decimals. Table 4.3 indicates focused elements from regression outcomes represented in the interpretation of results.

Table 4.3 Summary of key elements and their measures from regression analysis

Element	Measurement
Coefficients (C)	It explained the degree of impact that the regressor or independent variable (price) had on the dependent variable (market share) and the degree to which the dependent variable is influence by factors other than price.
p value	It measured the probability level of regressions to determine if either the null or alternative hypothesis is correct.
R square (R^2)	The R square indicated the percentage level of which the dependent variable was explained by the independent variable.
(*) / (**) / (***)	It denotes significance at 10%, 5% and 1% respectively.

4.3.1 Interpretation of the unit root test

As earlier mentioned, all the panel data unit root tests LLC, IPS and combining p value were performed on data to determine the degree of stationarity in the tested data. Unit tests were performed separately for each data category. Thus, unit tests were done for all quantity data (Q1 to Q11) across all cross sections while another unit test was done for all price data (P1 to P11) across all cross sections. Results from the unit test are indicated in table 4.4.

Table 4.4 Unit root tests results for price data

Test	Coefficients	*p* value
Levin, Lin,Chu	-2.171	0.015**
Im, Pesaran & Shin	-5.468	0.000***
ADF-Fisher Chi-square	148.373	0.000***
PP- Fisher Chi-square	107.981	0.000***

Table 4.4 reflect that the price data for all sampled supermarkets passed the various unit root tests at a 1% level of significance. This suggests that since the *p-values* for all the tests are less than 0.05, the null hypothesis that price data is non-stationary is rejected. (see appendix 3A for detailed results).

Table 4.5 Unit root tests result for sales data

Test	Coefficients	*p* value
Levin, lin,Chu	-3.101	0.001***
Im, Pesaran & Shin	-4.871	0.000***
ADF-Fisher Chi-square	137.863	0.000***
PP- Fisher Chi-square	75.907	0.189*

The *p* value results for the various unit root tests for quantity data confirmed positive at a 1% level of significance. Only the PP- Fisher Chi- square unit root test showed a result of 18.9 % level of significance. The results indicated that LLC, IPS and ADF for quantity data (Q1 to Q11) are stationary for all individual cross-sections. As earlier mentioned, the null hypothesis is to be rejected for LLC, IPS and ADF unit root tests. Alternatively, the null hypothesis is to be accepted for the PP-Fisher Chi-square. However, the LLC unit root test assumes a common presence of stationarity in data across all cross-sections while the IPS, ADF and PP Chi-squares unit root test assumes that there is stationarity across individual cross sections. Thus, it can be derived that the results from the PP unit root test has no major implications on results since two out of the three unit tests accountable for indicating the presence of stationarity on each separate cross section (IPS, ADF and PP), have a 1% level of significance (see appendix 3A for detailed results).

4.3.2 Poolability test and model estimation results

In this study, the pooled and the fixed effect models were tested. To decide between the pooled and the fixed effect model, the *F test* and Chi-square test were performed. After performing the relevant poolability tests, the fixed effect model which assumes specific characteristics or uniqueness in the relationship between price (independent variable) and market share (dependent variable) for each individual supermarket was considered against the pooled model. Such specific uniqueness includes the pricing strategy, pricing ability of price setters and the target market of a supermarket brand. All 11 items tested positive for the fixed effects model with a p value < 0.05 while the pooled model which assumes that all cross-sections have a common constant (homogeneous) for all tested items were weaker compared to the fixed effect model. Table 4.6 presents a summary of the poolability test. (See Appendix 3B for detailed results for the poolability test).

Table 4.6 Results for poolability testing

Input/output	Fixed effect estimates	Q-Statistic	p value	Conclusion
P1 & Q1	F- Statistics	2031.774	0.000***	*H_o was rejected*
	Chi-square	365.799	0.000***	
P2 & Q2	F- Statistics	937.920	0.000***	*H_o was rejected*
	Chi-square	294.039	0.000***	
P3 & Q3	F- Statistics	357176.083	0.000***	*H_o was rejected*
	Chi- square	859.917	0.000***	
P4 & Q4	F-Statistics	181.957	0.000***	*H_o was rejected*
	Chi-square	153.649	0.000***	
P5 & Q5	F- Statistics	31.845	0.000***	*H_o was rejected*
	Chi-square	50.503	0.000***	
P6 & Q6	F- Statistics	19987.053	0.000***	*H_o was rejected*
	Chi-square	583.343755	0.000***	
P7 & Q7	F-Statistics	105436.831	0.000***	*H_o was rejected*
	Chi- square	742.816	0.000***	
P8 & Q8	F-Statistics	5858.161	0.000***	*H_o was rejected*
	Chi-square	466.058	0.000***	
P9 & Q9	F-Statistics	19491.564	0.000***	*H_o was rejected*
	Chi-square	580.939	0.000***	

P10 & Q10	F-Statistics	3264.471	0.000***	*H_o was rejected*
	Chi-square	410.516	0.000***	
P11 & Q11	F-Statistics	1933.121	0.000***	*H_o was rejected*
	Chi-square	361.129	0.000***	

Poolability test reflected that, the null hypothesis that the data must be estimated by pooled model is rejected against the alternative that it must not. After the poolability test was done, the model estimation was performed on all 11 studied items. The model estimation had to establish the level of truth of the problem statement with regard to the model specification and the selected panel data model. Despite the fact that the fixed effect model was the considered model in this study, model estimation was conducted for both fixed and pooled model. The aim was to perfectly establish that the fixed effect model was the most appropriate model to be considered. The R squared values between the pooled and the fixed effect models were compared. R squares indicate a lowest value of 0.823 and a highest value of 0.999 for the fixed effect model. The pooled model had a lowest value of -0.004 and a maximum of 0.691. Thus, the fixed effect model was confirmed to be the most robust and representative model specification. Results showed that all independent variables (price) are significant in explaining the dependent variables (market share) for all 11 tested items. Table 4.7 presents a summary of the considered model estimation results (fixed effects) for all 11 items tested for each individual supermarket. See Appendix 3C for detailed results of the model estimation test.

Table 4.7 Summary of the model estimation results

Input/output	Supermarket	Coefficient	*p* values	R square
P1& Q1	Pick n Pay	-22.390	0.000***	
	Spar	-15.824	0.000***	0.980
	Shoprite	-27.194	0.000***	
P2 & Q2	Pick n Pay	-20.928	0.053**	
	Spar	-32.208	0.046**	0.954
	Shoprite	-43.587	0.000***	
P3 & Q3	Pick n Pay	-117.118	0.000***	
	Spar	-48.438	0.000***	0.999
	Shoprite	-72.176	0.000***	

P4 & Q4	Pick n Pay	-34.208	0.000***	
	Spar	-29.776	0.000***	0.841
	Shoprite	-18.746	0.000***	
P5 & Q5	Pick n Pay	-2.237	0.000***	
	Spar	-2.089	0.003***	0.823
	Shoprite	-4.112	0.000***	
P6 & Q6	Pick n Pay	-68.204	0.000***	
	Spar	-43.509	0.000***	0.998
	Shoprite	-36.402	0.000***	
P7 & Q7	Pick n Pay	-32.075	0.002***	
	Spar	-44.993	0.003***	0.999
	Shoprite	-65.857	0.000***	
P8 & Q8	Pick n Pay	-46.967	0.000***	
	Spar	-26.796	0.000***	0.995
	Shoprite	-17.739	0.000***	
P9 & Q9	Pick n Pay	-56.434	0.000***	
	Spar	-21.872	0.000***	0.998
	Shoprite	-50.339	0.000***	
P10 & Q10	Pick n Pay	-79.515	0.000***	
	Spar	-47.507	0.017*	0.986
	Shoprite	-85.588	0.000***	
P11 & Q11	Pick n Pay	-9.261	0.051**	
	Spar	-16.004	0.000***	0.992
	Shoprite	-15.478	0.000***	

Table 4.7 also elaborates on the regression analysis for model estimation. Each element in the table explains different indications as follows:

- The input and output variables represent the price and quantity for individual items respectively.
- The coefficients indicate the level of market share change for individual supermarkets if there is either an increase or decrease of R1 for a particular item.

- The p values as earlier indicated represents the level of probability of whether the null hypothesis or alternative hypothesis is true.
- The adjusted R squares indicate the percentage level at which the dependent variable was explained by the independent variable.

To further elaborate on the interpretation of table 4.7, if taking into consideration input and output variable (P1 & Q1) for instance, the coefficient indicates that a R1 increase in the price for White Star maize meal (5kg) by any of the sampled supermarkets against competitors, sales will decrease by 22, 15 and 27 units for Pick n Pay, Spar and Shoprite respectively. Likewise a R1 decrease in the price for White Star maize meal (5kg) by any of the sampled supermarkets against competitors will increase sales by 22, 16 and 27 units for Pick n Pay, Spar and Shoprite respectively.

The p values of Pick n Pay (0.000), Spar (0.000) and Shoprite (0.000) indicates the level of significance of the independent variable (price) in explaining the dependent variable (market share) for sampled supermarkets for White Star maize meal (5 kg) is 0% for Pick n Pay, Spar and Shoprite. The adjusted R square of 0.980 indicates that 98% of the variation in market share for sampled supermarkets for White Star maize meal (5kg) is explained by price. This means that only 2% of the variations in market share for sampled supermarkets are explained by other determinants excluded from the analysis such as quality and advertising. The same explanations hold for all other tested items in table 4.7.

4.3.3 Interpretation of normality test results

The normality test was one of the diagnostic tests conducted. The normality test was aimed at measuring if regression residuals are normally distributed. The null hypothesis proves that the residuals are normally distributed while the alternative hypothesis holds that residuals are not normally distributed. For the null hypothesis to be accepted, the p value has to be ≥ 0.05. If the p value is < 0.05, then the null hypothesis is rejected and the alternative hypothesis accepted. The normality test was done between the dependent variable (turn-over) and the independent variable (price) for each individual item (11 items) per supermarket. See Appendix 3D for detailed result of the normality test for all sampled supermarkets. Table 4.8, 4.9 and 4.10 reflect the outcome of the normality tests for individual supermarket.

Table 4.8 Normality test results for Pick n Pay supermarket

Input/ output	J-B value	*p* value	Conclusion
P1 & Q1	1.676	0.433	*Errors are normally distributed*
P2 & Q2	5.925	0.052	*Errors are normally distributed*
P3 & Q3	4.894	0.087	*Errors are normally distributed*
P4 & Q4	1.108	0.575	*Errors are normally distributed*
P5 & Q5	1.239	0.538	*Errors are normally distributed*
P6 & Q6	2.87	0.238	*Errors are normally distributed*
P7 & Q7	25.217	0.000	*Errors are not normally distributed*
P8 & Q8	0.363	0.834	*Errors are normally distributed*
P9 & Q9	0.399	0.819	*Errors are normally distributed*
P10 & Q10	1.075	0.584	*Errors are normally distributed*
P11 & Q11	2.839	0.238	*Errors are normally distributed*

Table 4.8 indicate the results of the normality test for Pick n Pay supermarket. As reflected in table 4.8, residuals for 10 items were normally distributed. Residuals for chicken braai cuts (P7& Q7) were not normally distributed, indicating a probability value of 0.000. The researcher critically examined the possible reasons why the probability that residual for chicken braai cuts was far from being normally distributed. The researcher found that Pick n Pay was very price competitive for chicken braai cuts during the sampled period of this study. Since, current to previous price changes for chicken braai cuts were not of significance, consumers were seen not to be sensitive towards fluctuations in the price for chicken braai cuts. The researcher saw such behaviour as the possible reason why residuals for chicken braai cuts at the Pick n Pay supermarket were not normally distributed.

Table 4.9 Normality test results for Spar supermarket

Input/ output	J-B value	*p* value	Conclusion
P1 & Q1	1.421	0.491	*Errors are normally distributed*
P2 & Q2	2.921	0.233	*Errors are normally distributed*
P3 & Q3	2.711	0.258	*Errors are normally distributed*
P4 & Q4	7.568	0.023	*Errors are not normally distributed*
P5 & Q5	0.297	0.862	*Errors are normally distributed*
P6 & Q6	3.253	0.197	*Errors are normally distributed*
P7 & Q7	3.158	0.206	*Errors are normally distributed*
P8 & Q8	6.215	0.045(0.05)	*Errors were assumed to be normally distributed*
P9 & Q9	1.200	0.549	*Errors are normally distributed*
P10 & Q10	2.079	0.353	*Errors are normally distributed*
P11 & Q11	2.839	0.242	*Errors are normally distributed*

As reflected in table 4.9, residuals for 9 items were normally distributed. Golden delicious apples, (P8 & Q8) was assumed to be normally distributed based on a *p value* result of 0.045, converted to 0.05. This is because the rule for the diagnostic test holds that the null hypothesis should be considered if p-value is ≥ 0.05. Thus, it can be concluded that errors were normally distributed for 10 items for the Spar supermarket. However, residuals for Lays potato chips (P4 & Q4) were not normally distributed with a *p value* < 0.05.

Table 4.10 Normality test results for Shoprite supermarket

Input/ output	J-B value	*p* value	Conclusion
P1 & Q1	5.126	0.077	*Errors are normally distributed*
P2 & Q2	1.093	0.579	*Errors are normally distributed*
P3 & Q3	0.740	0.691	*Errors are normally distributed*
P4 & Q4	0.752	0.687	*Errors are normally distributed*
P5 & Q5	1.347	0.510	*Errors are normally distributed*
P6 & Q6	1.749	0.417	*Errors are normally distributed*
P7 & Q7	4.409	0.110	*Errors are normally distributed*
P8 & Q8	2.094	0.351	*Errors are normally distributed*
P9 & Q9	0.769	0.681	*Errors are normally distributed*

P10 & Q10	3.535	0.171	*Errors are normally distributed*
P11 & Q11	1.854	0.396	*Errors are normally distributed*

As reflected in table 4.10, residuals for all 11 items were normally distributed with a *p value* > 0.05.

4.3.4 Results and interpretation for serial correlation test

A serial correlation test was done between the residuals for the dependent variable and the residuals for the independent variable for each individual item (11 items) per supermarket. For the serial correlation test, the null hypothesis holds that residuals are not serially correlated. On the other hand, the alternative hypothesis confirms that residuals are serially correlated. Just like the normality test, in order not to reject the null hypothesis, the *p* value has to be ≥ 0.05. If the *p* value is < 0.05, then the null hypothesis is to be rejected. It should be noted that the test for serial correlation using the Correllogram Q-Statistics usually involves more than one lag. In this study serial correlation was estimated for first lags. The serial correlation test was estimated at first difference of analysed item data. See Appendix 3D for detailed serial correlation results. Tables 4.11,4.12 and 4.13 reflect the outcome of the serial correlation test for individual items for Pick n Pay, Spar and Shoprite supermarkets respectively.

Table 4.11 Serial correlation results for Pick n Pay supermarket

Input & output	***p* value for lag 1**	***p* value for lag 2**	***p* value for lag 3**	***p* value for lag 4**	***p* value for lag 5**	**Conclusion**
P1 & Q1	0.419	0.336	0.282	0.431	0.428	*No serial correlation detected*
P2 & Q2	0.091	0.201	0.360	0.155	0.140	*No serial correlation detected*
P3 & Q3	0.242	0.217	0.108	0.192	0.288	*No serial correlation detected*
P4 & Q4	0.113	0.283	0.452	0.304	0.414	*No serial correlation detected*
P5 & Q5	0.055	0.116	0.199	0.325	0.294	*No serial correlation detected*
P6 & Q6	0.972	0.684	0.342	0.489	0.520	*No serial correlation detected*
P7 & Q7	0.688	0.808	0.934	0.978	0.993	*No serial correlation detected*
P8 & Q8	0.226	0.295	0.444	0.611	0.701	*No serial correlation detected*
P9 & Q9	0.939	0.929	0.984	0.623	0.717	*No serial correlation detected*
P10 & Q10	0.058	0.081	0.063	0.120	0.059	*No serial correlation detected*
P11 & Q11	0.401	0.697	0.853	0.882	0.877	*No serial correlation detected*

Results reflected in table 4.11 indicate that there is no serial correlation in the regression results for all 11 items for the Pick n Pay supermarket.

Table 4.12 Serial correlation results for Spar supermarket

Input & output	*p* value for lag 1	*p* value for lag 2	*p* value for lag 3	*p* value for lag 4	*p* value for lag 5	Conclusion
P1 & Q1	0.407	0.472	0.677	0.798	0.783	*No serial correlation detected*
P2 & Q2	0.412	0.611	0.739	0.820	0.669	*No serial correlation detected*
P3 & Q3	0.478	0.182	0.297	0.358	0.486	*No serial correlation detected*
P4 & Q4	0.546	0.661	0.647	0.738	0.818	*No serial correlation detected*
P5 & Q5	0.731	0.905	0.968	0.751	0.860	*No serial correlation detected*
P6 & Q6	0.754	0.504	0.458	0.533	0.677	*No serial correlation detected*
P7 & Q7	0.396	0.660	0.161	0.236	0.353	*No serial correlation detected*
P8 & Q8	0.809	0.572	0.729	0.752	0.845	*No serial correlation detected*
P9 & Q9	0.070	0.182	0.145	0.118	0.068	*No serial correlation detected*
P10 & Q10	0.337	0.455	0.616	0.668	0.681	*No serial correlation detected*
P11 & Q11	0.336	0.459	0.068	0.067	0.118	*No serial correlation detected*

Similar to Pick n Pay, results in table 4.12 (Spar supermarket) indicate that there was no trace of a serial correlation in the regression results for all 11 items for the Spar supermarket since all p values were ≥ 0.05. Hence, the null hypothesis which assumes no presence of a serial correlation was accepted for all items.

Table 4.13 Serial correlation results for Shoprite supermarket

Input & output	*p* value for lag 1	*p* value for lag 2	*p* value for lag 3	*p* value for lag 4	*p* value for lag 5	Conclusion
P1 & Q1	0.952	0.081	0.165	0.227	0.081	*No serial correlation detected*
P2 & Q2	0.495	0.779	0.714	0.718	0.814	*No serial correlation detected*
P3 & Q3	0.703	0.871	0.861	0.929	0.967	*No serial correlation detected*
P4 & Q4	0.089	0.079	0.074	0.081	0.063	*No serial correlation detected*
P5 & Q5	0.579	0.501	0.462	0.585	0.635	*No serial correlation detected*
P6 & Q6	0.908	0.955	0.944	0.073	0.111	*No serial correlation detected*
P7 & Q7	0.312	0.569	0.137	0.231	0.290	*No serial correlation detected*
P8 & Q8	0.054	0.058	0.110	0.110	0.069	*No serial correlation detected*
P9 & Q9	0.266	0.510	0.370	0.067	0.053	*No serial correlation detected*
P10 & Q10	0.455	0.756	0.895	0.945	0.965	*No serial correlation detected*
P11 & Q11	0.291	0.501	0.284	0.214	0.148	*No serial correlation detected*

Results in table 4.13 indicate the absence of a serial correlation in the regression results for all 11 tested items at Shoprite. This reflects an acceptance of the null hypothesis.

4.3.5 Results and interpretation for heteroscedasticity

The heteroscedasticity test was aimed at determining if any form of heterogeneity exists with the regressions disturbance in the model estimation outcomes for all 11 items tested. If heteroscedasticity exists, the null hypothesis, H_0, which assumes that residuals/disturbances are homoscedastic, is rejected. The White's cross section was used to remedy the heteroscedasticity. Hence, the researcher concluded that no heteroscedasticity existed since results from the model estimation were all homoskedastic.

4.3.6 Forecasting of model estimation

Forecasting was done for each individual regression of the model estimation. Hadavandi *et al.* (2011) indicate that it is important to forecast each individual cross section in a panel data analysis, because the effect of the identified problem varies across each cross section. Baltagi (2006:20) further maintained forecasting for more than one cross section as accurate, only through the fixed effect model. This has been proven in other panel data studies like that of Lee (2009). Forecasting was done in this study to show how accurate were regression models in predicting the value of quantity demanded.

Forecasting results is represented in appendix 3.F. The blue and the red line reflect the actual versus the fitted values. The first, second and third relationships in the figures represent Pick n Pay, Spar and Shoprite supermarkets respectively. With regards to the outcome from forecasting, the model of this study was concluded accurate since the predicted or forecasted values mimic the actual values. Thus, the model can be used for forecasting future quantity demand for a specified price for a product.

4.4 CONCLUSION

In this chapter, the analysis and interpretation of results were presented and displayed. Results from unit root tests, poolability tests, model estimations, normality tests, serial correlation and heteroscedasticity tests were all reported. The next chapter provides recommendations which include a proposed pricing decision support system (figure 5.1) and conclusions with regard to the findings of the empirical research and the literature study.

CHAPTER 5

RECOMMENDATIONS AND CONCLUSIONS

5.1 INTRODUCTION

The study sought to increase awareness on the impact of pricing regarding market share gain or loss for FMCG retailers in the Ngaka Modiri Molema district. The three largest district supermarkets, Pick n Pick, Spar and Shoprite were the participants in this study. This chapter discusses the summary of chapters, findings in this study, recommendations and conclusion.

5.2 SUMMARY OF THE STUDY

Chapter one presented a general introduction and background of the study. In the introduction, a brief discussion was done on the current continuous changes in prices of commodities and how it affects consumer purchases. The research motivation which was based on limited research in the pricing discipline was also outlined. A background of the study area was also indicated. A initial literature study was also done. The literature study was based on the marketing mix elements, pricing as a key marketing mix element and the role of pricing in influencing market share. The problem statement was examined with respect to results from other studies and the situation in Ngaka Modiri district. Chapter one also presented the research objectives, research questions, methods and design, data analysis techniques, limitations and general organisation of the study.

Chapter two presented the review of literature relevant to the study. The theoretical framework which underpinned the study were discussed and focused on the marketing and marketing mix elements, the pricing decision-making process under which different pricing methods, strategies and policies were discussed. Other internal and external elements influencing pricing decisions and unethical pricing decisions were also presented. The influence of the price indices as the main determinant of pricing was elaborated with the aid of the time change Le'vy model. Finally, the relationship between price and market share, and the advantages of being a market share dominant were discussed.

Chapter three presented the research design and strategy of the empirical study. The study made use of a quantitative design and an exploratory strategy. The target population, sampling type and criteria as well as the data sourcing process were theorised and discussed. The description of variables used, model specification and modification to the context of the

study were also discussed. Chapter three also discussed how the analytical techniques were applied and elaborates on the ethical considerations of the study.

Chapter four focused on data analysis, interpretation and presentation of findings from the empirical research. Results from linear regressions were all interpreted and presented in this chapter. Linear regression results were reported for the unit root, poolability and diagnostic tests. Chapter five presents the research findings, based on the relevancy to the research objectives. Chapter five also proposes recommendations and a general conclusion with respect to the research findings.

5.3 DISCUSSION OF RESEARCH FINDINGS

Considering that only secondary sources of data were used in this study, the research objectives were used in determining the findings from the empirical investigation. The research objectives were:

- To examine the impact of pricing on the market share of the largest three grocery retailers in the Ngaka Modiri Molema district.
- To investigate the type of pricing decisions made by the largest three grocery retailers in the Ngaka Modiri Molema district.
- To examine the challenges faced by these supermarkets in making pricing decisions.
- To determine the influence of these pricing decisions, their consumers' behaviour and market share performance.
- To determine the importance of market share for the Ngaka Modiri Molema grocery supermarkets.
- To recommend possible pricing decision majors that could be use by the Ngaka Modiri Molema retailers to gain market share.

5.3.1 Research objective 1

The research objective was aimed at examining the impact of pricing on the market share of the largest three grocery retailers in the Ngaka Modiri Molema district.

Pricing plays a major role in market share gain or loss among supermarkets in the Ngaka Modiri Molema district. All three sampled supermarkets in this study tested positive that pricing is the major determinant for market share. Results from the regression analysis indicated that a R1,00 increase or decrease in the price of a product by a supermarket will

also lead to an increase or decrease in the market share of that product. Thus, the findings revealed that the higher the market share of a supermarket in a particular product, the more moderate was its price compared to its competitors. This meant the model assumption of this study $MSV_{it} = \beta_0 + \beta_1 P_{it} + \varepsilon_{it}$ formula (3.2), that price plays a major role in influencing the market share of Ngaka Modiri grocery retailers was positive. However, findings also revealed that there is heterogeneity in the relationship between price and market share among the sampled supermarket brands. In other words, pricing decisions are customised for each sampled supermarket. Thus, the influence of price on the market share was seen to be unique for each sampled supermarkets.

