

**ROLE OF INNOVATION STRATEGY ON INSURANCE
PENETRATION IN KENYA**

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DECLARATION

This Thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

This thesis is dedicated to my wife Rose and our children Lavender and Gleta for giving me a peace of mind and encouragement when I thought of almost giving up.

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LIST OF ABBREVIATIONS AND ACRONYMS

AKI:	Association of Kenya Insurers
GDP:	Gross Domestic Product
HMOs:	Health Management Organisations
IRA:	Insurance Regulatory Authority
IRDA:	Insurance Regulatory and Development Authority
KNAC:	Kenya National Assurance Company
KPMG:	Klynveld Peat Marwick Goerdeler
MIPs:	Medical Insurance Providers
NSD:	New Service Development
OECD:	Organization for Economic Co-operation and Development
PI:	Product Intelligence
SM:	Social Media
UNCTAD:	United Nations Conference on Trade and Development
VIF:	Variance Inflation Factor

DEFINITION OF TERMS

- Innovation:** This refers to the process of coming up with new ideas, products and way of doing things in an organization (Puri, 2007).
- Penetration:** This is the successful gaining of a specific market share in a given geographical region or group/class of people through selling of a product or service in the said market (Gitau, 2013).
- Insurance Penetration:** This is the ratio of percentage of total insurance premiums to the gross domestic product (KPMG, 2013). Penetration rate indicates the level of development of insurance sector in a country (Easterly, 2006). Within insurance, there is life insurance penetration which considers premiums from life insurance policies only as a percentage of GDP and non life insurance penetration which considers premium from other than life insurance policies such as automobile, fire and peril, burglary insurance and health insurance (Beck & Webb, 2003).

Marketing Innovation Strategy: This is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing (OECD, 2005). It must be part of a new marketing concept or strategy that represents a significant departure from the firm's existing marketing methods. Marketing innovation strategies can be implemented for both new and existing products (Homburg, 2009).

Product Innovation Strategy: This refers to the development of new products, changes in design of established products, or use of new materials or components in the manufacture of established products. Product innovation can be divided into two categories: radical innovation which aims at developing a new product, and incremental innovation which aims at improving existing products (Kotler & Keller, 2009).

Process innovation Strategy: This is the predetermined elements and the uncertainties that are paired to form scenarios in a number of steps or stages . It is a means through which different futures can be anticipated (Heijden,

2005). Process innovation, also called scenario thinking or scenario analysis, is a strategic planning method that some organizations use to make flexible long-term plans. It is in large part an adaptation and generalization of classic methods used by military intelligence (Schoemaker, 2005).

Technological Innovation Strategy: This comprises of new insurance products and processes and significant technological changes of products and processes. An innovation has been implemented if it has been introduced on the insurance market (Didier & Olsson, 2011).

ABSTRACT

Insurance companies provide unique financial services to the growth and development of every economy. Such specialized financial services range from the underwriting of risks inherent in economic entities and the mobilization of funds through premiums for long-term investments. The insurance industry in Kenya faces low insurance penetration in terms of market share, product diversification among other measures. Only 6.8% of Kenya's population has purchased insurance cover with an overwhelming 93.2% never having embraced insurance cover either in life or property. The penetration of insurance in Kenya is estimated at 3.44% which is very low compared to other countries like South Africa with the highest penetration rate of 14%, Namibia 8%, and Mauritius 5.94%. This study was designed to assess the role of innovation strategy on insurance penetration in Kenya by reviewing four study variables namely product innovation strategy, market innovation strategy, technological innovation strategy, and scenario plan strategy. The study focused on the licensed insurance companies in Kenya. To enhance better understanding of the study variables, several theories were used in the study. The theories included: Marketing theory, resource based theory, diffusion theory of innovation, evolutionary theory and scenario thinking theory. This study employed a descriptive research design because it involves describing a phenomenon. The population of the study was 51 Insurance Companies licensed to underwrite insurance services. The sample of the study was 34 insurance companies licensed to underwrite insurance services from which 146 managers drawn from marketing, underwriting, finance and claims department were studied. Data was collected using both primary and secondary sources. Linear and Multiple regression analysis was used to show the relationship between independent and dependent variables. The data collected was presented using tables, bar charts, and pie charts. The result of the study may benefit several stakeholders among them the insurance firms, investors, the government of Kenya, the insurance industry and researchers. From the study findings, majority of the respondents thought product innovation analyzes and identifies what customers want. On the Contribution of Market Innovation to Insurance Penetration, the study found out that majority of the respondents were in agreement that market innovation contributes to insurance penetration. Results of the study indicated that all the respondents were of the opinion that technological innovations and process innovation contribute to Insurance Penetration in Kenya. The study also concluded that all the independent variables (Product innovation strategy, market innovation strategy, technological innovation strategy and scenerio planning contribute significantly to insurance penetration. . Based on the findings, study recommended that insurance companies should lay out procedures and strategies such as product innovation, market innovation, technological