5.3.2 Research objective 2

Objective two was aimed at investigating the type of pricing decisions made by the three largest grocery retailers in the Ngaka Modiri Molema district.

Without observing scanner data from the sampled supermarket stores, it might be tempting to conclude that all pricing decisions are determined at head office level. It was discovered that supermarket stores also contribute in deciding the final price to consumers. Individual stores are allowed the right to increase or decrease price within a minimum and maximum price set by the head office. The findings pointed out that the sampled supermarkets operate on pricing methods such as competitive-based pricing and customer-based and pricing policies such as product pricing and promotional pricing.

- **Competitive pricing**

The findings indicated that pricing decisions for supermarket brands were strongly associated with all dimensions of competitors' pricing decisions. Based on results Pick n Pay and Shoprite supermarkets were mainly seen to rival each other in pricing for all tested items in this study.

- **Customer-based**

Analysed data also suggest that supermarkets were also making a pricing decision based on the characteristics of their target market. If regression results and data for the Spar supermarket are evaluated, outcomes reveal that pricing decision for Spar supermarket were mainly done based on its customers rather than competitive action. Spar supermarket was

seen to practice less competitive pricing compared to Shoprite and Pick n Pay. This could be as a result of loyal customers who perceive Spar to be the most efficient supermarket.

- **Product pricing**

Findings highlight that supermarket pricing decisions were based on the elasticity of products. Supermarkets were seen to be very cautious in setting prices for elastic products such as White Star, Tastic rice and Chicken braai cuts. This is because these products had substitutes that consumers could tend to with regards to increase in price. Alternatively, less attention was put on others such as Stuyvesant cigarettes with an inelastic demand.

- **Loss leader pricing**

Results also reveal that retailers implemented a temporary pricing system. Prices were kept very low for a particular product for a particular period. The aim of such pricing is to create excitement among consumers and consequently an increase in market share for this product for a short-term.

5.3.3 Research objective 3

This objective set out to examine the challenges faced by sampled supermarkets in making pricing decisions.

Primary pricing challenges include the following: Emerging growth of other grocery sectors and insufficient data support systems. Market conditions were seen to be a major challenge for supermarkets in making pricing decisions.

- **Emerging growth of the informal grocery sector**

If critically examined, it is evident from the data that the prices of tested items of sampled supermarkets are strongly competing with those in other grocery sectors. A good example is the informal home-based retail grocery stores known as Spaza shops. According to Charman *et al.* (2012:49), recent continuous change of the Spaza retail sector, from survivalism to entrepreneurial mode it is becoming a site for fierce price competition with supermarkets in the Ngaka Modiri Molema district.

- **Insufficient data information**

Another issue that was experience as a challenge to supermarkets pricing decision, was the lack of reliable stored data information for future decision making. For instance, the

researcher originally had a list of 20 items that were to be tested for regression relationship. The researcher ended up with a list of 11 items as a result of insufficient data from 9 items. These mentioned items were then removed from the study. Existing price information can contribute to the analysing of consumer behaviour and also tracking complex mechanics of inter-store competition. This tendency also serves as motivation for record keeping of pricing decisions over time.

- **Current market conditions and managerial skills**

The sharp depreciation of the rand against all major currencies in the world is a major challenge for South African retailers in general. This crisis creates a major challenge for pricing decisions for all three supermarket stores in this study. Shama (2006:43) indicates that price is the most important element that consumers consider during volatile economic periods. Radical pricing decisions became necessary for survival in these extreme economic fluctuations. Delatolas and Jacobson (2012:2-3) states that most often, such decisions are not appropriately made due to lack of managerial experience in the pricing discipline.

5.3.4 Research objective 4

Objective four was aimed at determining the influence of implemented pricing decisions by supermarkets on their consumers' behaviour and market share performance.

Findings from the regression results revealed that consumers measure price transparency among retailers in order to make a purchase decision. Results reflect that a supermarket with the most moderate pricing for a certain product has the highest market share for that product. It was evident, based on the data that an increase in price will affect consumers' behaviour negatively and consequently, loss in market share. Likewise, a decrease in the price of a product will affect consumers' behaviour positively and consequently gain market share. Austin and Gravelle (2008:1) say consumers are very conscious of any change in price by a retailer, and this will affect their purchase decision. Thus, it can be concluded that the general Ngaka Modiri Molema consumer is very aware of price settings and changes by supermarket management with high knowledge levels of unacceptable pricing.

5.3.5 Research objective 5

The fifth objective was aimed at determining the importance of market share for Ngaka Modiri grocery supermarkets.

The fifth objective was to determine the importance of market share for Ngaka Modiri Molema grocery supermarkets. The findings from results revealed that market share domination is very important for supermarkets in the Ngaka Modiri Molema district. Outcome from data analyses indicate that, extensive price wars were initiated by supermarkets for products in which they had a dominant share of the market. Gehrig *et al.* (2009) argue that retailers with a dominant market share in a product, use aggressive price offers to destroy even already existing customer relationships between its competitors and their consumers. Bode and Scharafi (2007) state that it is important to have a strong market share position in the market because organisations with a better market share have an edge over their competitors in formulating or executing business strategies. Extensive price wars were initiated by supermarkets for products in which they had a dominant share of the market.

5.4 GENERAL CONCLUSIONS

The general conclusions drawn from the empirical research are based on results from the regression analysis. A conclusion can be drawn that price plays a major role in the gain or loss of market share among FMCG retailers in the Ngaka Modiri Molema district. However, there are differences (heterogeneities) in the manner in which pricing will impact on the market share of individual retailers. Results from the empirical research of the three sampled supermarkets in this study tested positive for these findings. This means the model specification and the considered panel data model were accurate with regard to the identified problem of the study. Hence, the main objective of this study to find whether price plays a role in influencing the market share gain or loss was positive. However questions can be raised on the influence of other determinants of market share in the Ngaka Modiri Molema FMCG sector. Thus, it should be noted that even though this study was aimed at the role of price, it did not reject the influence of other determinants of market share gain or loss among Ngaka Modiri Molema retailers.

Thus, critics can argue the effectiveness of the role of price in influencing market share if other determinants (error term) such as distribution are not taken into full consideration in the model specification of this study. However, the use of the panel data analysis technique helped in arriving at a solution to such criticisms. Regression results from the model estimation gave an indication of all product purchases that were not influenced by price but by other determinants over the study period. Results of purchases not influenced by price are

represented by the positive coefficients in the model estimation. See Appendix 3C for detailed results. Table 5.1, 5.2 and 5.3 present the total sales turnover, proportion of the total sales determined by price and proportions influenced by other determinants for each tested item over the study period for individual supermarkets.

Table 5.1 General conclusion for Pick n Pay

Items	Total sales for each item over the study period (2011-2013)	Proportion of the total sales influenced by price over the study period (2011-2013)	Proportion of total sales influenced by other determinants over the study period (2011-2013)
White star maize meal (5kg)	37753	35892	1861
Tastic rice (2kg)	60540	58224	2316
Coke (2 litres)	533203	514994	18209
Lays potato's (250g)	9787	9129	658
Axe deodorant spray (200ml)	524	458	66
Sasko bread (700g)	7610	6700	910
Chicken braai cuts (5kg)	601155	581259	19896
Golden Delicious apple (1kg)	41581	39550	2031
Nutriday yogurt (6×100g)	78448	75368	3080
Colgate tooth paste (100ml)	26391	24955	1436
Stuyvesant cigarettes (pack)	30712	29546	1166

Table 5.1 represents the total sales over the specified study period, the proportions of the total sales influenced by price and the proportions of the total sales influenced by other determinants for each tested item in Pick n Pay supermarket. Indications on the table show that the proportion of the total sales influence by price for all 11 items is larger to proportions influence by other determinants. Thus, price plays a major role in market share gain or loss in the Pick n Pay supermarket above all other determinants.

Table 5.2 General conclusion for Spar

Items	Total sales for each item over the study period (2011-2013)	Proportion of the total sales influenced by price over the study period (2011-2013)	Proportion of total sales influenced by other determinants over the study period (2011-2013)
White star maize meal (5kg)	2000	1382	618
Tastic rice (2kg)	41438	39511	1927
Coke (2 litres)	62506	59315	3191
Lays potato's (250g)	8198	7627	571
Axe deodorant spray (200ml)	247	190	57
Sasko bread (700g)	5054	4525	529
Chicken braai cuts (5kg)	23887	21554	2333
Golden delicious apple (1kg)	10452	9745	707
Nutriday yogurt (6×100g)	14998	14262	736
Colgate tooth paste (100ml)	15059	14222	837
Stuyvesant cigarettes (pack)	77666	77010	656

Table 5.2 represents the total sales over the specified study period, the proportions of the total sales influenced by price and the proportions of the total sales influenced by other determinants for each tested item in Spar supermarket. Indications on the table show that the proportion of the total sales influence by price for all 11 items is larger to proportions influence by other determinants. Thus, price plays a major role in market share gain or loss in the Spar supermarket above all other determinants.

Table 5.3 General conclusion for Shoprite

Items	Total sales for each item over the study period (2011-2013)	Proportion of the total sales influenced by price over the study period (2011-2013)	Proportion of total sales influenced by other determinants over the study period (2011-2013)
White star maize meal (5kg)	32059	30220	1839
Tastic rice (2kg)	73167	69976	3191
Coke (2 litres)	420928	406825	14103
Lays potato's (250g)	5567	5202	365
Axe deodorant spray (200ml)	975	861	114
Sasko bread (700g)	38947	37364	1583
Chicken braai cuts (5kg)	608265	586941	21324
Golden delicious apple (1kg)	12312	11857	455
Nutriday yogurt (6×100g)	34371	32794	1577
Colgate tooth paste (100ml)	61509	58927	2582
Stuyvesant cigarettes (pack)	8524	7835	689

Table 5.3 represents the total sales over the specified study period, the proportions of the total sales influenced by price and the proportions of the total sales influenced by other determinants for each tested item in Shoprite supermarket. Indications on the table show that the proportion of the total sales influence by price for all 11 items is larger to proportions influence by other determinants. Thus, price plays a major role in market share gain or loss in the Shoprite supermarket above all other determinants

With regards to table 5.1, 5.2 and 5.3 it is evident that price plays a major role in market share gain or loss among fast consumer goods retailers in the Ngaka Modiri district above all other determinants. To sum it all, the minimum adjusted R square in the model estimation was from Axe deodorant spray which had an adjusted R square of 82%. This meant 82% influence on market share gain or loss for Axe deodorant spray is from price, while only 18% of market share gain or loss for Axe deodorant spray comes from other determinants. All 10 other tested items had an adjusted R square above 82%. See table 4.7 or appendix 3C for detailed results for adjusted R squares.

5.5 RECOMMENDATIONS

The researcher suggests that FMCG retailers in the Ngaka Modiri Molema should consider implementing the following recommendations to solve the identified problem of this study.

5.5.1 Recommendation with regard to objective 1 (*impact of pricing on the market share).*

Empirical findings indicate that pricing is a pivotal component for market share gain or loss amongst FMCG retailers in the Ngaka Modiri Molema district. Thus, it is important that the marketing strategy of retailers should carefully outline pricing implementation plans. Pricing implementation plans should consider income levels of different target segments in the target population within the target market in order to build consumer loyalty and consequent increase in market share.

5.5.2 Recommendation with regard to objective 2 (*pricing decisions made by grocery retailers).*

Retailers should develop pricing strategies that will fit the financial abilities of their targeted segments. Implementing pricing strategies such as the loss leader is not advisable. Loss leader may lead to unfavourable outcomes such as price wars. In such time consumers develop the tendency of waiting for the next price promotion in order to make a purchase.

5.5.3 Recommendation with regard to objective *3 (challenges faced by sampled supermarkets in making pricing decisions).*

- Competitive pricing is always a factor in every industry. Retailers should monitor the pricing action of its competitors and competitive action should be reviewed regularly.
- Making appropriate pricing decisions requires the existence of relevant and factual pricing data. Track records of previous pricing decisions should be available to serve as basis for future pricing decision making by retailers. Supermarket management should implement relevant training programmes to assist supermarket employees in managing price information. Supermarkets should adopt an effective communication approach between the head office and supermarket stores.
- Supermarkets should adopt an effective communication approach between the head office and supermarket stores. This will enable the formulation of pricing decisions that will be mindful of both short-term and long-term price uncertainties in the market.

5.5.4 Recommendation with regard to objective 4 *(the influence of implemented supermarket pricing decisions on consumers' behaviour and market share performance).*

Retailers in the Ngaka Modiri Molema district should consider pricing decisions based on the price related behaviour of the target consumers. Consumers are in general very price sensitive, and should be taken into consideration by retailers when determining prices. Retailers may also develop the Every-Day-Low Pricing (EDLP) strategy that involves consistent temporary price cuts for all product categories in the store. This strategy has been recommended for developing excellent consumer loyalty by marketers in general. The strategy also makes consumers less price sensitive even in cases of major increases in prices.

5.5.5 Recommendations with regard to objectives 5 *(the importance of market share for Ngaka Modiri Molema grocery supermarkets).*

Empirical results revealed that market share is important for FMCG retailers to attain competitive advantage against rivals. Indications from results show that a supermarket that had a dominant market share for a product did launch an intensive price war against its competitors. Thus, it is important that retailers give more attention to pricing in order to increase market share and possibly become a market share dominant against rivals.

5.5.6 Recommendations with regard to objectives 6 *(proposing a pricing decision support system that could be use by the Ngaka Modiri Molema retailers to gain market share).*

Based on the findings and literature, a relevant and practical applicable pricing guideline structure is recommended for use by retailers when determining product prices. This suggested guideline structure is based and adopted from a model developed by Kehagias and Skourtis (2009) represented on figure (2.4) on page 24. The suggested guideline structure, applicable to this study is presented in Figure 5.1.

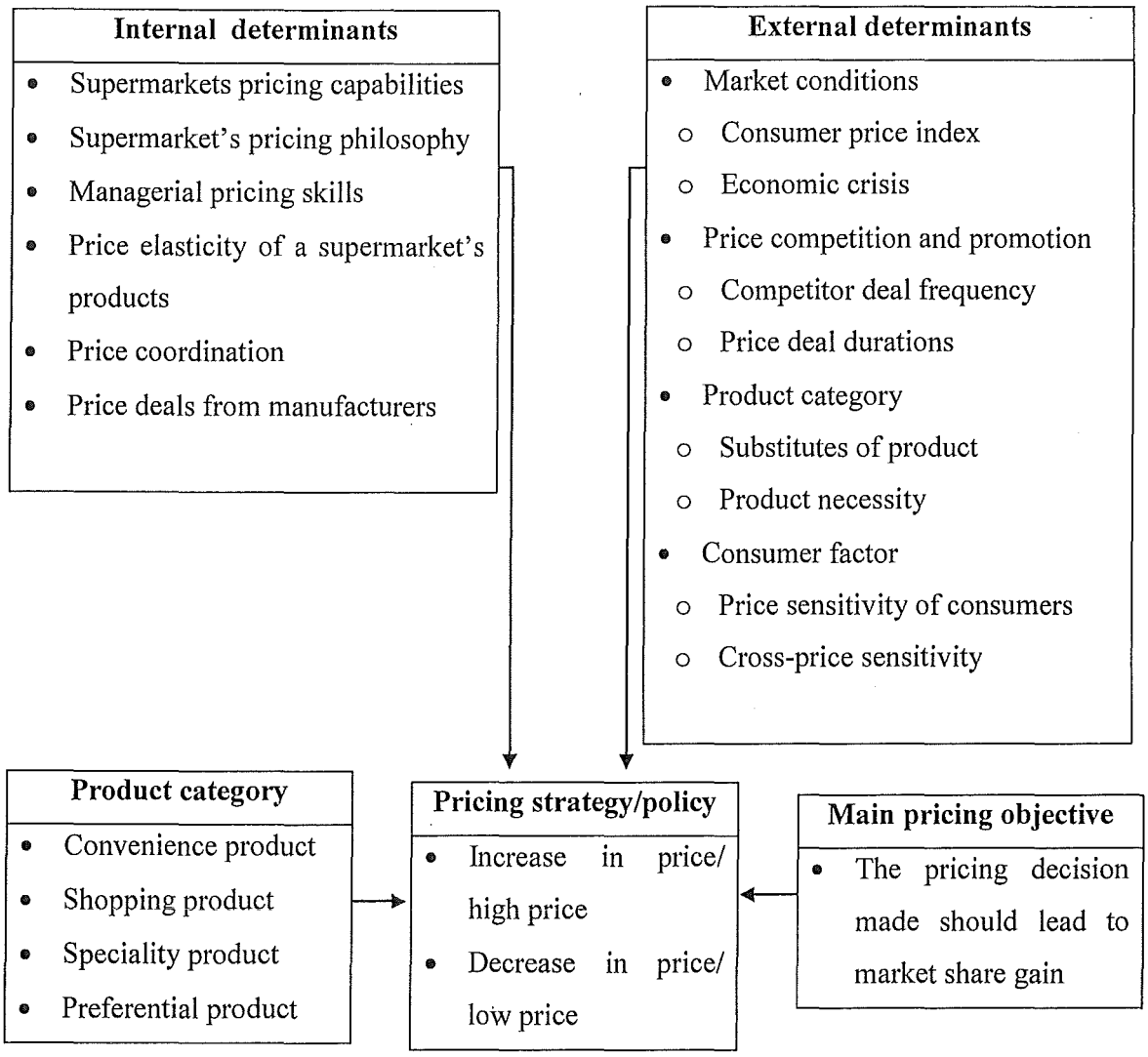


Figure 5.1 Pricing decision support system for Ngaka Modiri retailers

Adopted from (Kehagias & Skourtis 2009)

This framework assumes that pricing dimensions and pricing determinants are strongly connected. Hence, it is important that Ngaka Modiri Molema FMCG retailers should simultaneously consider both pricing dimensions and pricing determinants in developing pricing decisions. The framework indicates some internal and external factors that Ngaka Modiri Molema retailers should consider when making pricing decisions. The framework further suggested that a pricing decision for any product category in the FMCG industry will involve either an increase or decrease in price. However, whatever pricing decision a retailer selects, the objective should be towards market share gain.

5.5.6.1 Requirements for the framework application

In order to apply this framework, the following are required:

- Availability of actual and applicable data on pricing information.
- Skilful managers with effective ability in transforming pricing information into decision models. The success of a framework usually depends on the interactive ability of users of the framework.
- Access to technological software that can permit estimations of variables. Software should be flexible enough to accept future adjustments in the case of unforeseen events.

5.5.6.2 Steps for estimating the framework

The following steps are required for the analysis of variables in the framework:

- Set pricing objectives aimed at market share gain.
- Creating a formula with respect to considered pricing parameters as a function of market share.
- Testing the hypotheses.
- Transmitting results from hypotheses testing to pricing decisions.
- Implementing the pricing decisions and also making sure prices on shelves reflect results from analysis.

5.5.6.3 Advantages of the proposed framework

- It will enable fast consumer goods retailers in the Ngaka Modiri Molema district to select the most appropriate pricing strategies and policies for their target market.
- It fits accurately in the Ngaka Modiri Molema fast consumer goods retail sector. Its implementation is straight and forward and easy to understand.

5.5.6.4 Drawbacks of the proposed framework

- There might be issues of limited information with respect to new products and actions of competitors. However, it is important to have a contingency plan for handling such shortcomings.
- The application of the model may not permit accurate price decision making in different industries.
- Most fast consumer goods retailers in the Nkaga Modiri Molema district may lack analytical abilities in handling most dynamics in the model. However, skills can be improved through training programmes.

5.6 CONCLUSION

The problem identified in this study was the lack of awareness among retailers in the Ngaka Modiri Molema district on the role of price in market share gain or loss. Thus, the main aim of this study was to increase the level of awareness of the influence of price on market share gain or loss among Ngaka Modiri Molema retailers. After conducting an empirical research through a panel data analysis on the three largest supermarkets in the Ngaka Modiri Molema district, results reflect that price plays a major role in market share gain or loss among retailers in the Ngaka Modiri Molema district in general. The researcher recommends that retailers should dedicate more attention on pricing in order to increase their market share. Lastly, the researcher saw the need to create a framework that could also assist Ngaka Modiri Molema retailers in making effective pricing decisions-by developing a pricing decision support system. It is hoped that the findings of this study will encourage retailers to take pricing seriously and will also implement the propose pricing decision support system in making more appropriate and effective pricing decisions in order to improve their market shares.

REFERENCES

Adcock, D., Halborg, A. & Ross, C. 2001. Marketing principles and practice. 4th ed. London: Pearson Educational Limited.

Ahmetoglu, G., Dawes, J. & Furnham, A. 2010. Pricing practices : Their effects on consumer behaviour and welfare. London: Mountainview Learning Limited.

Ailawadi, K.L., Donald, R.L. & Scott, A.N. 2003. Revenue premium as an outcome measure of brand equity, *Journal of Marketing*, (67):1-17.

Alexander, M. 2012. Microsoft Acess 2007: data analysis. Indiana, U.SA: Wiley Blackwell.

Alkali, M. & Isa, A.H. 2012. Assessing the influence of external environmental factors on the performance of small business manufacturing enterprise in Bauchi state Nigeria. *Interdisciplinary journal of contemporary research in business*, 4(7):97-111.

Armstrong, J.S. & Green, K.C. 2007. Competitor-oriented objectives: the myth of market share. *International journal of business*, 12(1):116-134.

Asteriou, D. & Hall, S. 2007. Applied econometric: A modern approach using eviews and Microsoft. New York: Macmillan Palgrave.

Asteriou, D. & Hall, S. 2011. Applied econometric: 2nd ed. New York: Macmillan Palgrave.

Aucremanne, L. & Dhyne, E. 2004. How frequently do price? Evidence based on the micro data underlying the Belgian CPI. European Central Bank working paper series (no: 331).

Austin, A.D. & Gravelle, J.G. 2008. Does pricing transparency improve market efficiency? Implications of empirical evidence in other markets of the health sector. CRS Report for Congress.

Avlonitis, G.J., Indounas, K.S. & Gounaris, S.P. 2005. Pricing objectives over the service life cycle: Some empirical evidence. *European journal of marketing*, 39 (5/6):696-714.

Avlonitis, G.F. & Indounas, K.A. 2004. Pricing strategy and practice. Impact of market structure on pricing objectives of service firms. *Journal of product and brand management*, 13(5):343-358.

Axarloglou, K. 2007. Thick market, market competition and pricing dynamics: Evidence from retailers. *Journal of managerial and decision economics*, 28(7):669-677.

Babatunde, O. & Oluntunla, G. 2006. Pricing strategy as a determinant of market share in the soft drink industry. (A case of Nigerian bottling company).

Babbie, E. 2010. The practice of social research. 12th ed. Belmont,U.SA: Cengage learning.

Bafana, M. 2012. Chief executive officer's report. Invest Northwest Annual report 201/2012.

Balakrishnan, R. & Mahanta, V. 2004. Break in the call, brand equity. The economic times review, August 18 Mumbai.

Balcombe, K. 2009-2010. The nature and determinants of volatility in agriculture prices: An empirical study from 1962-2008. *Commodity market review:*1-24.

Ballasy, L. 2004. Marketing for the recruitment of mentors: A work book for finding and attracting volunteers, Portland: NWP regional educational laboratory.

Baltagi, B.H. 2005. Econometric analysis of panel data. 3rd ed. Chichester: John wiley & Sons.

Baltagi, B.H. 2008. Econometric analysis of panel data. 4th ed, Chichester: John wiley & Sons.

Baltagi, B.H. 2009. A companion to econometric analysis of panel data. Chichester: John wiley & Sons.

Baltagi, B.H. 2006. Deutsche Bundesbank 18th spring conference on " New development in economic forecasting" in Frankfurt Germany series 1, No:25.

Beletski, T. 2006. Inflation-linked products and optimal investment with macro derivatives. Kaiserslautern: Kaiserslautern University of Technology. (PHD thesis in mathematics).

Bickman, L. & Rog, D. 2009. The sage handbook of applied social research methods. 2nded. California: Sage publications.

Blonde, B. & Van Damme, I. 2010. Retail growth and consumer changes in a declining urban economy: Antwerp. *Economic history review*, 63(3):638-663.

Blyth, J. 2006. Principles and practice of marketing. London: Thompson Learning.

Bode, S. & Scharifi, O. 2007. Market share and dominant market share position in the case of emissions trading: An economic analysis based on U.S., European and Japanese competition law. *Carbon and climate law review* (2):103-116.

Bogopane, L.P. 2012. A qualitative assessment of the evaluation and monitoring processes of the integrated development planning (IDP) in the Ngaka Modiri Molema District-Northwest province, South Africa. *Journal of social science*, 32(1):91-100.

Bond, P. & Goldstein, I. 2012. Government intervention and information aggregation by prices.

Boukhari, E.A., Yabouri, E.M., Ktaibi, E.H. & Naji, J. 2007. International; trade export costing project: Factors affecting the price of a product.

Briggs, A.R.J. & Coleman, M. 2007. Research Methods in Education Leadership and Management. 2nd ed. Great Britain: SAGE.

Bruweri, J.P. & Watkins, A. 2010. Sustainability of the fast moving consumer goods retail SMMEs. *African journal of business management*, 4(16):3550-3555.

Cameron, S. 2005. Econometrics. Berkshire: McGraw Hill Education.

Cant, M. 2005. Pricing management. 2nded. Claremont: New African Books (pty) Ltd.

Cant, M., Heerden, C. & Ngambi, H. 2010. Marketing management: A South African perspective. 1sted. Cape Town: Juta & CO.

Carr, P. & Wu, L. 2004. Time-Change Le'vy Process and option pricing. *Journal of financial economics,* (71):113-141.

Charman, A., Petersen, L. & Piper, L. 2012. From local survivalism to foreign entrepreneurship: The transformation of Spaza sector in Delft. Cape town: Transformation 78.

CIM (Chartered Institute of Marketing). 2009. Marketing and the 7p's: A brief summary of marketing and how it works.

Chopra, S. & Meindl, P. 2010. Supply chain management. Strategy, planning and operation. 4th ed. New Jersey: Pearson.

Claessen, S., Kose, M. A. & Terrones, M. E. 2009. What happens during recessions, crunches and bust? *Economic Policy*, (60-62):653-700.

Cohen, L., Manion, L. & Marrison, K. 2011. Research Methods In Education. 7th ed. published by Routledge.

Colander, D.C. 2004. Macroeconomics. 5thed. New York: McGraw-Hill.

Constantinides, E. 2006. The marketing mix revisited towards the 21st century. *Journal of marketing management*, (22):407-438.

Conway, L.S. & Powell, R.R. 2010. Basic research methods for librarians. California. Greenwood.

Creswell, J.W. 2009. Research Design. Qualitative, quantitative and mixed methods approaches. 3rd ed. SAGE Publications ltd.

Creswell, J.W. & Clark, P.V.L. 2007. Designing and Conducting Mixed Methods Research. Thousand Oaks, CA: SAGE Publications.

De Jagar, N. 2004. The living standard measure as a market segmentation tool for selected retailers. Potchefstroom. Northwest University. (Dissertation in masters of commerce).

Delatos, A. & Jacobson, C. 2012. Obstacles when implementing a value based pricing strategy: A case study-Volvo construction equipment. Linnaeus University. (Bachelor degree in business administration).

Depken, C.A. 2006. Micro-economics: A self-teaching guide. California: McGraw-Hill.

Derby, R. 2013. Recovering market share a big task for Pick n' Pay. *www.bdlive.co.za/opinion /columnists/203/04/24/recovering -market share-a-big-task-for-pick-n-pay.* 10p.m, 24 August: 2013.

Dirkie, U. 2012. Success stories. Section One. Invest Northwest Annual report 2010/2011.

Donaldson, B. 2007. Sales management principles, process and practice. 3rd ed. New York: Palgrave Macmillan.

Dovey, K. & White, R. (2005). Learning about learning in knowledge-intense organizations. *Learnin.Org.*, 12(3):15.

Drew, C.J., Hardman, M.L. & Hosp, J.L. 2008. Designing and Conducting Research Education: SAGE Publications.

Drummond, G. & Ensor, J. 2005. Introduction to marketing concepts. 1st ed. Burlington: Elsevier.

Du Plessis, S. & Smith, B. 2007. South African growth revival after 1994. Stellenbosch Economic working paper.

Dutta, S., Zbaracki, M.J. & Bergen, M. 2003. Pricing process as a capability: A resource-based perspective. *Strategic management journal*, (24):615-630.

EAUGP (Economic Analysis Unit Gauteng Provinnce). 2012. The retail industry on the rise in South Africa.Gauteng Provincial Treasury quarterly Treasury bulletin. *www.treasury.gpg.gov.za/.../QB1%/20 the% 20 Retail% industry %20on.*13 September 2013.

Edmond, A.W. & Kenedy, E.T. 2013. An applied reference guide to research design. Quantitative, qualitative and mixed method. SAGE.

Egan, J. 2007. Marketing communication. 1st ed. London: Thomson.

Els, J. 2013. New CPI measures increases S.A inflation rate by 0.2% for 2013 real threat from expensive oil and weak rand.

Emprise, W. 2008. The concept of price in economics. *http://www.helium.co/items/891170-the concept-of-price-in-economics* [9 march 2013].

Erikson, K. & Simpson, B. 2007. Deception and price in a marker with asymmetric information. *Judgement and decision making,* 2(1):23-28.

Ernst & Young. 2004. Global pricing trends. *http://www.2.eycom.ch/publications/items/rcp-pricingtrends2004-report/en.pdf.*15 July 2013.

Esclana, N.S., Diginis, C., Plessis, R., Machado, R., Mpinganjira, M., McIntee, H., Kloppers, R. S. & Theron, D. 2012. Introduction to marketing. 4th ed. Cape Town: JUTA & Company Ltd.

Etro, F. 2007. The economics of competition policy and dominant market share position: Stockholm network experts' series on intellectual property and competition.

EI (Euromonitor International). 2012. Grocery retailers in South. *http:// www.eurominotor.com/grocery -retailers-in-south-africa/report.* (09 April /2013).

Evans, B. 2012. International comparison of the formula effect between the CPI and RPI. Office of National Statistics.

Farshid, M.M. & Amir, F. 2012. The influence of marketing strategy elements on market share of firms. *International journal of fundamental psychology and social sciences*, 2 (1):19-24.

Fenwick, D. & Astin, J. 2009. Practical guide to producing consumer price indices. New York and Geneva: United Nation.

Ferrel, O.C. & Hartline, M.D. 2008. Marketing strategy, 4thed. Natorp Boulevard, U.S.A: Thamson Learning Inc.

Ferrel, O.C. & Hartline, M.D. 2011. Marketing management strategies. 5thed, Canada: Cengage learning.

Fok, D. & Franses, P.H. 2000. Forecasting marketing shares from Models for sales. Erasmus report series research in management.

Fouche, D. & Wilkinson, S. 2012. South African retail and consumer products outlook 2012 - 2016.*http;//ww.pwc.coo.za/en-ZA/za/assets/pdf/retail-and-consumers-product-outlook-2012-2-16pdf.* 11 October 2013.

Francis, E. 2002. Rural livelihoods, institutions and vulnerability in Madibogo, Northwest of South Africa. Development studies working paper. (Series issn 1470-23220).

Furrier, O., Alexander, M.T. & Sudharshan, D. 2007. The impact of resource strategy correspondence on marketing performance- financial performance – tradeoffs. *Journal of strategic marketing,* (15):161-183.

Ganfoldolfo, D. 2009. From marketing mix to E- marketing mix, A literature overview and classification. *International journal of business and management*, 4(9):17-24.

Garrett, K. 2011. Relevant to ACCA qualification. Studying paper 3. Business strategy and pricing.

Gaunaris, S. & Stathakopoulos, V. 2004. Antecedents and consequences of brand loyalty: An empirical study. *Journal of brand management*, 11(4):283-306.

Gehrig, T., Shy, O. & Stenbacka, R. 2009. Market dominance and behaviour-based pricing under horizontal and vertical differentiation. JEL classification L1, L41.

Gerdeman, D. 2011. Getting the marketing mix right. Harvard business school *http://hbswk.hbs,edu/item/6828.html*. 22 June 2013.

Goi, C.L. 2006. Marketing mix: A review of 'p'. http://www.arraydev.com/commerce/JiBc/2005-08/goi. 12 November 2013.

Goi, C. L. 2009. A review of marketing mix: 4Ps or more? *International journal of marketing studies,* 1(1):2-15.

Gratton, C. & Jones, I. 2010. Research Methods for Sports Studies. 2nd ed. Routledge.

Gujarati, D.N & Porter, D.C 2009. Basic econometrics. 5th ed. Boston: McGraw-Hill Irwin.

Guruprakash, R. & Sohn, T.H. 2008. A dissertation submitted to the engineering systems division in the partial fulfilment for the degree masters engineering in logistics. Massachusetts Institute of Technology.

Hadavandi, E., Ghanbari, A., Mirjani, M. & Abbasians, S. 2011. An econometric panel data-based approach for housing price forecasting in Iran. *International journal of housing markets and analysis.* 4(1):70-83.

Helfat, C.E. & Lieberman, M. 2002. The birth of capabilities: Market entry and importance of pre history. *Industrial and corporate change.* 11(4): 725-760.

Hill, P. 2004. An introduction to consumer price index methodology. The World Bank consumer price index manual: Theory and practices. Geneva: International Labour Office. ISBN 92-2-113699-x.

Hinterhuber, A. & Liozu, S. 2012. Is time to rethink your pricing strategy. *MIT Sloan management review* (summer 2012 release).

Hoeffler, S. & Keller, K.L. 2003. The marketing advantage of strong brands. *Journal of brand management,* 10(6):421-445.

Holmberg, S.L. & Cummings, J.L. 2009. Building successful strategic alliances: Strategic process and analytical tool for selecting partner industries and firms. *Long range planning.* 4(2):164-193.

Hunt, S.D. & Arnett, D.B. 2006. Does marketing success lead to market success? *Journal of business research,* (59):820-828.

Indounas, K. & Avlonitis, G.J. 2009. Pricing objectives and their antecedents in the services sector. *Journal of service marketing.* 20(3):342-374.

Issler, J.V. & Lima, L.R. 2008. A panel data approach to econometric forecasting: The biases- corrected average forecast.

Jayne, M.E. & Dipboye, R.L. 2004. Leverage diversity to improve business performance. Research findings and recommendations for organisations. *Human resource management.* 43(4):409-424.

Jehle, G.A. & Reny, P.J. 2011. Advanced microeconomic theory. 3rd ed. Harlow, New York: financial times/Prentice-hall.

Johnson, B. & Christensen, L. 2008. Educational Research.Quantitative, qualitative, and mixed approaches. 3rded. SAGE Publications.

Jooste, C., Berndt, A., Klopper, H. & Herbst, F. 2005. Product management. 2nd ed. Pretoria: VAN SCHAIK.

Jooste, C., Berndt, A., Klopper, H. & Herbst, F. 2010. Product management. 3rd ed. Pretoria: VAN SCHAIK.

Kanagal, N. 2009. Role of relationship marketing in competitive market strategy. *Journal of management and marketing research,* (2):1-17.

Kazmi, S. 2007. Marketing management text and cases. 1sted. New Delhi: Excel Books.

Kehagias, J. & Skourtis, E. 2009. Pricing strategy and practice: Plaiting pricing in to product categories and corporate objectives. *Journal of product & brand management,* 18(1):67-76.

Khan, S. 2011. Marketing mix strategy adaptation: A retail organisation's response to global economic downturn. Cape Peninsula University of Technology. (Masters dissertation in technology marketing).

Klenow, P.J. & Willis, J.L. 2007. Sticky information and sticky prices. *Journal of monetary economics,* (54):79-99.

Kotabe, M. & Helsen, K. (2004). Global marketing management. 3rd ed. New Jersey: Wiley & Sons.

Kotler, P. & Armstrong, G. 2010. Global and South African perspective: Principles of marketing. 1sted. Cape Town: Pearson Education.

Kotler, P. & Keller, L.K. 2012. A framework for marketing management. 5th ed. Edinburg: Pearson.

Kotler, P., Wong, V., Saunders, J.D. & Armstrong, G. 2005. Principles of marketing. 4th European ed. Prentice-Hall.

Kunst, R. M. (2012). Econometric forecasting. Paper from university of Vienna and Institute of Advanced Study.

Lamb, C.W., Hair, J.F., McDaniel, C., Boshoff, C. & Terblanche, N.S. (2009). Marketing 3rd South African ed. Cape Town: Oxford University press.

Lancaster, G. & Reynolds, P. 2005. Management of marketing.1sted. Burlington: Elsevier.

Lawrence, E. & Lawrence, R. 2008. South African trade policy matters: Trade performance and trade policy. National Bearu of Economics Research (NBER) working paper.

Lee, J. & Kim, B.C. 2013. Relationship between innovation and market share: Evidence from global LCD industry. *Industry and innovation,* 20(1):1-21.

Lee, C. & Griffith, D.A. 2004. The marketing strategy-performance relationship in an export-driven developing economy: A Korean illustration. *International Marketing Review, 21*(3):321-334.

Lee, C.L. 2009. Housing price volatility and its determinants. *International journal of housing market and analysis.* 2(3*)*:293-308.

Lee Y.J. 2006. Diagnostic testing for dynamic panel data methods. JEL C4, C3.

Levy, M. & Weitze, B. 2007. Retail management. 6thed. New York: McGraw Hill/ Irwin.

Liu, Y. & Yang, R. 2009. Competing loyalty programs: Impact of market saturation, market share and category expandability. *Journal of marketing,* (73):93-108.

Luarin, P. & Lin, H.H. 2003. A customer loyalty model for E-service context. *Journal of electronic commerce research*, 4 (4):156-167.

Mamoun, N.A. 2011. The 7p's classification of the services marketing mix. *Journal of business administration.* (1).

Mariri, T. & Chipunza, C. 2009. Instore shopping environment and impulse buying. *African journal of marketing management*, 1(4):102-108.

Maxwell, J.A. (2012) A Realist Approach for Qualitative Research. SAGE Publicaions.

McCarthy, E.J. 1964. Basic marketing: A managerial approach. Homewood: IL:Irwin.

McGregor, G. 2010. Shoprite vs Pick n' Pay: The showdown. *www.fin24.com/companies/shoprite-vs-pick-n-pay-the-showdown-20100509.* 15 April 2013.

Meldrum, M. & McDonald, M. 2007. Marketing in a nutshell: key concepts for non-specialists. 1st ed. Burlington: Elsevier.

Miller, R. 2011. Office for budget responsibility working paper no:2. The long-run difference between the RPI and CPI inflation.

Mills, D.Q. 2009. The World financial crisis of 2008-2010: What happened, who is to blame?

Mohammadian, M. & Habibi, E.S. 2012. The impact of marketing mix on attracting audience to the cinema. *International business and management journal.* 5(1):99-106.

Mohr, P. & Fourie, L. 2004. Economics for South African students. 3rd ed: VAN SCHAIK.

Mohr. P, & Fourie. L. 2007. Economics for South African students. 4thed: VAN SCHAIK.

Mojaki, M. 2012/2013. NgakaModiriMolema district: Top-layer service delivery and budget implementation plan report.

Mokgele, M. 2012/2013. Ngaka Modiri District Municipality. Draft top-layer service delivery and budget implementation plan.

Möller, K. 2006. The Marketing Mix Revisited: Towards the 21st Century Marketing by E. Constantinides. *Journal of Marketing Management*, 22(3):439-450.

Moutinho, L. & Chien, C. 2008. Problems in marketing: Applying key concepts and techniques. 2nded. London: SAGE Publications.

Mouton, J. 2002. How to succeed in your Masters and Doctorial studies. Pretoria: Van Schaik.

Mullikin, J.L. & Petty, R.D. 2011. Marketing tactics discouraging price search: Deception and competition. *Journal of business research*, (64):67-73.

Munusamy, J. & Hoo, W.C. 2008. Relationship between marketing mix strategy and consumer motive: An empirical study in major TESCO stores. *Unitar E- journal*, 4(2):41-56.

Myers, J.L., Well, A.D. & Lorch, R.F. 2010. Research design and statistical analysis. 3rd ed: Routledge.

Ndagijimana, U. & Musonera, E. 2012. An examination of factors that affect pricing decisions for export markets.

Neuman, W.L. 2003. Social Research Methods: Qualitative and Quantitative approaches. Boston: Pearson Education.

Ngaka Modiri Molema District Integrated Development Plan (NMMDIDP) (2013/14).

Nierop, E.V., Herpen, E.V. & Sloot, L. 2011. The relationship between Instore marketing and observed of sustainable products: A shopper marketing view. New economics papers.

Nissan, E. 2003. Relative market power versus concentration as a measure of market dominance: Property and liability insurance. *Journal of insurance issues*, 26(2):129-141.

Nopiah, Z.M., Lennie, A., Abdullah, S., Nuawi, M.Z., Nuryazmin, A.Z. & Bahrain, M.N. 2010. The use of autocorrelation function in the seasonality analysis for fatigue strain data. *Journal of Asian scientific research*, 2(11):782-788.

ONS (Office, for National Statistics United Kingdom). 2012. Consumer price indices technical manual.

Officer, L.H. 2013. What was the consumer price index then? A data study.

Olawale, F. & Garwe, D. 2010. Obstacles to the Growth of New Small and Medium Enterprises in South Africa: A Principal Component Analysis Approach. *African Journal of Business Management*, 4 (5):729-738.

Palley, T.I. 2004. From Keynesianism to Neoliberalism: Shifting paradigms in economics.

Pellinen, J. 2003. Making price decisions in tourism enterprises. *Hospitality management*, (22):217-235.

PIIE (Institute for International Economics Paper). A new trade plan for South Africa. Mail & Guardian [5/ 22/ 2008].

Pindyck, R. & Rubinefeld, D. 2013. Microeconomics. 8th ed. New Jersey: Pearson Learning.

Pitner, J. 2007. Business economics – What is supply and demand. *http:// www.insidebusiness360.com/index.php/busi.* 18 July 2013.

Plessis, P.J. & Rousseau, G.G. 2007. Buying behaviour. Understanding consumer psychology and marketing. 4th ed. Cape town: Oxford University press.

Punch, K.F. 2009. Introduction to Research Methods in Education. New Delhi: SAGE Publications.

Purushotam, N. 2011. Store attributes preference in selecting a store: A study of large scale retail stores in South Africa. *Journal of business and behavioural sciences*, 23(3):66-81.

Rajasekar, S., Philominathan, P. & Chinnathambi, V. 2013. Research methodology. arXiv:physics/0601009V3[physics.ed-ph].6 February 2014.

Rapsomanikis, G. & Sarris, A. 2009-2010. Food and agriculture organisation of the united nation. *Commodity market review,* Introduction: ix-xvii.

Roger, B.J. 2009. Market-based management: Strategies for growing customer value and profitability. 5th ed. New Jersey: Pearson Educational International.

Roger, B.M. 2003. An investigation into how marketers cope with an environment of high complexity and turbulence with special reference to the South African environment. Rhodes University. (Dissertation in doctor of philosophy).

Rohani, A. & Nazari, M. 2012. Impact of dynamic pricing strategies on consumer behaviour. *Journal of management research.* 4(4):143-159.

Rossman, G.B. & Marshall, C. 2011. Designing qualitative research. 5th ed. Los Angeles: SAGE Publication.

Reviere, J. 2009. Price concept in economics. *Http://www.helium.com/items/207879-the-concept-of-price-in-economics*_[15 March 2013].

Sahay, A. 2007. How to reap higher profits with dynamic pricing. *MIT Sloan management review,* (48):53-60.

Sarin, S. & O'Connor, G.C. 2009. First among Equals: The Effect of Team Leader Characteristics on the Internal Dynamics of Cross-Functional Product Development Teams. *Journal Product Innovation and Management,* (26): 188–205.

Scheer, L.V. 2010. The South African cherry picking consumer's price knowledge and gender issues. *Problems and perspectives in management, 8(3):193-199.*

Schindler, R.M. 2012. Pricing strategies: A marketing approach. 1sted. California: SAGE Publications.

Shama, A. 2006. Marketing best practice: Latest tools and techniques. New York: Select Knowledge.

Shankar, A.C. & Chin, K.K. 2011. A study of the relationship between marketing mix and customer retention for herbal coffee in Malaysia. 2nd international conference of business and economic research proceeding.

Sherrington, M. 2003. Added Value: The Alchemy of Brand-Led Growth. Basingstoke: Palgrave Macmillan.

Simon, H. 2009. Hidden champion of the 21st century: Success strategies of unknown world market leaders. 1sted. Bonn: Springer Publishers.

Sinha, A.K. & Mishra, S.K. 2011. Factors affecting ethical decision making in corporate setting. *Purushartha: Journal of management ethics and spirituality,* 5(1):135-153.

Smith, C.H., Bless, C. & Sithole, S.L. 2013. Fundamentals of social research methods: An African perspective. 5thed. Cape Town: Juta and company Ltd.

Smith, L.L. 2002. Economies and markets as complex systems. *Business economics*, 1-4(37): 46-68.

Smith, T.J. 2011. Pricing strategy: Piercing the veil of value exchange. *Ivey business journal.* 1-4.

Smyth, H. & Skitmore, M. 2006. Pricing in construction work: A marketing view point.

Snieskiene, G. & Pridotkiene, J. 2010. Export pricing objectives and factors influencing them. *Economics and management* (15):248-254.

Southern Africa Legal Information Institute (SAFLII) (2012). South Africa: Ngaka Modiri High Court in Mafikeng. *http//www.saflii.org.za/cases/zanwite/2012.*[17 July, 2013, 10.40a.m].

Spaku, P. & Mojaki, M.E. 2012. Ngaka Modiri Molema district municipality annual report *2011-2102. http//www.nmdm.gov.za/Annual Report final/ 2011-2012.pdf.* 6 April 2013.

Stat S.A CS (Statistics South Africa Community survey). 2007. Basic results North-West : Report No. 03-01-28. *http;//www.stassa.gov.za/publications./P03o//2007.pdf.* 18 April 2014.

Stat S.A CPISMM (Statistics South Africa CPI Sources and Methods Manual). 2009. Release V.1 February._*http: //www.statsssa.gov.za/cpi/documents/CPI-sources –method.pdf.*17 May 2013.

Stat S.A CPISMM (Statistics South Africa CPI Sources and Methods Manual). 2013. Release V .2 February. 20 March 2013.

Strydom, J.W., Erasmus, B.J. & Kloppers, S.R. 2013. Introduction to business management. 9th ed. Cape town: Oxford university press for Southern Africa.

Stucki, A. 2009. Internal and external factors influencing the implementation and diffusion of the open innovation model: The case of the postal sector. Paper presented at the 3rd global postal research and educational network conference.

Studenmund, A.H. 2011. Using econometrics: A practical guide. 6thed. Boston: Addison-wesley.

Sunil, G. & Steenburgh, T.J. 2008. Allocating marketing resources. Working paper 08-069.

Sychrova, L. 2012. Evaluation of approaches using the product life cycle. *Economic and management,*17(4):34-48.

The Report South Africa. 2008. The South African Economy. Oxford: Oxford business school.

Thomas, D.R. 2003. A General Inductive Approach for Qualitative Data Analysis, school of population health. University of Auckland.

Todeva, E. & Knoke, D. 2005. Strategic alliances and model of collaboration. *Management decision,* 43(1):123-148.

Trochim, W.M.K. 2006. Research Methods Knowledge Base. revised 2nd ed. Cincinnati, OH: Atomic Dog publishing.

USAID (United State Agency for International Development). 2009. Adjusting prices for inflation and creating prices indices. Fews Net markets guidance No,3.

Venter, P. & Van Rensburg, M.J. 2009. Strategic marketing: Theory and application for competitive advantage. 1sted. Cape Town: Oxford University press.

Veryzer, R.W. 2003. Discontinuous Innovation and the New Product Development Process. *Jounal of product innovation and Management*, 15(4): 304-321.

Wee, T.T.T. & Ming, M.C.H. 2003. Leveraging on symbolic values and meanings in branding, *Journal of Brand Management,* (10)3:208-18.

Weitze, B. & Wensley, R. 2005. Hand book of marketing. 2nded. London: SAGE Publications.

Westerland, J. & Breitung, J. 2010. Lessons from a decade of IPS and LLC*.

White House and Associates. 2007. The South African agri-food market report. Prepared for high commission of Canadian trade.

White, C.J. 2002. Research Methods and techniques. New York: Harper Colloins College.

Whiteside, A., Bentley, P.S., Danko, D., Portele, C., Herring, J.R., Matheus, A., Pearall, R. & Reff, B. 2008. The specification model-modular specification: Annex to OGC policy and procedures- The specification model- structuring an OGC specification to encourage implementation. Open Geospatial Consortium Inc.

Wiid, J. 2012. Fundamentals of Merchandising.1st ed. Cape Town: Juta & Company Ltd.

Wilson, E, 2009. School-based research: a guide for education student: New Delhi: SAGE Publications.

Wong, H.K. & Ellis, P.D. 2007. Is marketing orientation affected by the product life cycle? *Journal of world business*, 42(2):145-156.

Wood, M. 2008. Applying commercial marketing theory to social marketing: A trade of 4p's. *Social marketing quarterly*, (14)1:76-85.

Wooldridge, J.M. 2006. Introductory econometric: A modern approach. 3rd ed. Ohio: South Western college.

Wooldridge, J.M. (2009). Introductory econometric: A modern approach. 4th ed, Ohio, South Western college.

Woolworths. 2009. Annual report 2008/2009
http://www.woolworthsholdings.co.za/investor/annual_report.asp. 6 August 2013.

Appendix 1

NORTH WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES UNIVERSITEIT
MAFIKENG CAMPUS

HUMAN RESEARCH ETHICS COMMITTEE

APPLICATION FOR RESEARCH ETHICS CLEARANCE 2015

Instructions and recommended path for the completion of your ethics application:

1. The completed Ethics Application Form must be submitted to the relevant School/ Faculty Representative of the Human Ethics Committee who will then submit it to the Chair of the research ethics committee.
2. All applications must be signed and submitted in Electronic Format.
3. Incomplete applications will not be reviewed.
4. Proof of Research Proposal Acceptance must be submitted with the application (Please refer to your departmental research committee for relevant documentation).

Please complete all information below:

SECTION A:			
Title, initials, surname:	BB Ateba		
Student or staff no.:	21994358		
Department:	School of Management Sciences		
Telephone:			
Cell phone:	073 690 2154		
Fax:			
E-mail:	CaptainBenedict@Yahoo.com		
Application:	First application x	Resubmission ☐	
Title of research:	*Pricing as a Marketing Mix Element's effect on Market share of Supermarkets in the Ngaka Modiri District of the North West Province of South Africa*		
Supervisor:	Prof JJ Prinsloo		
Co-supervisor:			
Purpose of research:		**Estimated duration of research:**	
Honours	☐		
Masters (including mini -dissertations)	x	2 years	
Doctoral	☐		
Non-degree	☐		
Funding (if applicable):			

Please answer each question by ticking the appropriate box[1]:

		Yes	No
1	Does the study involve participants who are particularly vulnerable[2] or unable to give informed consent? (e.g. children, people with learning or other mental or physical disabilities, people who are incarcerated, unemployed or otherwise compromised in responding to your questions)		X
2	Are you planning on making use of NWU students or direct and secondary contracted staff members in this research?		X
3	Will the study require the co-operation of a gatekeeper for initial access to the groups of individuals to be recruited? (e.g. students at school, members of self-help groups, residents of a nursing home, the Minister of Education, a tribal chief or village elder)		X
4	Will it be necessary for participants to take part in the study without their knowledge and consent at the time? (e.g. covert observation of people)		X
5	Will the study involve discussion of or questions about a sensitive topic? (e.g. sexual activity, drug use, crime, harassment, violence)		X
6	Are drugs, placebos or other substances (e.g. food substances, vitamins) to be administered to the study participants or will the study involve invasive, intrusive or potentially harmful procedures of any kind or any physical, psychological or socio-economic intervention?		X
7	Will blood or tissue samples be obtained from participants?		X
8	Could the study induce physical, psychological or social stress or anxiety or cause harm or negative consequences beyond the risks[3] encountered in normal life?		X
9	Will the study require the identification of individuals for follow up evaluation?		X
10	Will financial inducements (other than reasonable expenses and compensation for time) or inducements of any other kind be offered to participants?		X
11	I have read the NWU's Manual for Postgraduate Studies and am familiar with the Guidelines for Research Ethics contained therein	X	
12	Could the image of the NWU, the relevant academic department, your employer, or any other institution however affected by/involved in the project be negatively affected by this research or put in a bad light?		X

[1] Adapted from Economic and Social Research Council (2005) Research Ethics Framework [illegible]

[2] ***Vulnerable groups*** raise special issues of informed consent and potential [illegible] 'Vulnerable' participants are not clearly described but have been noted to include "children, prisoners, pregnant women, mentally disabled persons, economically or educationally disadvantaged persons" [illegible] Federal Policy, 1991; Weijer and Emanuel [illegible] consider participants to be vulnerable if they are not in a position to provide informed consent due to their position (such as being a [illegible] or not possessing adequate intellectual faculty (such as children or the mentally ill). Children here are defined as participants younger than 16 years of age.

[3] ***Risk***: These possible risks are described as an [illegible] of privacy, loss of confidentiality, psychological trauma, indirect physical harm, embarrassment, stigma, and group stereotyping" [illegible] 2002: 449) and also risks posed to [illegible] subjects personal standing, privacy, personal values and beliefs, their links to family and the wider community, and their position within occupational settings, as well as the adverse effects of revealing information that relates to illegal, sensitive or deviant behaviour (Economic and Social Research Council (ESRC), 2005: 21). Minimal risk may be defined as where "the probability and magnitude of harm or discomfort anticipated in the proposed research are not greater in and of themselves than those ordinarily encountered in daily life" [illegible] Federal Regulations [illegible]

If you answered **no** to all questions, submit the completed and signed form with your title registration. Students should retain a copy of the form and submit it with their dissertation/thesis.

If you answered **yes** to any of the questions, you will need to describe more fully how you plan to deal with the ethical issues raised by your proposal. **This does not mean that you cannot do the research, only that your proposal will need to be approved by the Research Ethics Committee.** You will need to submit your plans for addressing the ethical issues raised by your proposal using the Ethics Approval Application Form. This may be obtained from http://www.nwu.ac.za/sites/www.nwu.ac.za/files/files/p_postgrad.pdf. Alternatively, you may attach a fuller description of the specific issue to this declaration, for discussion by the panel at the Proposal Meeting.

Please note that it is your responsibility to follow NWU's Guidelines for Ethical Research as set out in the Manual for Postgraduate Studies and any relevant academic or professional guidelines in the conduct of your study. **This includes providing appropriate information sheets and consent forms, and ensuring the confidentiality in the storage and use of data.** Any significant change in the question, design or conduct over the course of the research should be notified to the Study Leader and may require a new application for ethics approval.

Candidate

Name and Surname: BB Ntebeti

Signature:

Supervisor

Name and Surname: JJ Prinsloo

Signature:

School/ Faculty Representative

Name and Surname:

Signature:

Chair/ Vice-Chair: Research Proposal Committee:

Name and Surname: Prof EW Bothma

Signature:

Date: 15/11/2013

Appendix 2

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
MAFIKENG CAMPUS
Faculty of Commerce and Administration

DEPARTMENT OF MANAGEMENT

Tel: +27 18 3892565
Fax: +27 18 3892022
E-mail: Frazer.Kadama@nwu.ac.za
Internet: http://www.nwu.ac.za/

08/04/2013

TO WHOM IT MAY CONCERN

This is to confirm that Mr. Benedict Ateba is an MCom in Management student at our university. He is required to undertake research in management related aspects in both public and private sectors. His focus is on the impact of pricing strategy on the market share of retailers. His study will be delimited to the Ngaka Modiri Molema District Municipality. Mr. Ateba is under instruction to conform to the ethical requirements prescribed for such studies and to protect the interests of all participants.

We humbly request that you provide him with the necessary assistance and information to complete his research. He is available on mobile number 0736902154 and also on e-mail: captainbenedict@yahoo.com.

Yours truly,

Dr. F. Kadama

Programme coordinator.

NORTH-WEST UNIVERSITY • YUNIBESITI YA BOKONE-BOPHIRIMA • NOORDWES-UNIVERSITEIT
2013 -04- 08

Appendix 3

Results from regression analysis

3A. UNIT ROOT TESTS

Test for price data for all items across all cross sections

Group unit root test: Summary
Series: PP_P1, SP_P1, SH_P1, PP_P10, SP_P10, SH_P10, PP_P11, SP_P11, SH_P11, PP_P2, SP_P2, SH_P2, PP_P3, SP_P3, SH_P3, PP_P4, SP_P4, SH_P4, PP_P5, SP_P5, SH_P5, PP_P6, SP_P6, SH_P6, PP_P7, SP_P7, SH_P7, PP_P8, SP_P8, SH_P8, PP_P9, SP_P9, SH_P9
Date: 02/14/14 Time: 07:45
Sample: 2011M01 2013M12
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.17127	0.0150	33	997
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.46766	0.0000	33	997
ADF - Fisher Chi-square	148.373	0.0000	33	997
PP - Fisher Chi-square	107.981	0.0009	33	1023

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Test for quantity data for all items across all cross sections

Group unit root test: Summary
Series: PP_Q1, SP_Q1, SH_Q1, PP_Q10, SP_Q10, SH_Q10, PP_Q11, SP_Q11, SH_Q11, PP_Q2, SP_Q2, SH_Q2, PP_Q3, SP_Q3, SH_Q3, PP_Q4, SP_Q4, SH_Q4, PP_Q5, SP_Q5, SH_Q5, PP_Q6, SP_Q6, SH_Q6, PP_Q7, SP_Q7, SH_Q7, PP_Q8, SP_Q8, SH_Q8, PP_Q9, SP_Q9, SH_Q9
Date: 02/14/14 Time: 07:48
Sample: 2011M01 2013M12
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 6
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-3.10129	0.0010	33	987
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-4.87158	0.0000	33	987
ADF - Fisher Chi-square	137.863	0.0000	33	987

PP - Fisher Chi-square	75.9068	0.1894	33	1023

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

3.B. POOLABILITY TEST RESULTS

- **Results for white star 5kg**

Redundant Fixed Effects Tests
Pool: POOL
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2031.774188	(2,92)	0.0000
Cross-section Chi-square	365.799466	2	0.0000

Cross-section fixed effects test equation:
Dependent Variable: ?Q1
Method: Panel Least Squares
Date: 03/04/14 Time: 17:20
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3320.324	648.8491	5.117252	0.0000
?P1	-82.25102	20.83288	-3.948135	0.0002

R-squared	0.142240	Mean dependent var	764.8021
Adjusted R-squared	0.133115	S.D. dependent var	475.5946
S.E. of regression	442.8103	Akaike info criterion	15.04477
Sum squared resid	18431609	Schwarz criterion	15.09820
Log likelihood	-720.1491	Hannan-Quinn criter.	15.06637
F-statistic	15.58777	Durbin-Watson stat	0.051615
Prob(F-statistic)	0.000152		

- **Results for Tastic rice 2kg**

Redundant Fixed Effects Tests
Pool: POOL
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	937.920143	(2,92)	0.0000
Cross-section Chi-square	294.038721	2	0.0000

Cross-section fixed effects test equation:
Dependent Variable: ?Q2
Method: Panel Least Squares
Date: 03/04/14 Time: 17:29
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	717.8780	570.9241	1.257396	0.2117
?P2	54.52602	28.07702	1.942016	0.0551

R-squared	0.038574	Mean dependent var	1823.552
Adjusted R-squared	0.028346	S.D. dependent var	422.0041
S.E. of regression	415.9801	Akaike info criterion	14.91977
Sum squared resid	16265706	Schwarz criterion	14.97319
Log likelihood	-714.1487	Hannan-Quinn criter.	14.94136
F-statistic	3.771427	Durbin-Watson stat	0.081238
Prob(F-statistic)	0.055129		

- **Coke 2 liters**

Redundant Fixed Effects Tests
Pool: POOL
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
	357176.08267		
Cross-section F	8	(2,92)	0.0000
Cross-section Chi-square	859.917269	2	0.0000

Cross-section fixed effects test equation:
Dependent Variable: ?Q3
Method: Panel Least Squares
Date: 03/04/14 Time: 17:32
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	46487.64	6758.370	6.878529	0.0000
?P3	-2640.274	495.3084	-5.330567	0.0000

R-squared	0.232120	Mean dependent var	10588.71
Adjusted R-squared	0.223951	S.D. dependent var	6306.277
S.E. of regression	5555.429	Akaike info criterion	20.10355
Sum squared resid	2.90E+09	Schwarz criterion	20.15698
Log likelihood	-962.9705	Hannan-Quinn criter.	20.12515
F-statistic	28.41494	Durbin-Watson stat	0.123422
Prob(F-statistic)	0.000001		

- **Results for Lays potato chips**

Redundant Fixed Effects Tests
Pool: POOL
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	181.957288	(2,92)	0.0000
Cross-section Chi-square	153.649621	2	0.0000

Cross-section fixed effects test equation:
Dependent Variable: ?Q4
Method: Panel Least Squares
Date: 03/04/14 Time: 17:34
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	498.4254	54.43811	9.155816	0.0000
?P4	-24.41770	5.214915	-4.682282	0.0000

R-squared	0.189122	Mean dependent var	245.3333
Adjusted R-squared	0.180496	S.D. dependent var	69.94775
S.E. of regression	63.32123	Akaike info criterion	11.15493
Sum squared resid	376900.3	Schwarz criterion	11.20836
Log likelihood	-533.4367	Hannan-Quinn criter.	11.17653
F-statistic	21.92376	Durbin-Watson stat	0.146853
Prob(F-statistic)	0.000010		

- **Results for Dark temptation axe spray**

Redundant Fixed Effects Tests
Pool: POOL
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	31.844660	(2,92)	0.0000
Cross-section Chi-square	50.503095	2	0.0000

Cross-section fixed effects test equation:
Dependent Variable: ?Q5
Method: Panel Least Squares
Date: 03/04/14 Time: 17:35
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	123.6421	7.242715	17.07123	0.0000
?P5	-4.748892	0.324879	-14.61740	0.0000

R-squared	0.694476	Mean dependent var	18.18750
Adjusted R-squared	0.691226	S.D. dependent var	11.29724
S.E. of regression	6.277588	Akaike info criterion	6.532462
Sum squared resid	3704.362	Schwarz criterion	6.585886
Log likelihood	-311.5582	Hannan-Quinn criter.	6.554057
F-statistic	213.6683	Durbin-Watson stat	0.779318
Prob(F-statistic)	0.000000		

- **Results for Sasko bread**

Redundant Fixed Effects Tests
Pool: POOL
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	19987.053140	(2,92)	0.0000
Cross-section Chi-square	583.343755	2	0.0000

Cross-section fixed effects test equation:
Dependent Variable: ?Q6
Method: Panel Least Squares
Date: 03/04/14 Time: 17:37
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1100.345	762.6572	1.442778	0.1524
?P6	-58.37161	75.66281	-0.771470	0.4424

R-squared	0.006292	Mean dependent var	513.3333
Adjusted R-squared	-0.004280	S.D. dependent var	505.8900
S.E. of regression	506.9713	Akaike info criterion	15.31540
Sum squared resid	24159872	Schwarz criterion	15.36882
Log likelihood	-733.1392	Hannan-Quinn criter.	15.33699
F-statistic	0.595166	Durbin-Watson stat	0.000813
Prob(F-statistic)	0.442363		

- **Results for Chicken braai cut**

Redundant Fixed Effects Tests
Pool: POOL
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
	105436.83065		
Cross-section F	7	(2,92)	0.0000
Cross-section Chi-square	742.815560	2	0.0000

Cross-section fixed effects test equation:
Dependent Variable: ?Q7
Method: Panel Least Squares
Date: 03/04/14 Time: 17:39
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	20508.07	10435.73	1.965179	0.0523
?P7	-218.8014	296.9816	-0.736751	0.4631

R-squared	0.005741	Mean dependent var	12846.95
Adjusted R-squared	-0.004836	S.D. dependent var	8604.889
S.E. of regression	8625.670	Akaike info criterion	20.98349
Sum squared resid	6.99E+09	Schwarz criterion	21.03691
Log likelihood	-1005.207	Hannan-Quinn criter.	21.00508
F-statistic	0.542802	Durbin-Watson stat	0.002044
Prob(F-statistic)	0.463109		

- **Results for Apple golden**

Redundant Fixed Effects Tests
Pool: POOL
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	5858.160710	(2,92)	0.0000
Cross-section Chi-square	466.058034	2	0.0000

Cross-section fixed effects test equation:
Dependent Variable: ?Q8
Method: Panel Least Squares
Date: 03/04/14 Time: 17:40
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	425.5414	306.0771	1.390308	0.1677
?P8	11.48194	20.08926	0.571546	0.5690

R-squared	0.003463	Mean dependent var	597.9583
Adjusted R-squared	-0.007138	S.D. dependent var	505.4186
S.E. of regression	507.2193	Akaike info criterion	15.31638
Sum squared resid	24183510	Schwarz criterion	15.36980
Log likelihood	-733.1861	Hannan-Quinn criter.	15.33797
F-statistic	0.326665	Durbin-Watson stat	0.014433
Prob(F-statistic)	0.568994		

- **Results for Nutriday yogurt**

Redundant Fixed Effects Tests
Pool: POOL
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	19491.563904	(2,92)	0.0000
Cross-section Chi-square	580.939474	2	0.0000

Cross-section fixed effects test equation:
Dependent Variable: ?Q9
Method: Panel Least Squares
Date: 03/04/14 Time: 17:42
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2654.119	615.7137	4.310639	0.0000
?P9	-118.8603	54.81535	-2.168377	0.0327

R-squared	0.047637	Mean dependent var	1331.427
Adjusted R-squared	0.037505	S.D. dependent var	836.3599
S.E. of regression	820.5260	Akaike info criterion	16.27838
Sum squared resid	63286710	Schwarz criterion	16.33181
Log likelihood	-779.3623	Hannan-Quinn criter.	16.29998
F-statistic	4.701857	Durbin-Watson stat	0.011936
Prob(F-statistic)	0.032654		

- **Results for Colgate triple action 100ml**

Redundant Fixed Effects Tests
Pool: POOL
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3264.470959	(2,92)	0.0000
Cross-section Chi-square	410.515617	2	0.0000

Cross-section fixed effects test equation:
Dependent Variable: ?Q10
Method: Panel Least Squares
Date: 03/04/14 Time: 17:43
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1588.072	715.4660	2.219633	0.0288
?P10	-66.87639	92.42891	-0.723544	0.4711

R-squared	0.005538	Mean dependent var	1072.490
Adjusted R-squared	-0.005041	S.D. dependent var	627.5677
S.E. of regression	629.1474	Akaike info criterion	15.74722
Sum squared resid	37207690	Schwarz criterion	15.80065
Log likelihood	-753.8666	Hannan-Quinn criter.	15.76882
F-statistic	0.523516	Durbin-Watson stat	0.002016
Prob(F-statistic)	0.471142		

- **Results for Styvensant cigarette**

Redundant Fixed Effects Tests
Pool: POOL
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1933.120887	(2,92)	0.0000
Cross-section Chi-square	361.129597	2	0.0000

Cross-section fixed effects test equation:
Dependent Variable: ?Q11
Method: Panel Least Squares
Date: 03/04/14 Time: 17:45
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3221.895	195.0336	16.51969	0.0000
?P11	-108.5957	7.712576	-14.08034	0.0000

R-squared	0.678364	Mean dependent var	489.6042
Adjusted R-squared	0.674943	S.D. dependent var	336.1980
S.E. of regression	191.6792	Akaike info criterion	13.37014
Sum squared resid	3453648.	Schwarz criterion	13.42356
Log likelihood	-639.7666	Hannan-Quinn criter.	13.39173
F-statistic	198.2561	Durbin-Watson stat	0.214066
Prob(F-statistic)	0.000000		

3. C. RESULTS FOR MODEL ESTIMATION

- **Results for White star 5kg**

Dependent Variable: ?Q1
Method: Pooled Least Squares
Date: 02/14/14 Time: 07:31
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PP_--C	1861.557	193.0216	9.644297	0.0000
SP_--C	618.5133	147.8682	4.182870	0.0001
SH_--C	1839.378	213.4389	8.617818	0.0000
PP_--PP_P1	-22.39002	6.327171	-3.538709	0.0006
SP_--SP_P1	-15.82375	4.611937	-3.431042	0.0009
SH_--SH_P1	-27.19350	6.919501	-3.929979	0.0002

R-squared	0.981431	Mean dependent var	764.8021
Adjusted R-squared	0.980400	S.D. dependent var	475.5946
S.E. of regression	66.58396	Akaike info criterion	11.29527
Sum squared resid	399008.2	Schwarz criterion	11.45554
Log likelihood	-536.1728	Hannan-Quinn criter.	11.36005
F-statistic	951.3669	Durbin-Watson stat	0.230685
Prob(F-statistic)	0.000000		

- **Results for Tastic rice 2kg**

Dependent Variable: ?Q2
Method: Pooled Least Squares
Date: 02/14/14 Time: 07:33
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PP_--C	2316.963	218.2133	10.61788	0.0000
SP_--C	1927.147	313.4294	6.148584	0.0000
SH_--C	3191.666	196.1173	16.27427	0.0000
PP_--PP_P2	-20.92787	10.64828	-1.965376	0.0525
SP_--SP_P2	-32.20833	15.94699	-2.019712	0.0464
SH_--SH_P2	-43.58722	9.411896	-4.631078	0.0000

R-squared	0.956290	Mean dependent var	1823.552
Adjusted R-squared	0.953861	S.D. dependent var	422.0041
S.E. of regression	90.64619	Akaike info criterion	11.91227
Sum squared resid	739505.8	Schwarz criterion	12.07254
Log likelihood	-565.7888	Hannan-Quinn criter.	11.97705
F-statistic	393.8015	Durbin-Watson stat	0.124068
Prob(F-statistic)	0.000000		

- **Results for Coke 2 litters**

Dependent Variable: ?Q3
Method: Pooled Least Squares
Date: 02/14/14 Time: 07:34
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PP_--C	18209.58	167.6107	108.6421	0.0000
SP_--C	2649.343	120.6405	21.96065	0.0000
SH_--C	14103.46	148.9860	94.66302	0.0000
PP_--PP_P3	-117.1181	12.66549	-9.247026	0.0000
SP_--SP_P3	-48.43777	8.357149	-5.795969	0.0000
SH_--SH_P3	-72.17599	11.26153	-6.409074	0.0000

R-squared	0.999919	Mean dependent var	10588.71
Adjusted R-squared	0.999915	S.D. dependent var	6306.277
S.E. of regression	58.13578	Akaike info criterion	11.02390
Sum squared resid	304179.2	Schwarz criterion	11.18417
Log likelihood	-523.1473	Hannan-Quinn criter.	11.08869
F-statistic	223551.5	Durbin-Watson stat	0.414692
Prob(F-statistic)	0.000000		

- **Results for Lays potato chips**

Dependent Variable: ?Q4
Method: Pooled Least Squares
Date: 02/14/14 Time: 07:35
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PP_--C	658.7636	47.71352	13.80665	0.0000
SP_--C	571.8379	39.98987	14.29957	0.0000
SH_--C	365.3048	39.62993	9.217903	0.0000
PP_--PP_P4	-34.30466	4.613008	-7.436504	0.0000
SP_--SP_P4	-29.77571	3.743478	-7.954023	0.0000
SH_--SH_P4	-18.74638	3.852583	-4.865924	0.0000

R-squared	0.849184	Mean dependent var	245.3333
Adjusted R-squared	0.840805	S.D. dependent var	69.94775
S.E. of regression	27.90864	Akaike info criterion	9.556211
Sum squared resid	70100.30	Schwarz criterion	9.716483
Log likelihood	-452.6981	Hannan-Quinn criter.	9.620996
F-statistic	101.3504	Durbin-Watson stat	0.831152
Prob(F-statistic)	0.000000		

- **Results for dark temptation axe spray**

Dependent Variable: ?Q5
Method: Pooled Least Squares
Date: 02/14/14 Time: 07:36
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PP_--C	66.78853	11.64550	5.735137	0.0000
SP_--C	57.23437	16.62954	3.441728	0.0009
SH_--C	114.2824	12.47598	9.160192	0.0000
PP_--PP_P5	-2.236935	0.515383	-4.340332	0.0000
SP_--SP_P5	-2.089184	0.700744	-2.981380	0.0037
SH_--SH_P5	-4.112419	0.610759	-6.733296	0.0000

R-squared	0.832211	Mean dependent var	18.18750
Adjusted R-squared	0.822890	S.D. dependent var	11.29724
S.E. of regression	4.754386	Akaike info criterion	6.016474
Sum squared resid	2034.377	Schwarz criterion	6.176745
Log likelihood	-282.7907	Hannan-Quinn criter.	6.081258
F-statistic	89.27771	Durbin-Watson stat	0.953103
Prob(F-statistic)	0.000000		

- **Results for Sasko bread**

Dependent Variable: ?Q6
Method: Pooled Least Squares
Date: 02/14/14 Time: 07:37
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PP_--C	910.5599	66.96954	13.59663	0.0000
SP_--C	529.7779	80.11542	6.612683	0.0000
SH_--C	1583.617	49.99498	31.67553	0.0000
PP_--PP_P6	-68.20437	6.797135	-10.03428	0.0000
SP_--SP_P6	-43.50996	7.793676	-5.582726	0.0000
SH_--SH_P6	-36.40209	4.948856	-7.355658	0.0000

R-squared	0.998035	Mean dependent var	513.3333
Adjusted R-squared	0.997926	S.D. dependent var	505.8900
S.E. of regression	23.03997	Akaike info criterion	9.172800
Sum squared resid	47775.61	Schwarz criterion	9.333071
Log likelihood	-434.2944	Hannan-Quinn criter.	9.237584
F-statistic	9142.136	Durbin-Watson stat	0.409994
Prob(F-statistic)	0.000000		

- **Results for chicken braai cut 2kg**

Dependent Variable: ?Q7
Method: Pooled Least Squares
Date: 02/14/14 Time: 07:38
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PP_--C	19896.40	356.9119	55.74598	0.0000
SP_--C	2333.041	537.1419	4.343435	0.0000
SH_--C	21324.06	314.9592	67.70420	0.0000
PP_--PP_P7	-32.07535	10.27059	-3.123028	0.0024
SP_--SP_P7	-44.99279	15.20639	-2.958808	0.0039
SH_--SH_P7	-65.85707	8.912143	-7.389588	0.0000

R-squared	0.999595	Mean dependent var	12846.95
Adjusted R-squared	0.999572	S.D. dependent var	8604.889
S.E. of regression	177.9475	Akaike info criterion	13.26132
Sum squared resid	2849879.	Schwarz criterion	13.42159
Log likelihood	-630.5432	Hannan-Quinn criter.	13.32610
F-statistic	44410.36	Durbin-Watson stat	0.179135
Prob(F-statistic)	0.000000		

- **Results for Apple golden**

Dependent Variable: ?Q8
Method: Pooled Least Squares
Date: 02/14/14 Time: 07:39
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PP_--C	2031.343	44.06493	46.09885	0.0000
SP_--C	707.4897	54.26310	13.03814	0.0000
SH_--C	455.6344	30.60197	14.88905	0.0000
PP_--PP_P8	-46.96698	2.800070	-16.77350	0.0000
SP_--SP_P8	-26.79567	3.345038	-8.010573	0.0000
SH_--SH_P8	-17.73894	2.246348	-7.896790	0.0000

R-squared	0.995540	Mean dependent var	597.9583
Adjusted R-squared	0.995293	S.D. dependent var	505.4186
S.E. of regression	34.67649	Akaike info criterion	9.990462
Sum squared resid	108221.3	Schwarz criterion	10.15073
Log likelihood	-473.5422	Hannan-Quinn criter.	10.05525
F-statistic	4018.321	Durbin-Watson stat	0.528956
Prob(F-statistic)	0.000000		

- **Results for Nutriday yogurt**

Dependent Variable: ?Q9
Method: Pooled Least Squares
Date: 02/14/14 Time: 07:39
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PP_--C	3080.189	61.56200	50.03393	0.0000
SP_--C	736.4009	53.66633	13.72184	0.0000
SH_--C	1577.689	58.52727	26.95648	0.0000
PP_--PP_P9	-56.43366	5.497534	-10.26527	0.0000
SP_--SP_P9	-21.87201	4.354700	-5.022622	0.0000
SH_--SH_P9	-50.33908	5.816931	-8.653890	0.0000

R-squared	0.998309	Mean dependent var	1331.427
Adjusted R-squared	0.998215	S.D. dependent var	836.3599
S.E. of regression	35.33726	Akaike info criterion	10.02821
Sum squared resid	112384.9	Schwarz criterion	10.18849
Log likelihood	-475.3543	Hannan-Quinn criter.	10.09300
F-statistic	10625.25	Durbin-Watson stat	0.494860
Prob(F-statistic)	0.000000		

- **Results for colgate triple action**

Dependent Variable: ?Q10
Method: Pooled Least Squares
Date: 02/14/14 Time: 07:40
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PP_--C	1436.715	159.4925	9.008037	0.0000
SP_--C	837.0783	151.0829	5.540522	0.0000
SH_--C	2582.683	135.0030	19.13056	0.0000
PP_--PP_P10	-79.51547	20.65116	-3.850412	0.0002
SP_--SP_P10	-47.50671	19.50937	-2.435071	0.0169
SH_--SH_P10	-85.58821	17.40891	-4.916345	0.0000

R-squared	0.986529	Mean dependent var	1072.490
Adjusted R-squared	0.985780	S.D. dependent var	627.5677
S.E. of regression	74.83565	Akaike info criterion	11.52893
Sum squared resid	504033.7	Schwarz criterion	11.68920
Log likelihood	-547.3885	Hannan-Quinn criter.	11.59371
F-statistic	1318.157	Durbin-Watson stat	0.146461
Prob(F-statistic)	0.000000		

- **Result for styvensant cigarette**

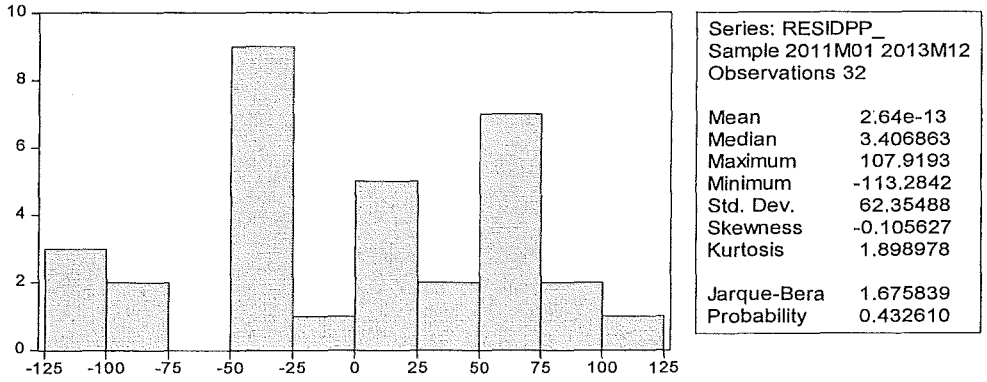
Dependent Variable: ?Q11
Method: Pooled Least Squares
Date: 02/14/14 Time: 07:41
Sample (adjusted): 2011M01 2013M08
Included observations: 32 after adjustments
Cross-sections included: 3
Total pool (balanced) observations: 96

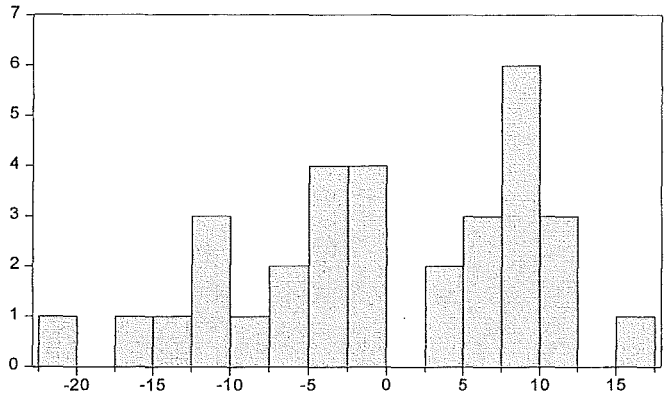
Variable	Coefficient	Std. Error	t-Statistic	Prob.
PP_--C	1166.112	104.3544	11.17453	0.0000
SP_--C	656.8708	84.15951	7.805070	0.0000
SH_--C	689.1853	101.3027	6.803230	0.0000
PP_--PP_P11	-9.260898	4.677219	-1.980001	0.0508
SP_--SP_P11	-16.00399	3.245616	-4.930957	0.0000
SH_--SH_P11	-15.47764	3.703389	-4.179317	0.0001

R-squared	0.992650	Mean dependent var	489.6042
Adjusted R-squared	0.992241	S.D. dependent var	336.1980
S.E. of regression	29.61322	Akaike info criterion	9.674780
Sum squared resid	78924.84	Schwarz criterion	9.835052
Log likelihood	-458.3894	Hannan-Quinn criter.	9.739565
F-statistic	2430.908	Durbin-Watson stat	0.234254
Prob(F-statistic)	0.000000		

3. D. NORMALITY TEST RESULTS

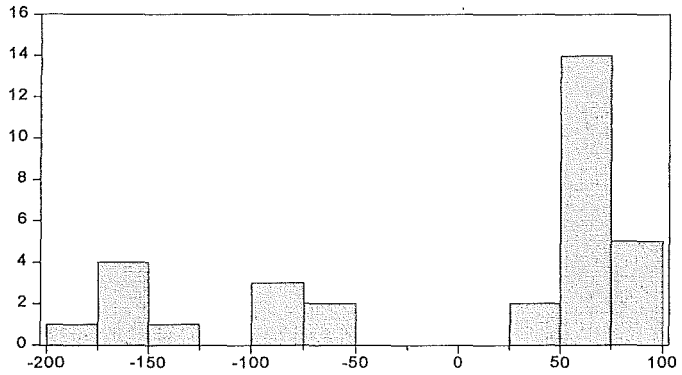
White star 5 kg (P1 & Q1) for individual supermarkets





Series: RESIDSP_
Sample 2011M01 2013M12
Observations 32

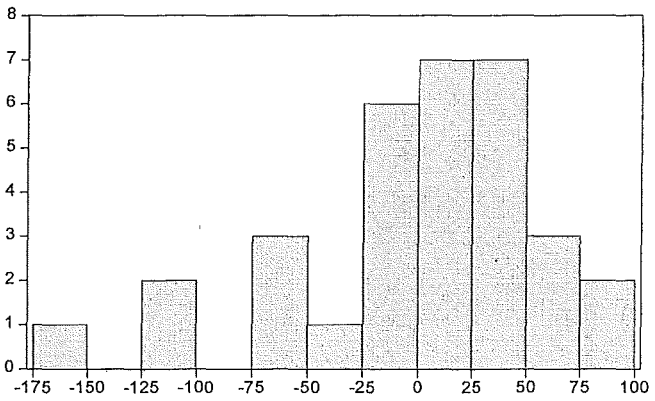
Mean	1.32e-13
Median	-0.638692
Maximum	16.60039
Minimum	-20.89040
Std. Dev.	9.320414
Skewness	-0.348739
Kurtosis	2.238943
Jarque-Bera	1.420910
Probability	0.491421



Series: RESIDSH_
Sample 2011M01 2013M12
Observations 32

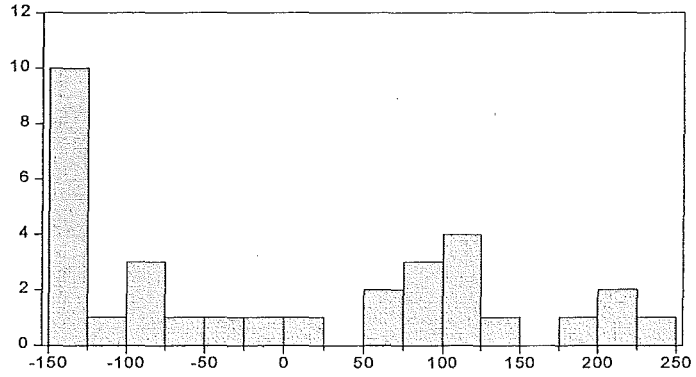
Mean	-1.63e-13
Median	55.44526
Maximum	83.15501
Minimum	-182.6515
Std. Dev.	94.31983
Skewness	-0.854162
Kurtosis	2.037831
Jarque-Bera	5.125518
Probability	0.077092

Tastic rice (P2 & Q2) Results for individual supermarkets



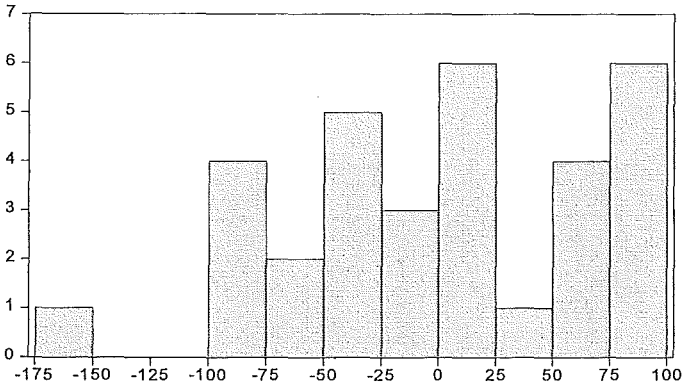
Series: RESIDPP_
Sample 2011M01 2013M12
Observations 32

Mean	-5.20e-14
Median	10.93642
Maximum	94.25068
Minimum	-156.6152
Std. Dev.	56.66005
Skewness	-0.975433
Kurtosis	3.798496
Jarque-Bera	5.924636
Probability	0.051699



Series: RESIDSP_
Sample 2011M01 2013M12
Observations 32

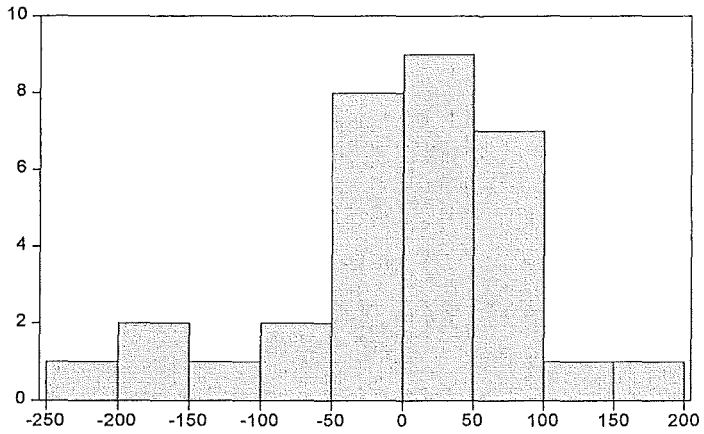
Mean	1.01e-13
Median	-17.61474
Maximum	231.6978
Minimum	-149.9281
Std. Dev.	128.4907
Skewness	0.294644
Kurtosis	1.644668
Jarque-Bera	2.912246
Probability	0.233138



Series: RESIDSH_
Sample 2011M01 2013M12
Observations 32

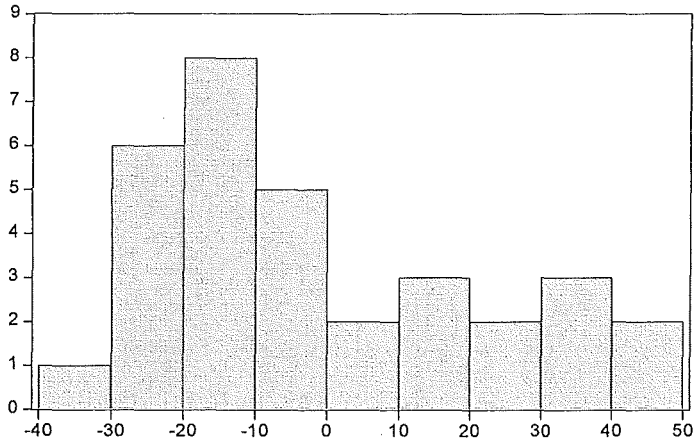
Mean	-4.94e-13
Median	1.142185
Maximum	99.40385
Minimum	-150.0089
Std. Dev.	64.30239
Skewness	-0.224890
Kurtosis	2.214181
Jarque-Bera	1.093086
Probability	0.578948

Coke (P3 & Q3) results for individual supermarkets



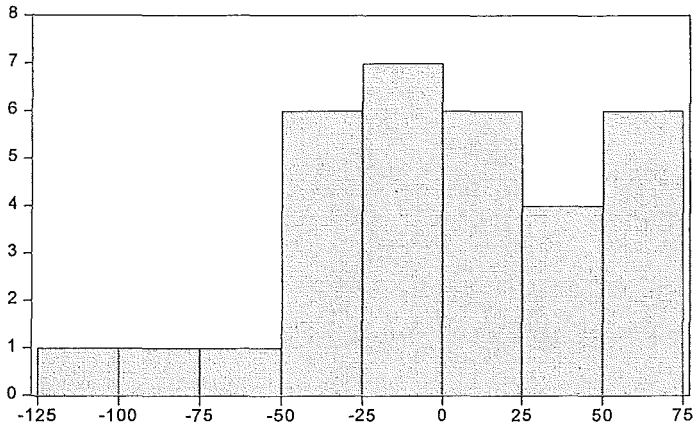
Series: RESIDPP_
Sample 2011M01 2013M12
Observations 32

Mean	1.77e-12
Median	7.151215
Maximum	165.9221
Minimum	-231.2133
Std. Dev.	86.50343
Skewness	-0.861554
Kurtosis	3.837315
Jarque-Bera	4.893599
Probability	0.086570



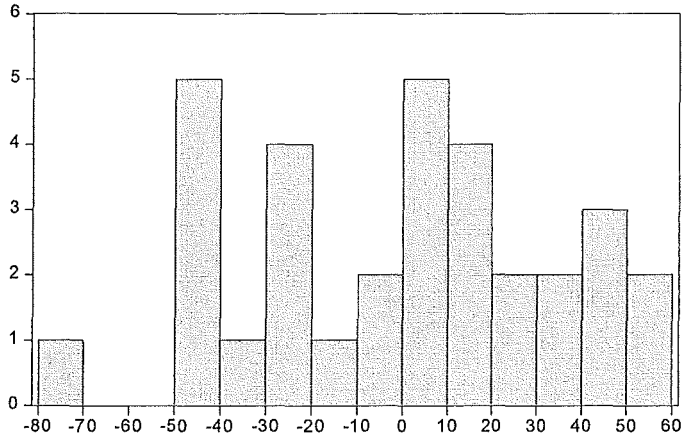
Series: RESIDSP_
Sample 2011M01 2013M12
Observations 32

Mean	9.17e-14
Median	-4.729331
Maximum	45.86388
Minimum	-32.38590
Std. Dev.	23.14594
Skewness	0.545326
Kurtosis	2.081376
Jarque-Bera	2.711192
Probability	0.257794

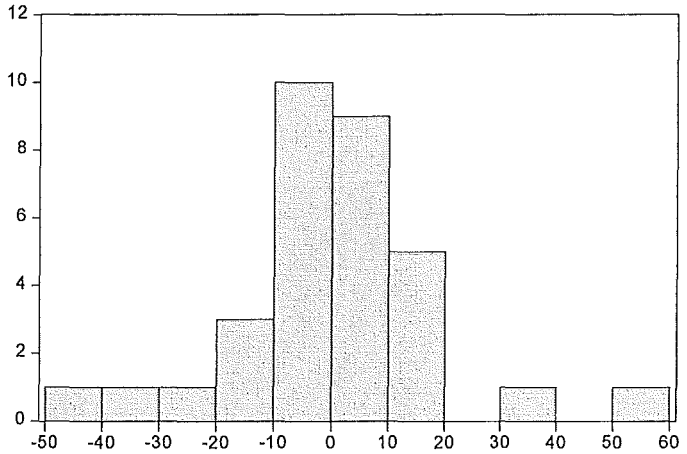


Series: RESIDSH_	
Sample 2011M01 2013M12	
Observations 32	
Mean	1.96e-13
Median	-0.715896
Maximum	64.78114
Minimum	-101.9846
Std. Dev.	42.35158
Skewness	-0.356454
Kurtosis	2.782996
Jarque-Bera	0.740438
Probability	0.690583

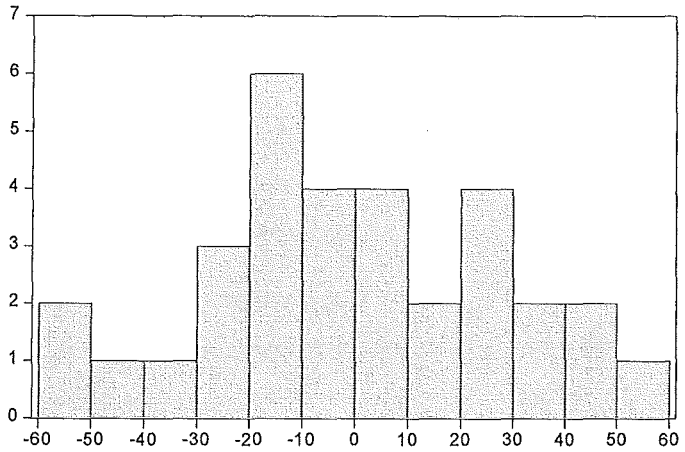
Lays Potato onion chips (P4 & Q4) individual supermarket results



Series: RESIDPP_	
Sample 2011M01 2013M12	
Observations 32	
Mean	9.34e-14
Median	3.787566
Maximum	59.84060
Minimum	-70.75545
Std. Dev.	34.06646
Skewness	-0.114660
Kurtosis	2.117524
Jarque-Bera	1.108468
Probability	0.574512



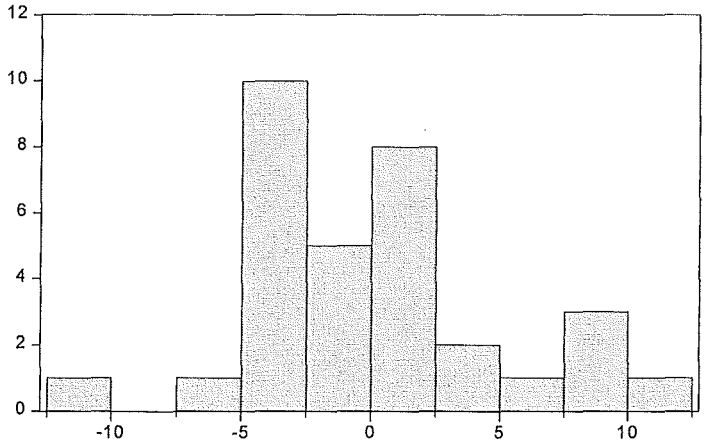
Series: RESIDSP_	
Sample 2011M01 2013M12	
Observations 32	
Mean	1.24e-13
Median	0.045989
Maximum	53.62140
Minimum	-48.37860
Std. Dev.	18.18463
Skewness	0.027543
Kurtosis	5.381824
Jarque-Bera	7.568158
Probability	0.022730



Series: RESIDSH_
Sample 2011M01 2013M12
Observations 32

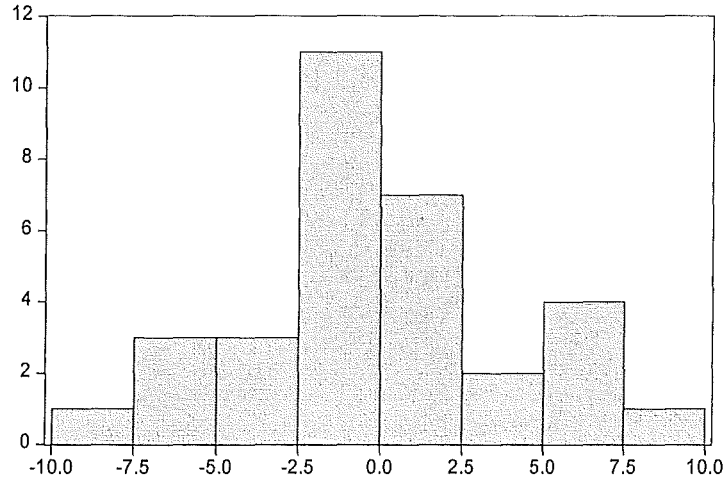
Mean	4.75e-14
Median	-3.462933
Maximum	52.71787
Minimum	-52.40518
Std. Dev.	27.75060
Skewness	0.031716
Kurtosis	2.251766
Jarque-Bera	0.751836
Probability	0.686659

Dark temptation axe spray (P5 & Q5) individual results



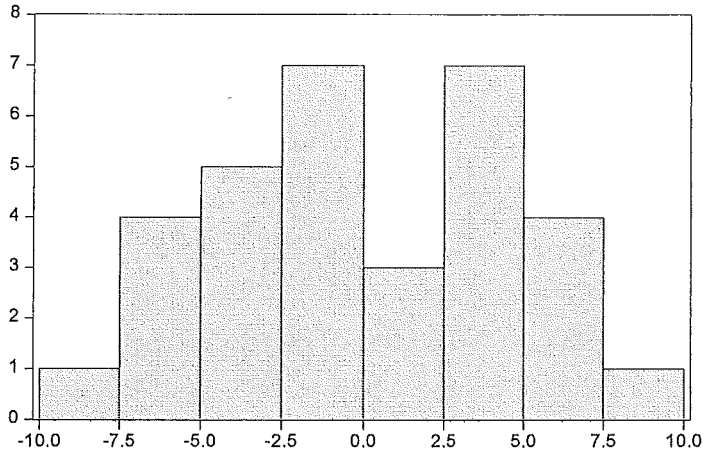
Series: RESIDPP_
Sample 2011M01 2013M12
Observations 32

Mean	-2.74e-14
Median	-0.881251
Maximum	12.40168
Minimum	-12.07219
Std. Dev.	5.229172
Skewness	0.459862
Kurtosis	3.288930
Jarque-Bera	1.239166
Probability	0.538169



Series: RESIDSP_
Sample 2011M01 2013M12
Observations 32

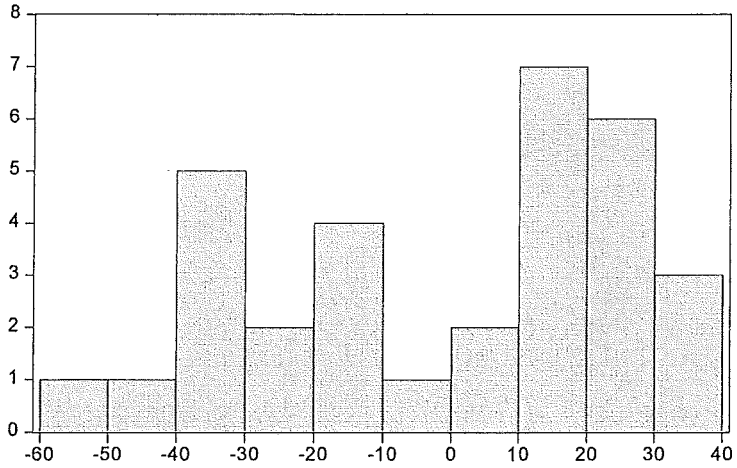
Mean	-1.50e-15
Median	-0.301468
Maximum	9.378134
Minimum	-8.272322
Std. Dev.	4.038319
Skewness	0.234577
Kurtosis	2.950914
Jarque-Bera	0.296686
Probability	0.862135



Series: RESIDSH_
Sample 2011M01 2013M12
Observations 32

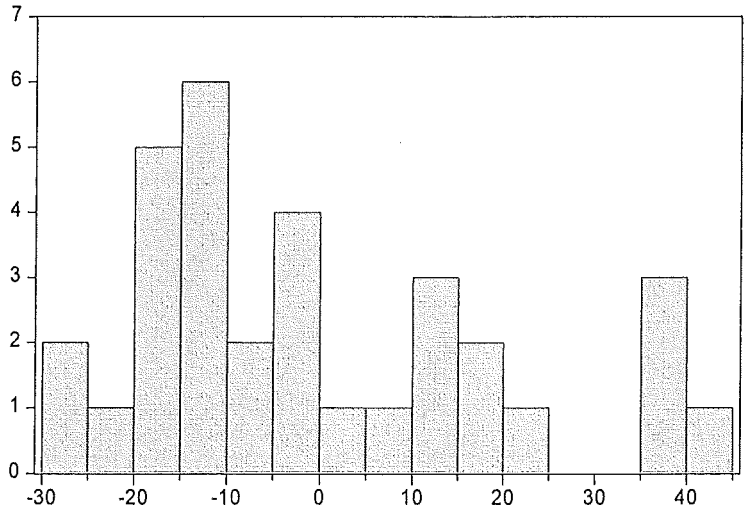
Mean	4.33e-15
Median	-0.536418
Maximum	8.816549
Minimum	-9.187583
Std. Dev.	4.687514
Skewness	0.020204
Kurtosis	1.995825
Jarque-Bera	1.346668
Probability	0.510005

Sasko bread (P6 & P6) results individual supermarket



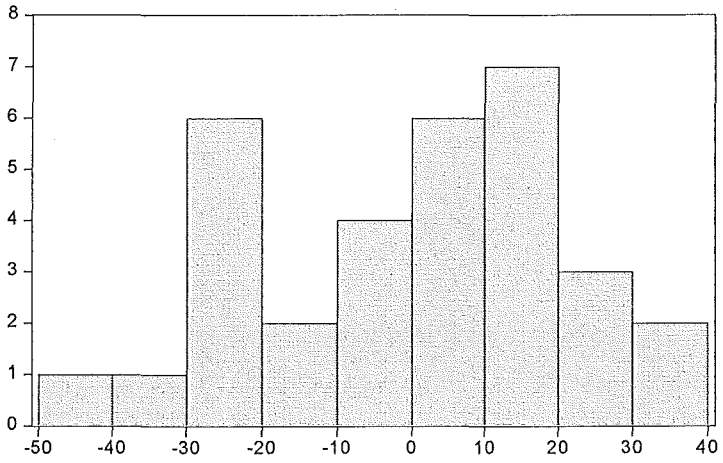
Series: RESIDPP_
Sample 2011M01 2013M12
Observations 32

Mean	1.89e-13
Median	9.104876
Maximum	38.00618
Minimum	-51.94126
Std. Dev.	26.99717
Skewness	-0.398296
Kurtosis	1.767035
Jarque-Bera	2.873018
Probability	0.237756



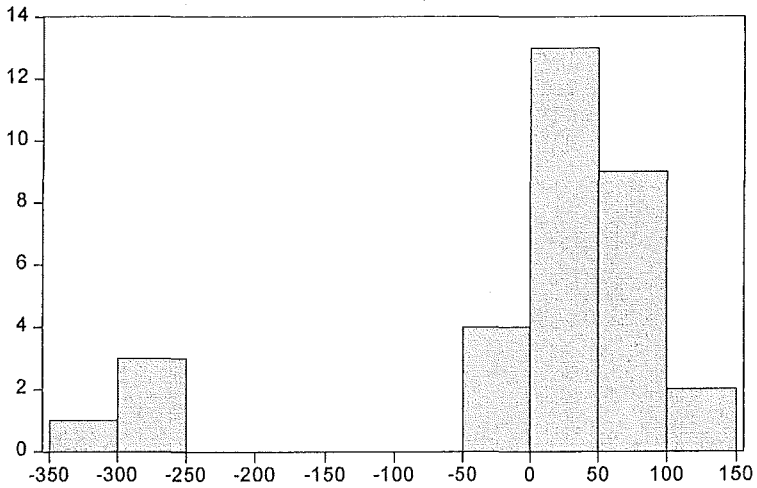
Series: RESIDSP_
Sample 2011M01 2013M12
Observations 32

Mean	3.84e-14
Median	-6.957081
Maximum	40.79523
Minimum	-27.65641
Std. Dev.	19.61411
Skewness	0.731274
Kurtosis	2.451622
Jarque-Bera	3.253018
Probability	0.196615

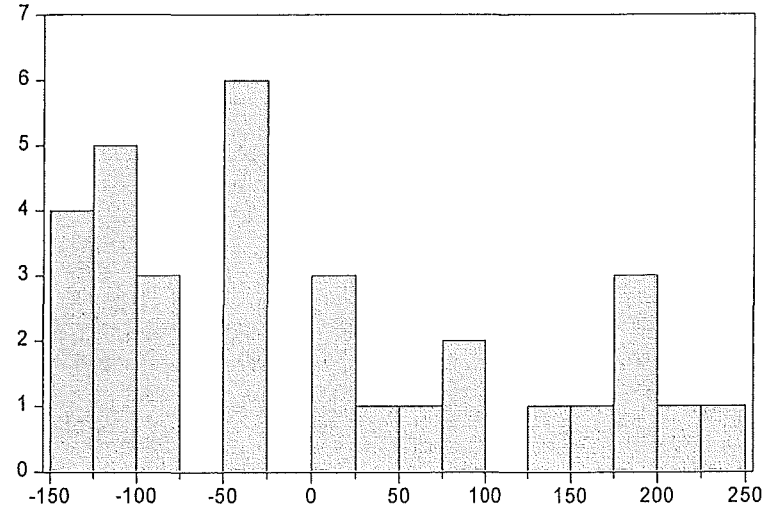


Series: RESIDSH_	
Sample 2011M01 2013M12	
Observations 32	
Mean	2.43e-13
Median	2.240631
Maximum	35.44168
Minimum	-40.19430
Std. Dev.	20.67821
Skewness	-0.324753
Kurtosis	2.056341
Jarque-Bera	1.749800
Probability	0.416904

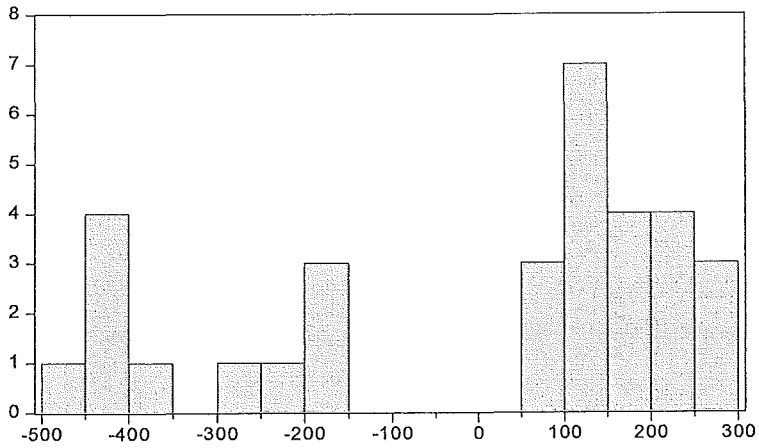
Chicken braai cut (P7 & Q7) results individual supermarkets



Series: RESIDPP_	
Sample 2011M01 2013M12	
Observations 32	
Mean	5.24e-12
Median	35.30110
Maximum	110.8014
Minimum	-312.3120
Std. Dev.	117.1059
Skewness	-1.872772
Kurtosis	5.209938
Jarque-Bera	25.21723
Probability	0.000003

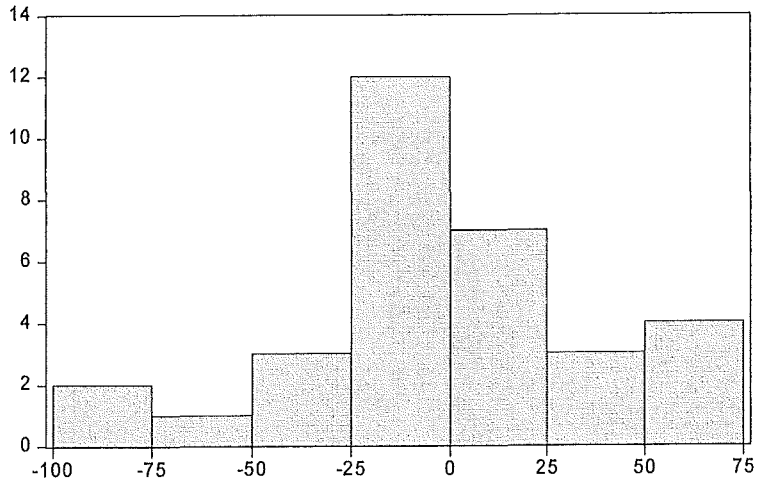


Series: RESIDSP_	
Sample 2011M01 2013M12	
Observations 32	
Mean	5.76e-13
Median	-36.52848
Maximum	227.6922
Minimum	-146.7433
Std. Dev.	117.4023
Skewness	0.569496
Kurtosis	1.965063
Jarque-Bera	3.157866
Probability	0.206195

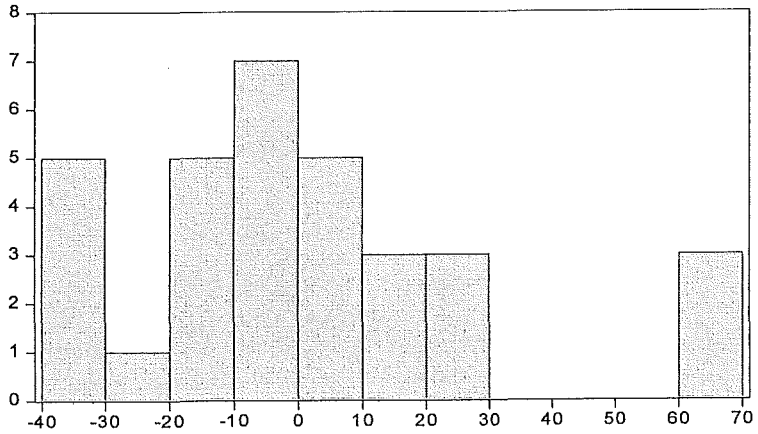


Series: RESIDSH_	
Sample 2011M01 2013M12	
Observations 32	
Mean	3.01e-12
Median	124.6332
Maximum	289.2761
Minimum	-459.7239
Std. Dev.	253.8395
Skewness	-0.749705
Kurtosis	1.971262
Jarque-Bera	4.408711
Probability	0.110322

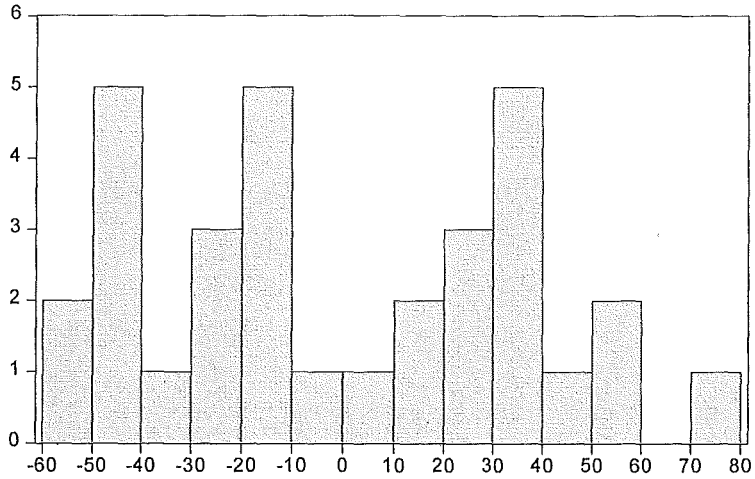
Apple golden (P8 & Q8) individual supermarket results



Series: RESIDPP_	
Sample 2011M01 2013M12	
Observations 32	
Mean	-6.36e-14
Median	-5.131867
Maximum	70.75847
Minimum	-87.97125
Std. Dev.	37.42843
Skewness	-0.236714
Kurtosis	3.218897
Jarque-Bera	0.362735
Probability	0.834129

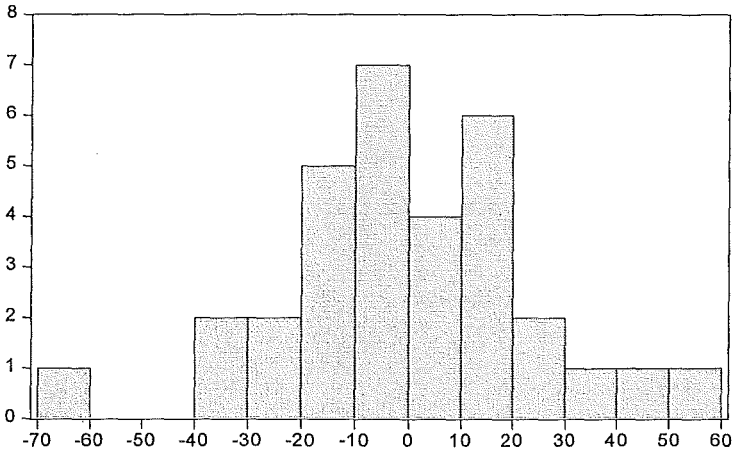


Series: RESIDSP_	
Sample 2011M01 2013M12	
Observations 32	
Mean	-1.47e-14
Median	-1.960694
Maximum	69.38171
Minimum	-36.43561
Std. Dev.	27.97510
Skewness	1.012331
Kurtosis	3.749609
Jarque-Bera	6.214887
Probability	0.044715

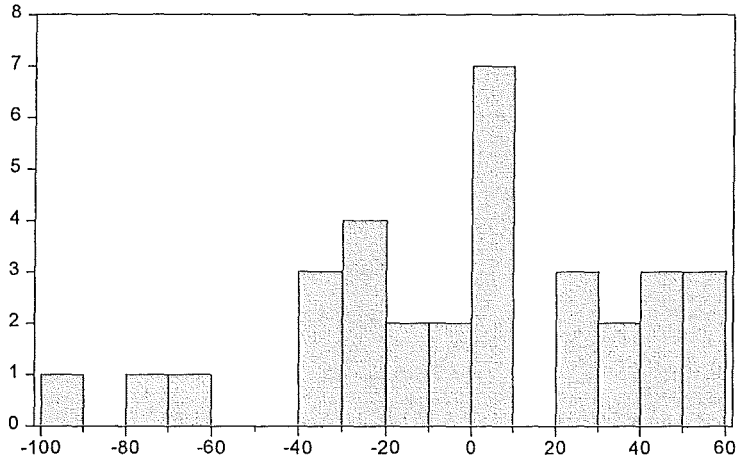


Series: RESIDSH_	
Sample 2011M01 2013M12	
Observations 32	
Mean	-2.55e-14
Median	-6.414212
Maximum	71.05548
Minimum	-52.46665
Std. Dev.	36.15960
Skewness	0.177221
Kurtosis	1.798079
Jarque-Bera	2.093656
Probability	0.351049

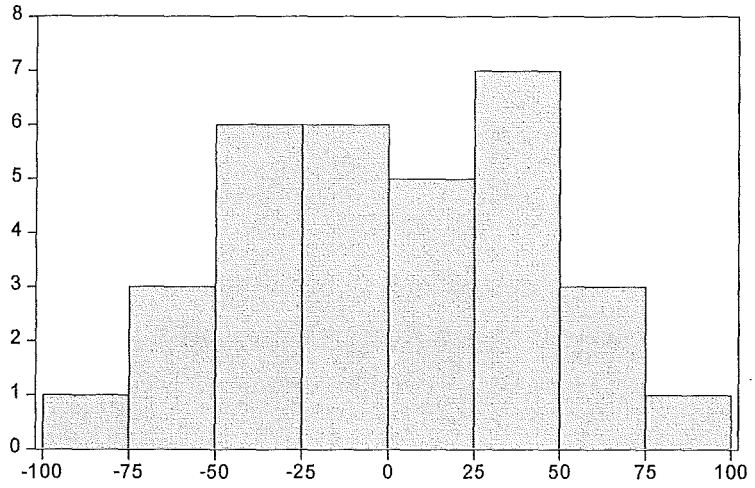
Nutriday yogurt (P9 & Q9) results for individual supermarkets



Series: RESIDPP_	
Sample 2011M01 2013M12	
Observations 32	
Mean	1.25e-13
Median	-1.874270
Maximum	51.65356
Minimum	-63.41634
Std. Dev.	24.02085
Skewness	-0.128443
Kurtosis	3.483236
Jarque-Bera	0.399343
Probability	0.819000

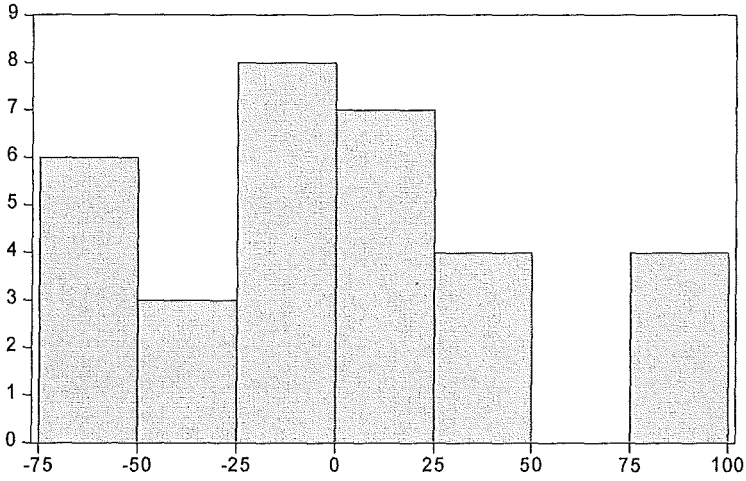


Series: RESIDSP_	
Sample 2011M01 2013M12	
Observations 32	
Mean	3.93e-14
Median	3.376495
Maximum	55.90562
Minimum	-92.34749
Std. Dev.	37.85614
Skewness	-0.454391
Kurtosis	2.727390
Jarque-Bera	1.200270
Probability	0.548738

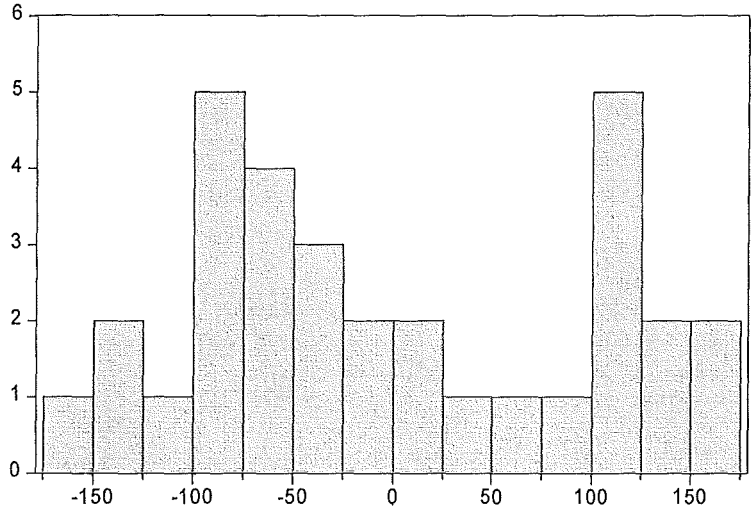


Series: RESIDSH_	
Sample 2011M01 2013M12	
Observations 32	
Mean	3.71e-13
Median	0.333989
Maximum	75.70175
Minimum	-81.29825
Std. Dev.	40.18995
Skewness	-0.049778
Kurtosis	2.247087
Jarque-Bera	0.769052
Probability	0.680773

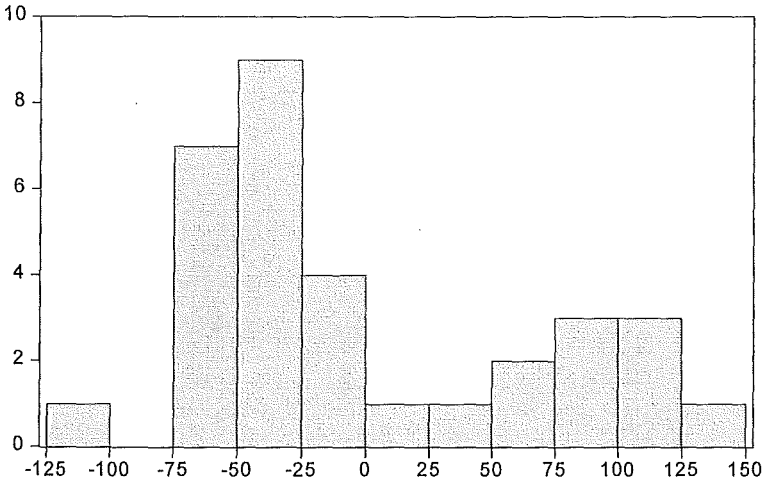
Colgate triple action (P10 & Q10) results for individual supermarket



Series: RESIDPP_	
Sample 2011M01 2013M12	
Observations 32	
Mean	1.27e-13
Median	-5.128194
Maximum	89.19551
Minimum	-72.98511
Std. Dev.	44.73115
Skewness	0.369644
Kurtosis	2.490354
Jarque-Bera	1.075048
Probability	0.584193

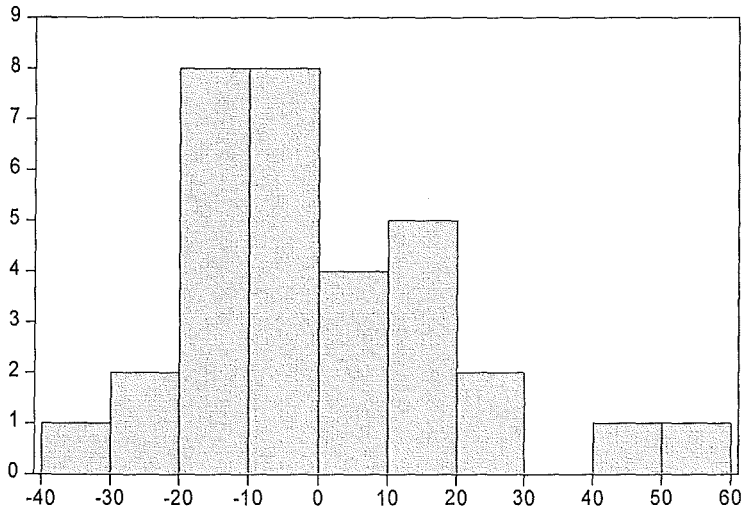


Series: RESIDSP_	
Sample 2011M01 2013M12	
Observations 32	
Mean	-2.04e-14
Median	-21.87237
Maximum	171.7550
Minimum	-172.3319
Std. Dev.	98.44991
Skewness	0.196781
Kurtosis	1.814695
Jarque-Bera	2.079784
Probability	0.353493

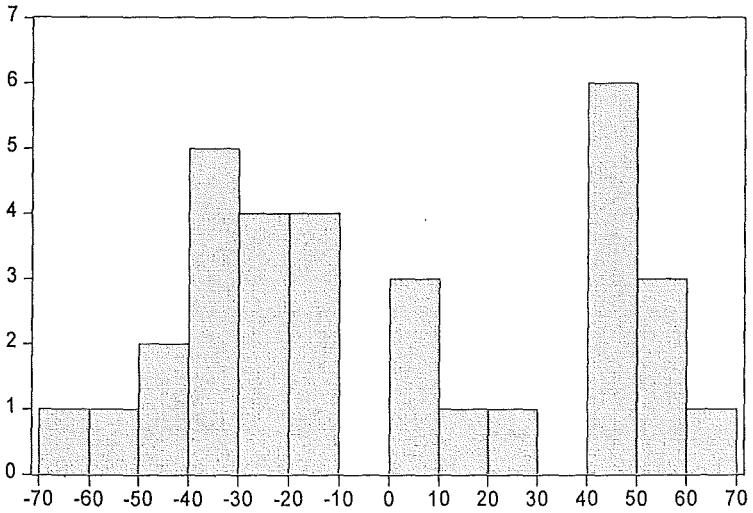


Series: RESIDSH_	
Sample 2011M01 2013M12	
Observations 32	
Mean	2.76e-13
Median	-30.11287
Maximum	148.9489
Minimum	-100.6393
Std. Dev.	67.57139
Skewness	0.703579
Kurtosis	2.180619
Jarque-Bera	3.535308
Probability	0.170733

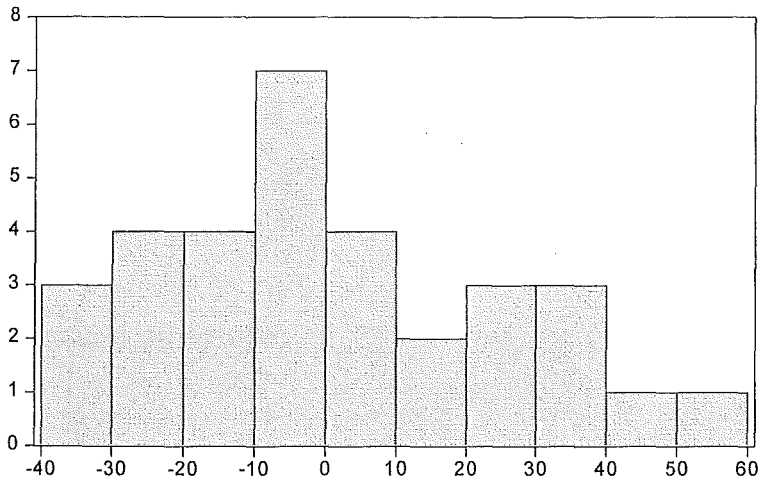
Styvensant cigarette (P11 & Q11) results for individual supermarket



Series: RESIDPP_	
Sample 2011M01 2013M12	
Observations 32	
Mean	2.52e-13
Median	-1.723729
Maximum	51.53540
Minimum	-35.68191
Std. Dev.	19.70429
Skewness	0.700801
Kurtosis	3.434047
Jarque-Bera	2.870511
Probability	0.238055



Series: RESIDSP_	
Sample 2011M01 2013M12	
Observations 32	
Mean	1.47e-14
Median	-13.84504
Maximum	63.22899
Minimum	-63.92107
Std. Dev.	39.15091
Skewness	0.190488
Kurtosis	1.591203
Jarque-Bera	2.839802
Probability	0.241738



Series: RESIDSH_
Sample 2011M01 2013M12
Observations 32

Mean	3.67e-14
Median	-2.411267
Maximum	53.55607
Minimum	-37.32421
Std. Dev.	24.99820
Skewness	0.451439
Kurtosis	2.241505
Jarque-Bera	1.854006
Probability	0.395738

3.E. RESULTS FOR THE SERIAL CORRELATION TEST

- **White star results**

Results for Pick n Pay

Date: 02/26/14 Time: 17:05
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |* . |	. |* . |	1	0.138	0.138	0.6534	0.419
. |* . |	. |* . |	2	0.208	0.193	2.1821	0.336
. |* . |	. |* . |	3	0.212	0.171	3.8196	0.282
. | . |	. *| . |	4	0.008	-0.074	3.8223	0.431
. |* . |	. |* . |	5	0.165	0.108	4.8988	0.428

Results for Shoprite

Date: 02/26/14 Time: 17:06
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |* . |	. |* . |	1	0.142	0.142	0.6867	0.407
. *| . |	. *| . |	2	-0.152	-0.176	1.5016	0.472
. | . |	. |* . |	3	0.024	0.078	1.5230	0.677
. | . |	. *| . |	4	-0.060	-0.110	1.6590	0.798
. *| . |	. *| . |	5	-0.142	-0.102	2.4558	0.783

Results for Shoprite

Date: 02/26/14 Time: 17:08
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. | . |	. | . |	1	-0.010	-0.010	0.0036	0.952
***| . |	***| . |	2	-0.378	-0.378	5.0368	0.081
. | . |	. | . |	3	0.039	0.035	5.0924	0.165
. |* . |	. | . |	4	0.122	-0.024	5.6535	0.227
. | . |	. | . |	5	0.014	0.049	5.6609	0.341

- **Tastic rice results**

Results for Pick n Pay

Date: 02/26/14 Time: 17:10
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |**. |	. |**. |	1	0.290	0.290	2.8638	0.091
. |* . |	. | . |	2	0.099	0.017	3.2121	0.201
. | . |	. | . |	3	-0.007	-0.044	3.2138	0.360
.**| . |	.**| . |	4	-0.302	-0.317	6.6593	0.155
.**| . |	. | . |	5	-0.205	-0.043	8.3135	0.140

Results for Spar

Date: 02/26/14 Time: 17:16
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. *| . |	. *| . |	1	-0.141	-0.141	0.6743	0.412
. |* . |	. |* . |	2	0.094	0.076	0.9848	0.611
. *| . |	. | . |	3	-0.086	-0.065	1.2575	0.739
. *| . |	. *| . |	4	-0.086	-0.116	1.5387	0.820
. |* . |	. |* . |	5	0.205	0.200	3.1980	0.669

Results for Shoprite

Date: 02/26/14 Time: 17:20
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. *| . |	. *| . |	1	-0.117	-0.117	0.4665	0.495
. | . |	. | . |	2	0.030	0.017	0.4986	0.779
. *| . |	. *| . |	3	-0.154	-0.151	1.3642	0.714
. *| . |	. *| . |	4	-0.139	-0.181	2.0986	0.718
. | . |	. | . |	5	0.061	0.027	2.2453	0.814

- **Coke 2 litters**

Results for Pick n Pay

Date: 02/26/14 Time: 17:25
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. *| . |	. *| . |	1	-0.200	-0.200	1.3683	0.242
. |**. |	. |* . |	2	0.219	0.186	3.0565	0.217
.**| . |	.**| . |	3	-0.288	-0.232	6.0789	0.108
. | . |	. *| . |	4	-0.021	-0.153	6.0950	0.192
. | . |	. | . |	5	-0.051	0.022	6.1967	0.288

Results for Spar

Date: 02/26/14 Time: 17:26
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. *| . |	. *| . |	1	-0.122	-0.122	0.5043	0.478
.**| . |	.**| . |	2	-0.287	-0.306	3.4101	0.182
. |* . |	. | . |	3	0.088	0.006	3.6926	0.297
. |* . |	. | . |	4	0.134	0.068	4.3751	0.358
. | . |	. | . |	5	-0.046	0.015	4.4580	0.486

Results for Shoprite

Date: 02/26/14 Time: 17:28
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. | . |	. | . |	1	0.065	0.065	0.1449	0.703
. | . |	. | . |	2	-0.061	-0.065	0.2756	0.871
. *| . |	. *| . |	3	-0.114	-0.107	0.7532	0.861
. | . |	. | . |	4	-0.054	-0.045	0.8653	0.929
. | . |	. | . |	5	-0.045	-0.053	0.9436	0.967

- **Lays potato**

Results for Pick n Pay

Date: 02/26/14 Time: 17:32
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
.**| . |	.**| . |	1	-0.271	-0.271	2.5102	0.113
. | . |	. *| . |	2	-0.019	-0.099	2.5222	0.283
. | . |	. | . |	3	0.055	0.024	2.6318	0.452
.**| . |	.**| . |	4	-0.242	-0.241	4.8426	0.304
. | . |	. *| . |	5	0.066	-0.074	5.0124	0.414

Results for Spar

Date: 02/26/14 Time: 17:34
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. *| . |	. *| . |	1	-0.103	-0.103	0.3642	0.546
. *| . |	. *| . |	2	-0.115	-0.127	0.8276	0.661
. *| . |	. *| . |	3	-0.150	-0.182	1.6539	0.647
. *| . |	. *| . |	4	-0.094	-0.160	1.9897	0.738
. |* . |	. | . |	5	0.077	-0.005	2.2212	0.818

Results for Shoprite

Date: 02/26/14 Time: 17:45
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |**. |	. |**. |	1	0.291	0.291	2.8965	0.089
. |*** |	. |*** |	2	0.430	0.377	9.4088	0.079
. | . |	.**| . |	3	0.018	-0.217	9.4201	0.074
. *| . |	.**| . |	4	-0.120	-0.321	9.9662	0.081
***| . |	.**| . |	5	-0.353	-0.282	14.870	0.063

- Axe spray

Results for Pick n Pay

Date: 02/26/14 Time: 17:48
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
.**| . |	.**| . |	1	-0.344	-0.344	4.0307	0.045
. *| . |	.**| . |	2	-0.089	-0.235	4.3118	0.116
. *| . |	.**| . |	3	-0.096	-0.258	4.6515	0.199
. | . |	.**| . |	4	-0.006	-0.221	4.6527	0.325
. |* . |	. | . |	5	0.194	0.056	6.1324	0.294

Results for Spar

Date: 02/26/14 Time: 17:50
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. | . |	. | . |	1	-0.059	-0.059	0.1180	0.731
. | . |	. | . |	2	-0.048	-0.052	0.1995	0.905
. | . |	. | . |	3	0.039	0.033	0.2541	0.968
.**| . |	.**| . |	4	-0.210	-0.209	1.9178	0.751
. | . |	. | . |	5	-0.008	-0.029	1.9201	0.860

Results for Shoprite

Date: 02/26/14 Time: 17:53
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. *| . |	. *| . |	1	-0.095	-0.095	0.3083	0.579
. *| . |	. *| . |	2	-0.175	-0.185	1.3830	0.501
. |* . |	. |* . |	3	0.181	0.150	2.5770	0.462
. *| . |	. *| . |	4	-0.083	-0.089	2.8401	0.585
. *| . |	. *| . |	5	-0.121	-0.084	3.4207	0.635

- **Sasko bread**

Results for Pick n Pay

Date: 02/26/14 Time: 17:55
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. | . |	. | . |	1	-0.006	-0.006	0.0012	0.972
. *| . |	. *| . |	2	-0.146	-0.147	0.7582	0.684
.**| . |	.**| . |	3	-0.266	-0.274	3.3442	0.342
. | . |	. | . |	4	0.046	0.011	3.4254	0.489
. |* . |	. | . |	5	0.141	0.071	4.2093	0.520

Results for Spar

Date: 02/26/14 Time: 17:58
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. | . |	. | . |	1	-0.054	-0.054	0.0982	0.754
. |* . |	. |* . |	2	0.190	0.188	1.3708	0.504
. *| . |	. *| . |	3	-0.183	-0.171	2.5978	0.458
. |* . |	. |* . |	4	0.121	0.080	3.1482	0.533
. | . |	. | . |	5	0.002	0.074	3.1483	0.677

Results for Shoprite

Date: 02/26/14 Time: 18:01
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. | . |	. | . |	1	-0.020	-0.020	0.0134	0.908
. | . |	. | . |	2	-0.047	-0.048	0.0921	0.955
. *| . |	. *| . |	3	-0.089	-0.091	0.3816	0.944
***| . |	****| . |	4	-0.465	-0.477	8.5777	0.073
. *| . |	. *| . |	5	-0.097	-0.196	8.9467	0.111

- **Chicken braai cut**

Results for Pick n Pay

Date: 02/26/14 Time: 18:05
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. *| . |	. *| . |	1	-0.069	-0.069	0.1610	0.688
. |* . |	. |* . |	2	0.087	0.082	0.4258	0.808
. | . |	. | . |	3	0.012	0.023	0.4308	0.934
. | . |	. | . |	4	0.021	0.016	0.4473	0.978
. | . |	. | . |	5	-0.018	-0.019	0.4607	0.993

Results for Spar

Date: 02/26/14 Time: 18:09
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. *| . |	. *| . |	1	-0.145	-0.145	0.7193	0.396
. | . |	. | . |	2	0.056	0.036	0.8318	0.660
.**| . |	.**| . |	3	-0.344	-0.338	5.1567	0.161
. *| . |	.**| . |	4	-0.101	-0.223	5.5428	0.236
. | . |	. | . |	5	-0.003	-0.049	5.5432	0.353

Results for Shoprite

Date: 02/26/14 Time: 18:14
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. *| . |	. *| . |	1	-0.173	-0.173	1.0242	0.312
. | . |	. | . |	2	0.054	0.025	1.1281	0.569
***| . |	.**| . |	3	-0.347	-0.344	5.5288	0.137
. | . |	. *| . |	4	0.043	-0.082	5.5990	0.231
. |* . |	. |* . |	5	0.121	0.143	6.1719	0.290

- **Apple golden**

Results for Pick n Pay

Date: 02/26/14 Time: 18:17
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
.**| . |	.**| . |	1	-0.207	-0.207	1.4674	0.226
. *| . |	.**| . |	2	-0.166	-0.218	2.4392	0.295
. *| . |	. *| . |	3	-0.081	-0.184	2.6764	0.444
. | . |	. *| . |	4	0.021	-0.097	2.6927	0.611
. *| . |	. *| . |	5	-0.088	-0.183	2.9940	0.701

Results for Spar

Date: 02/26/14 Time: 18:19
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. | . |	. | . |	1	0.041	0.041	0.0586	0.809
. *| . |	. *| . |	2	-0.173	-0.175	1.1161	0.572
. *| . |	. | . |	3	-0.071	-0.057	1.2987	0.729
. |* . |	. |* . |	4	0.127	0.106	1.9123	0.752
. | . |	. | . |	5	0.055	0.025	2.0311	0.845

Results for Shoprite

Date: 02/26/14 Time: 18:21
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |*** |	. |*** |	1	0.376	0.376	4.8195	0.054
. |* . |	. | . |	2	0.157	0.018	5.6860	0.058
. |* . |	. | . |	3	0.097	0.037	6.0281	0.110
. *| . |	.**| . |	4	-0.200	-0.292	7.5402	0.110
.**| . |	. *| . |	5	-0.262	-0.127	10.234	0.069

- **Nutriday yogurt**

Results for Pick n Pay

Date: 02/26/14 Time: 18:29
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. | . |	. | . |	1	-0.013	-0.013	0.0058	0.939
. | . |	. | . |	2	-0.063	-0.064	0.1475	0.929
. | . |	. | . |	3	-0.018	-0.020	0.1592	0.984
.**| . |	.**| . |	4	-0.255	-0.261	2.6189	0.623
. |* . |	. |* . |	5	0.083	0.077	2.8909	0.717

Results for Spar

Date: 02/26/14 Time: 18:31
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |**. |	. |**. |	1	0.310	0.310	3.2727	0.070
. | . |	. *| . |	2	-0.062	-0.175	3.4084	0.182
.**| . |	. *| . |	3	-0.233	-0.179	5.3950	0.145
.**| . |	. *| . |	4	-0.228	-0.120	7.3608	0.118
.**| . |	.**| . |	5	-0.272	-0.241	10.272	0.068

Results for Shoprite

Date: 02/26/14 Time: 18:33
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |* . |	. |* . |	1	0.190	0.190	1.2349	0.266
. | . |	. *| . |	2	-0.056	-0.096	1.3467	0.510
.**| . |	. *| . |	3	-0.222	-0.201	3.1411	0.370
***| . |	.**| . |	4	-0.386	-0.337	8.7843	0.067
.**| . |	.**| . |	5	-0.293	-0.253	12.167	0.053

- **Colgate Triple action**

Results for Pick n Pay

Date: 02/26/14 Time: 18:38
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
.**| . |	.**| . |	1	-0.325	-0.325	3.5970	0.058
. *| . |	.**| . |	2	-0.202	-0.344	5.0337	0.081
. |**. |	. | . |	3	0.250	0.063	7.3086	0.063
. | . |	. |* . |	4	0.021	0.103	7.3245	0.120
.**| . |	. *| . |	5	-0.290	-0.201	10.637	0.059

Results for Spar

Date: 02/26/14 Time: 18:40
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. *| . |	. *| . |	1	-0.164	-0.164	0.9213	0.337
. *| . |	. *| . |	2	-0.136	-0.168	1.5766	0.455
. |* . |	. | . |	3	0.077	0.025	1.7951	0.616
. |* . |	. |* . |	4	0.123	0.127	2.3722	0.668
. *| . |	. *| . |	5	-0.138	-0.082	3.1257	0.681

Results for Shoprite

Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. *| . |	. *| . |	1	-0.128	-0.128	0.5587	0.455
. | . |	. | . |	2	-0.001	-0.018	0.5587	0.756
. | . |	. | . |	3	0.036	0.034	0.6069	0.895
. | . |	. | . |	4	0.062	0.072	0.7503	0.945
. |* . |	. |* . |	5	0.075	0.095	0.9717	0.965

- Styvensant Cigarette

Results for Pick n Pay

Date: 02/26/14 Time: 18:50
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |* . |	. |* . |	1	0.144	0.144	0.7041	0.401
. | . |	. | . |	2	-0.023	-0.045	0.7231	0.697
. | . |	. | . |	3	0.042	0.053	0.7872	0.853
. *| . |	. *| . |	4	-0.101	-0.120	1.1768	0.882
. |* . |	. |* . |	5	0.125	0.169	1.7917	0.877

Results for Spar

Date: 02/26/14 Time: 18:53
Sample: 2011M01 2013M12
Included observations: 31

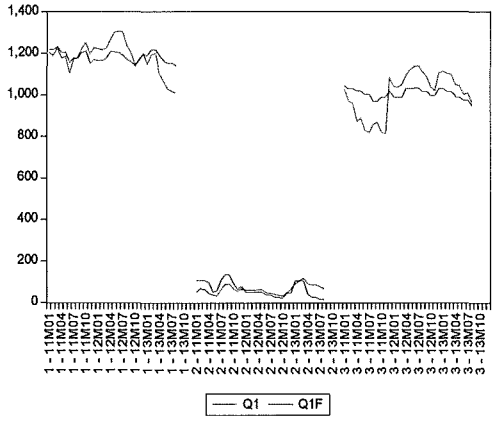
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |* . |	. |* . |	1	0.165	0.165	0.9246	0.336
. |* . |	. |* . |	2	0.134	0.110	1.5572	0.459
. |*** |	. |*** |	3	0.390	0.367	7.1174	0.068
.**| . |	***| . |	4	-0.209	-0.383	8.7719	0.067
. | . |	. | . |	5	0.016	0.065	8.7824	0.118

Results for Shoprite

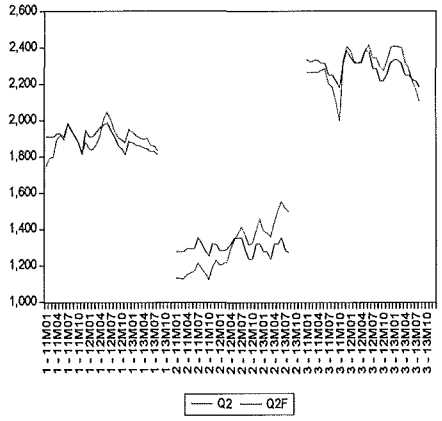
Date: 02/26/14 Time: 18:54
Sample: 2011M01 2013M12
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |* . |	. |* . |	1	0.181	0.181	1.1135	0.291
. |* . |	. | . |	2	0.087	0.056	1.3822	0.501
.**| . |	.**| . |	3	-0.257	-0.293	3.7996	0.284
.**| . |	. *| . |	4	-0.230	-0.157	5.8108	0.214
.**| . |	. *| . |	5	-0.244	-0.150	8.1570	0.148

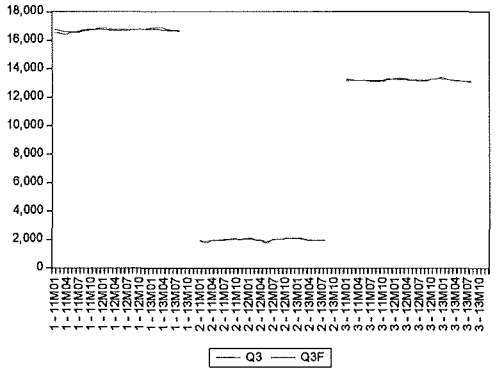
3.F. Forecasting results



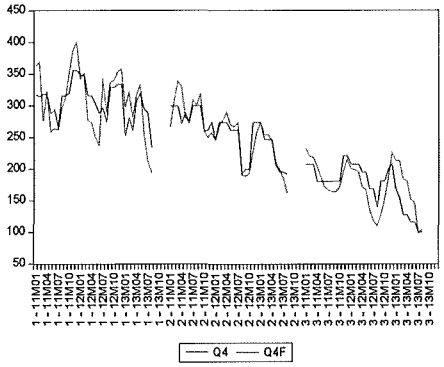
Forecasting results for White star maize meal



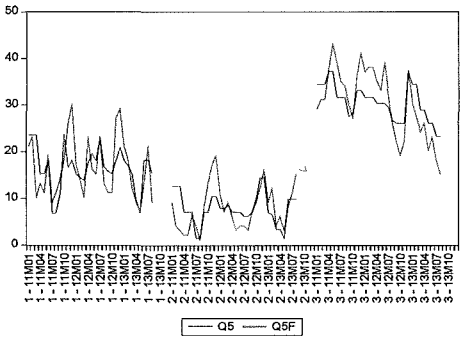
Forecasting results for Tastic rice



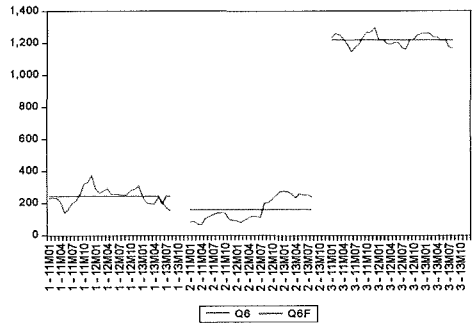
Forecasting results for coke 2 litres



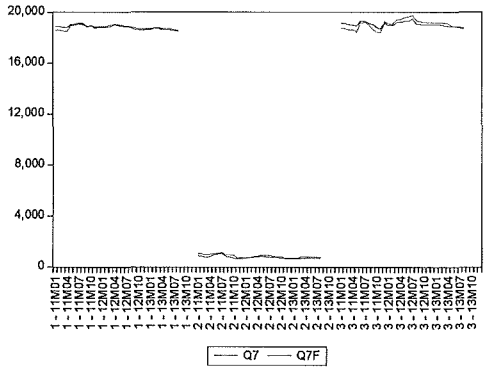
Forecasting results for potato chips



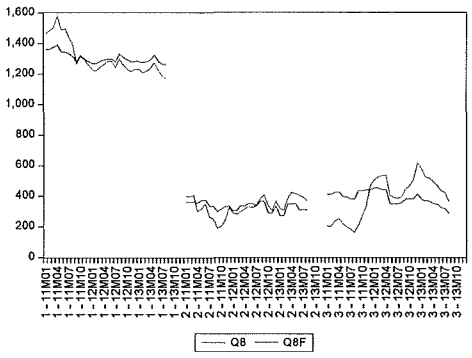
Forecasting results for axe deodorant spray



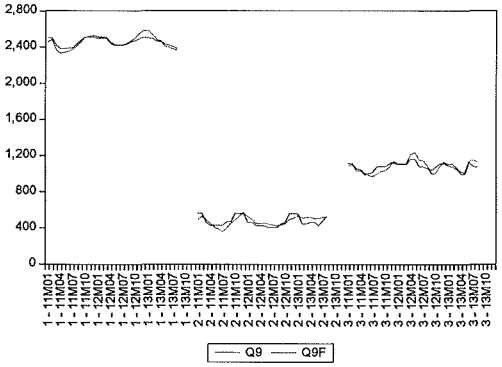
Forecasting results for sasko bread



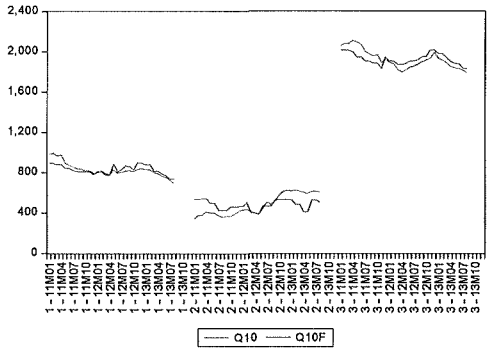
Forecasting results for Chicken braai cuts



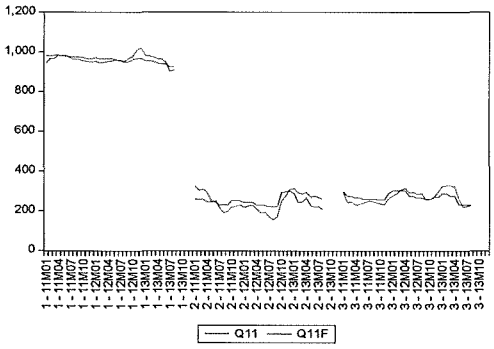
Forecasting results for Golden delicious apple



Forecasting results for Nutriday yogurt



Forecasting result for Colgate tooth paste



Forecasting results for Styvensen cigarette

Appendix 4

Sampled 11 items
White star (5 kg)
Tastic rice (2kg)
Coke (2 litres)
Lays potato chips (125g)
Dark temptation axe spray (100ml)
Sasko bread (700g)
Chicken braai cut (2kg)
Golden delicious apple (1kg)
Nutriday yogurt
Colgate triple action (100ml)
Stuyvesant cigarette (pack)
9 items removed from the study due to limited reliable data
Vaseline blue seal (50 ml)
Palmolive (175g)
Doom insecticide (80 ml)
Sunfoil 2 litre
Dish wash liquid (750ml)
Five roses tea (250g)
Uncle's barbecue spice (400g)
Knorrox chilli beef (120g)
Brown onion soup (50g)

Appendix 5

Pick n pay price data

2011	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
JAN	27.79	19.99	12.99	9.89	19.99	9.29	32.99	11.99	9.99	6.79	20.99
FEB	27.99	19.99	12.99	9.99	19.99	9.29	32.99	11.99	9.99	6.79	20.99
MAR	26.99	19.99	13.99	9.89	19.99	9.89	34.99	10.99	11.99	6.99	20.79
APR	28.99	19.49	14.99	9.89	22.99	9.89	35.17	10	12.99	6.99	20.79
MAY	28.89	19.49	14.79	10.99	22.99	10.49	29.99	12.99	12.99	7.49	21
JUN	32.49	19.99	14.79	10.79	21.99	10.29	29.49	12.99	12.79	7.49	21
JUL	30.99	17.99	14.69	11.79	25.99	9.99	27.99	13.65	12.79	7.79	21.39
AUG	30.99	18.99	12.99	9.99	25.99	9.99	28.99	14.99	11.59	7.89	21.39
SEP	28.99	19.99	12.99	9.99	24.49	9.49	33.99	17.49	10.59	7.99	21.39
OCT	28.49	20.99	12.79	9.79	19.99	9	32.49	14.74	9.79	7.99	21.59
NOV	32.79	22.99	12.79	8.49	22.49	8.92	35.99	15.99	9.79	7.99	21.99
DEC	31.49	18.99	11.99	8.49	21.99	8.49	34.89	16.99	9.79	8.39	21.99
2012	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**	**P11**
JAN	31.79	19.99	12.49	8.79	22.99	9.49	34.89	17.99	9.99	7.99	21.59
FEB	31.79	19.99	12.79	8.79	23.29	9.99	34.49	17.95	9.99	8	21.99
MAR	30.99	19.29	13.49	9.99	23.49	9.59	33.49	16.99	9.99	8.47	21.99
APR	28.79	18.49	13.29	9.99	22.19	9.35	30.29	16.29	11.49	8.47	21.99
MAY	28.79	17.99	13.79	10.49	21.49	9.99	31.99	15.99	11.99	6.99	22
JUN	28.99	17.69	12.99	10.99	21.99	9.99	32.79	15.79	11.99	7.99	22.39
JUL	29.99	18.99	13.26	10.69	20.29	10	33.49	17.29	11.99	7.65	22.75
AUG	31.49	19.99	12.99	11.49	22.49	10	34.29	13.89	11.59	7.15	23.29
SEP	32.29	21.39	12.79	9.49	22.79	9.99	36.99	15.29	11	7.29	22.99
OCT	33.79	21.99	12.49	9.49	22.99	9.59	37.89	16.29	10.69	7.69	22.49
NOV	31.49	22.99	12.49	9.29	21.99	9.29	39	17.29	9.99	6.75	22.19
DEC	29.99	20.75	12.19	9.29	20.99	8.99	37	16.99	9.69	6.75	21.99
2013	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**	**P11**
JAN	29.99	20.99	12.49	12.29	21.99	10.29	38	16.99	9.79	6.99	22.79
FEB	27.99	21.39	12.29	11.29	22.39	10.99	34.89	17.49	9.99	6.99	22.75
MAR	27.99	21.49	12	11.99	22.99	10.99	35.99	17	10.99	7.89	23
APR	30.29	21.75	13.29	10.26	24.99	9.99	37.29	16.29	10.99	7.89	23.59
MAY	31.99	21.99	13.29	9.89	25.99	9.49	37.99	14.51	11.79	8.29	24
JUN	32.75	22.49	13.65	10.75	21.99	99.99	38	16.99	11.99	8.49	24
JUL	32.75	22.49	13.39	10.99	21.99	10.69	38.99	18.29	12.49	8.99	24.99
AUG	33.59	22.99	14.45	12.99	22.99	10.99	39.99	18.29	12.99	8.99	24.99
SEP	-	-	-	-	-	-	-	-	-	-	-
OCT	-	-	-	-	-	-	-	-	-	-	-
NOV	-	-	-	-	-	-	-	-	-	-	-
DEC	-	-	-	-	-	-	-	-	-	-	-

Pick n pay quantity data

2011	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
JAN	1200	1742	16457	361	21	225	18543	1459	2453	974	944
FEB	1186	1787	16490	367	23	231	18571	1477	2481	986	964
MAR	1220	1797	16411	276	10	227	18489	1500	2370	960	966
APR	1175	1892	16364	320	13	203	18456	1573	2328	969	981
MAY	1181	1913	16495	258	11	135	18900	1485	2338	889	976
JUN	1101	1890	16472	263	19	157	18935	1492	2352	866	978
JUL	1169	1978	16492	261	9	195	19042	1433	2374	849	966
AUG	1174	1940	16586	294	11	209	19006	1388	2410	832	960
SEP	1219	1906	16622	312	14	247	18847	1264	2456	829	960
OCT	1245	1873	16670	351	18	315	18913	1312	2505	811	954
NOV	1191	1817	16705	387	26	327	18797	1290	2513	814	950
DEC	1223	1877	16811	399	30	366	18834	1255	2523	784	947
2012	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**	**Q11**
JAN	1219	1841	16778	341	17	283	18842	1226	2514	795	951
FEB	1212	1836	16778	349	14	258	18878	1215	2506	810	943
MAR	1221	1863	16725	276	10	273	18933	1239	2500	789	946
APR	1261	1913	16700	272	23	286	19022	1257	2447	772	949
MAY	1296	2005	16687	249	16	251	18981	1278	2421	823	952
JUN	1302	2041	16699	236	15	252	18923	1281	2412	791	958
JUL	1298	2000	16673	341	23	250	18866	1236	2420	799	954
AUG	1230	1938	16685	289	13	246	18833	1291	2436	811	949
SEP	1199	1903	16690	335	11	248	18790	1254	2464	816	964
OCT	1139	1891	16713	339	11	274	18715	1227	2498	807	975
NOV	1162	1874	16722	352	27	282	18677	1210	2550	827	1006
DEC	1190	1946	16780	357	29	302	18724	1225	2585	835	1014
2013	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**	**Q11**
JAN	1141	1932	16804	297	21	237	18689	1229	2576	828	980
FEB	1187	1911	16816	320	18	199	18772	1204	2530	822	977
MAR	1198	1900	16871	280	12	193	18795	1213	2483	800	973
APR	1100	1892	16819	316	9	190	18726	1233	2462	785	962
MAY	1063	1897	16720	331	7	228	18712	1269	2409	761	962
JUN	1027	1860	16687	254	13	204	18709	1220	2395	749	945
JUL	1015	1856	16650	211	21	167	18660	1181	2374	718	899
AUG	1009	1829	16631	193	9	150	18575	1165	2363	690	907
SEP	-	-	-	-	-	-	-	-	-	-	-
OCT	-	-	-	-	-	-	-	-	-	-	-
NOV	-	-	-	-	-	-	-	-	-	-	-
DEC	-	-	-	-	-	-	-	-	-	-	-

Spar price data

2011	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
JAN	28.92	20.25	14.99	8.99	22	9.85	34.29	14.19	9.99	6.92	25
FEB	28.92	20.25	16.99	8.99	22	9.85	34.49	14.19	9.99	6.92	25
MAR	28.92	20.25	16.99	8.99	22	10.29	37	13.99	12.49	6.92	25
APR	29.65	19.75	14.99	9.99	23.99	10.29	34.99	14.63	13.49	6.92	25.99
MAY	32.95	19.75	14.99	9.45	23.99	9.89	32.19	13.41	13.49	7.51	25.99
JUN	32.49	19.75	14.99	9.99	23.99	9.89	31.29	13.41	13.49	7.51	25.99
JUL	28.9	17.99	14.21	8.99	25.99	9.85	29.99	15.99	13.49	8.52	27
AUG	27	18.99	13.79	8.99	25.99	9.85	34.49	15.99	12.45	8.52	27
SEP	27	20.15	13.79	8.99	24	9.85	35.39	17.99	12.45	8.52	27
OCT	29.99	20.99	13.29	10.45	24	9.85	37.17	16.99	9.99	8	25.45
NOV	32	18.99	13.79	10.45	22.79	10	37.99	15.99	9.99	8	25.45
DEC	31	18.99	13.17	9.99	22.79	10	37.99	15.99	9.99	7.99	25.45
2012	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**	**P11**
JAN	32.92	19.99	13	10.99	23.71	10.49	36.99	17.99	12.45	7.99	25.99
FEB	32.99	19.99	13	9.99	23.71	10.49	36.99	17.79	12.45	7.45	25.99
MAR	32.99	19.79	14.45	9.99	23.49	9.85	34.99	15.99	13.49	8.79	25.99
APR	32.95	18.99	14.45	9.99	24	9.85	34.79	15.99	13.49	8.79	27
MAY	32.95	17.99	16.95	10.45	24	9.85	31.99	14.95	13.49	8.99	27
JUN	33.99	17.99	16.95	10.45	24	9.99	32.99	14.95	13.99	7.89	27
JUL	33.99	17.99	13.99	10.45	24.29	11.69	32.99	15.99	13.99	7.89	27.49
AUG	34.79	19.99	13.45	12.99	24.29	11.69	34.29	13.99	13.99	7.89	27.49
SEP	34.79	21.49	13.45	12.74	23.99	11.45	35	13.99	12.99	6.99	27.49
OCT	35	21.49	13	12.74	22.99	9.99	35	18.99	12.49	6.99	22.49
NOV	33.37	18.99	12.99	9.99	21.35	9.99	37.99	18.99	9.99	6.99	22.19
DEC	33.37	18.99	12.99	9.99	21.35	9.89	37.99	15.99	9.99	6.99	21.99
2013	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**	**P11**
JAN	28.99	20.25	13.17	9.99	24	9.99	38	19.99	9.99	6.99	22.79
FEB	28.99	20.25	13.17	10.98	24.19	10.49	37.99	19.99	12.99	7.65	25.99
MAR	28.99	21.49	13.99	10.98	25.29	10.49	34.99	14.99	12.99	7.65	25.99
APR	33.79	18.99	14.95	11	25.29	10.89	34.99	14.99	12.49	8.69	24.49
MAY	34.79	18.99	14.95	12.49	25.99	10.39	35.45	14.99	12.49	8.69	27
JUN	34.79	17.99	14.99	12.89	22.99	10.45	35.75	17.74	13.49	6.99	27.49
JUL	35.59	19.99	14.99	12.89	22.99	10.45	35.49	17.14	12.14	6.99	27.49
AUG	35.59	20.39	14.99	12.99	22.99	10.69	36.48	17.59	11	7.32	28.49
SEP	-	-	-	-	-	-	-	-	-	-	-
OCT	-	-	-	-	-	-	-	-	-	-	-
NOV	-	-	-	-	-	-	-	-	-	-	-
DEC	-	-	-	-	-	-	-	-	-	-	-

Spar sales data

2011	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
JAN	50	1127	1912	266	9	78	970	393	482	336	320
FEB	66	1130	1864	306	4	82	967	392	520	366	299
MAR	61	1125	1862	337	3	65	896	402	485	370	307
APR	43	1147	1900	328	2	57	934	297	447	408	290
MAY	36	1159	1909	281	2	100	982	312	403	394	247
JUN	30	1166	1917	274	6	112	1008	343	378	392	249
JUL	59	1211	1928	308	4	123	1045	260	349	367	212
AUG	86	1180	1959	300	1	133	931	248	391	351	187
SEP	88	1156	1966	318	8	134	903	185	444	358	196
OCT	65	1120	2003	260	13	134	864	196	482	362	216
NOV	53	1190	1960	249	17	97	653	231	526	380	221
DEC	65	1225	2011	256	19	91	641	315	560	406	228
2012	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**	**Q11**
JAN	58	1200	2009	245	11	88	674	285	520	418	215
FEB	57	1208	2019	267	7	76	678	276	489	423	224
MAR	57	1219	1936	276	9	91	715	292	444	409	226
APR	60	1288	1930	288	6	104	731	309	437	393	207
MAY	61	1340	1845	269	3	118	790	324	451	381	187
JUN	47	1372	1841	266	4	114	753	319	435	445	191
JUL	44	1411	1953	272	4	108	721	331	426	493	167
AUG	39	1366	2000	190	3	197	685	374	416	477	153
SEP	34	1314	2004	188	7	200	679	401	430	513	168
OCT	30	1322	2045	192	9	222	650	333	437	567	245
NOV	46	1390	2049	226	12	246	598	299	488	606	271
DEC	63	1453	2066	257	16	268	582	358	502	614	306
2012	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**	**Q11**
JAN	88	1391	2052	272	9	272	587	314	522	610	312
FEB	101	1380	2048	253	12	268	579	302	501	617	289
MAR	116	1358	1990	253	4	253	612	380	506	605	283
APR	91	1432	1922	244	6	231	625	418	511	596	291
MAY	82	1500	1914	210	3	256	611	412	498	584	267
JUN	84	1550	1899	199	8	248	607	399	493	605	272
JUL	76	1515	1899	186	11	251	618	388	509	612	266
AUG	64	1493	1894	162	15	237	598	364	516	601	254
SEP	-	-	-	-	-	-	-	-	-	-	-
OCT	-	-	-	-	-	-	-	-	-	-	-
NOV	-	-	-	-	-	-	-	-	-	-	-
DEC	-	-	-	-	-	-	-	-	-	-	-

Shoprite price data

2011	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
JAN	28	19.39	12.49	8.99	18.99	9.45	33.29	11.99	9.17	6.49	25.45
FEB	29	19.79	12.49	8.99	18.99	9.45	33.29	11.99	9.17	6.49	26.99
MAR	29	19.49	12.94	8.99	18.99	9.45	34.99	10.99	11.21	6.49	26.99
APR	29.79	19.49	13.17	9.99	17.99	9.99	35.99	10.99	11.21	6.75	27.45
May	29.79	19.99	13.49	10	17.99	10.99	37.29	12.99	12	7.45	27.45
JUN	30.99	19.99	13.49	10	19.99	11	29.99	12.99	12	7.45	27.99
JUL	30.99	21.99	13.99	10	19.99	10.29	29.99	13.99	11.45	8	27.99
AUG	33.47	21.99	13.99	9.99	19.99	9.99	32.99	13.99	10	8	27.99
SEP	33.47	22.99	13.99	9.99	21.45	9.49	34.99	10.45	10	8.29	27.99
OCT	32	23.99	13.99	9.99	21.17	9	39.99	10.45	9.99	8.29	28.21
NOV	32	19.99	12.17	8.49	19.45	8.99	41.99	9.99	8.99	8.99	28.21
DEC	29.99	17.99	11.99	8.49	19.45	8.45	33.29	9.99	8.99	7.49	25.99
2012	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**	**P11**
JAN	31.99	18.99	12.45	8.99	19.99	9.45	36.89	9.24	9.29	7.99	25
FEB	31.99	19.99	12.45	8.99	19.99	9.45	36.89	9.24	9.29	7.99	25
MAR	31.99	19.99	12.75	8.99	19.99	9.99	31.99	10	9.29	8.47	24.99
APR	28.99	19.99	12.75	9.45	20.45	9.99	31.99	10	7.89	8.47	24.99
May	28.99	17.99	13.49	9.45	20.45	10.29	29.99	15.99	7.89	8.29	26.99
JUN	28.79	17.99	13.49	10.45	20.45	10.29	29.99	15.99	10	7.99	26.99
JUL	28.79	20.99	13.99	10.45	20.79	11	26.45	15.99	10	7.99	27.49
AUG	29.99	20.99	13.99	11.49	21.75	11	34.99	15.29	10.49	7.79	27.49
SEP	29.99	22.99	13.99	9.99	21.99	9.99	34.99	13.99	11	7.39	28
OCT	31.45	22.99	12.29	9.99	21.99	9.99	35.99	13.99	10.17	7.39	28
NOV	31.45	21.99	12.29	9.29	21.99	9.45	35.99	13.99	9.19	6.45	27.29
DEC	28.99	19.99	11	8.99	17.99	9.45	35.29	11.99	9.19	6.45	27.29
2013	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**	**P11**
JAN	28.99	19.45	11.99	10.45	18.99	9.39	35.99	13.99	9.75	6.99	26
FEB	29.99	19.45	12.49	10.99	18.99	9.39	35.99	14.75	9.99	6.99	26
MAR	29.99	19.99	12.99	11.99	20.99	10.29	36.99	14.75	10.75	7.49	26.99
APR	31.75	21.99	13.49	11.99	20.99	10.29	37.99	15.75	11.45	7.99	26.99
May	31.99	21.99	13.99	12.39	21.99	10.99	38.79	15.99	11.79	8.29	29.99
JUN	32.99	22.75	14.29	12.39	21.99	10.99	38.99	17.39	8.79	8.39	29.99
JUL	32.99	22.99	14.99	12.99	22.99	11.99	39.99	17.99	9.75	8.99	29.99
AUG	34.99	23.99	14.99	12.99	22.99	11.99	40.99	19.99	9.99	8.99	29.99
SEP	-	-	-	-	-	-	-	-	-	-	-
OCT	-	-	-	-	-	-	-	-	-	-	-
NOV	-	-	-	-	-	-	-	-	-	-	-
DEC	-	-	-	-	-	-	-	-	-	-	-

Shoprite sales data

2011	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
JAN	1023	2262	13100	232	29	1231	18714	200	1080	2051	290
FEB	966	2258	13111	220	31	1257	18689	197	1091	2081	240
MAR	958	2264	13177	218	31	1249	18560	231	1053	2076	243
APR	871	2260	13150	204	38	1221	18593	247	1039	2109	227
MAY	883	2273	13112	187	43	1186	18420	217	982	2094	231
JUN	826	2281	13109	171	39	1143	19113	194	977	2069	237
JUL	814	2200	13062	166	35	1170	19182	183	964	1998	246
AUG	853	2180	13058	163	34	1193	18985	157	993	1975	246
SEP	864	2100	13053	163	30	1236	18600	200	1017	1953	239
OCT	817	1996	13056	170	27	1264	18412	263	1031	1966	233
NOV	810	2321	13174	195	36	1266	18376	332	1072	1888	229
DEC	1077	2400	13208	214	41	1292	19200	461	1126	1915	259
2012	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**	**Q11**
JAN	1037	2381	13259	200	37	1215	19032	501	1099	1891	273
FEB	1033	2322	13262	198	38	1219	19003	519	1100	1877	284
MAR	1046	2311	13248	195	38	1196	19347	530	1103	1820	303
APR	1089	2323	13244	171	35	1190	19388	531	1208	1794	312
MAY	1116	2376	13182	166	33	1201	19530	400	1230	1811	288
JUN	1133	2411	13175	134	39	1198	19611	388	1150	1843	292
JUL	1137	2340	13146	117	32	1165	19719	380	1137	1851	281
AUG	1107	2342	13138	109	26	1161	19309	391	1084	1872	287
SEP	1083	2289	13133	127	22	1218	19225	443	993	1897	255
OCT	1036	2271	13219	151	19	1222	19187	460	999	1913	257
NOV	1016	2325	13227	186	22	1250	19158	500	1075	1930	266
DEC	1103	2399	13311	225	37	1256	19145	611	1120	1986	291
2013	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**	**Q11**
JAN	1111	2406	13364	212	30	1259	19153	576	1097	1930	321
FEB	1101	2401	13213	212	27	1258	19150	521	1105	1911	325
MAR	1096	2397	13155	183	24	1233	19115	514	1062	1888	325
APR	1047	2309	13103	180	26	1232	19075	490	990	1851	319
MAY	1040	2283	13080	151	20	1214	18866	465	984	1837	260
JUN	1000	2217	13063	146	23	1219	18841	431	1133	1831	217
JUL	1006	2169	13025	98	18	1169	18810	419	1145	1812	221
AUG	960	2100	13011	103	15	1164	18757	360	1132	1789	227
SEP	-	-	-	-	-	-	-	-	-	-	-
OCT	-	-	-	-	-	-	-	-	-	-	-
NOV	-	-	-	-	-	-	-	-	-	-	-
DEC	-	-	-	-	-	-	-	-	-	-	-