innovation and process innovation so as to enhance their penetration in the market. The Insurance Regulatory Authority (IRA) should formulate a well defined regulatory framework to ensure that all the new products are registered and patented to encourage innovation. In addition, Insurance firms in Kenya should allocate adequate resources for research on product innovation in their budgets which may enhance insurance penetration in Kenya. Insurance firms should internally engage their staff in the process innovation process and also engage expert consultants to ensure that the scenario process planning becomes a success.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The focus of this study was to advance the understanding of the role of innovation strategy on insurance penetration in Kenya. This chapter looked at global, regional and local perspective of the insurance penetration and insurance industry in Kenya. The chapter encompasses statement of the problem, research objective, hypothesis, significance of the study, scope and the limitations of the study.

Insurance companies provide unique financial services to the growth and development of every economy. Such specialized financial services range from the underwriting of risks inherent in economic entities and the mobilization of large amount of funds through premiums for long-term investments (Pearson & Robinson, 2007). Insurance companies' ability to continue to cover risk in the economy hinges on their capacity to create profit or value for their shareholders. Indeed, a well-developed and evolved insurance industry is a boon for economic development as it provides long-term funds for infrastructure development of every economy (Charumathi, 2012).

There is a positive correlation between a country's level of development and insurance coverage (Puri, 2007). It is widely acknowledged that innovation strategies are central to the growth of output and productivity in many economies (Kiraka, Kobia & Katwalo, 2013). Despite the fact that insurance has been practiced for over a thousand years world over, it is still a fact that insurance uptake is still very low, not only in Kenya but the world over (Osero, 2009). In Kenya however, the problem is a very serious one given that 96% adults do not have any form of insurance (Anja, Doubell, Herman, Sandisiwe & Chelwa, 2010) and insurance companies have not come up with products or strategies to fully tap this market (Ohnemus, 2009). It is worth noting that the contribution of

insurance industry to the economy is still minimal and therefore this study is aimed at identifying the role of innovation strategy on insurance penetration in Kenya.

Statistics show that global insurance penetration is 6.28% with Latin America taking the lead at 11.03%, Europe 6.73%, Asia 5.73%, Oceania 5.6% and Africa trailing at 3.65% (Swiss Re, 2013). According to Okulo (2014), in 2013 the average penetration for Europe is 6.82 percent while Africa's is 3.65 per cent. South Africa has the highest penetration rate of 14%, Namibia 8%, Mauritius 5.94% with the rest of African countries below 3.5% (Swiss Re, 2013). South Africa's insurance industry which is the biggest in the continent grew by 17 per cent while Jordan had the highest growth rate globally at 24 percent (Swiss Re, 2013).

According to Ernst and Young (2014), total direct premium in Brazil increased by 14% in 2013, higher than the 10% nominal increase in GDP. Total insurance penetration in Mexico grew at 11% and is well above the country's 7.5% nominal GDP. The trend of robust premium growth continues in other Latin American countries: Colombia's premium growth was 8% in 2013, while total insurance premiums in Peru grew 16% (Ernst & Young, 2014). A report by Sinha (2011) on behalf of the Insurance Regulatory and Development Authority shows that Insurance markets in India are showing clear signs of expansion, requiring insurers to be innovative in their approach towards the achievement of sustainable growth. India's insurance penetration is lower than the world average which in 2013 was 6.28 per cent, while for India it was 5.2 per cent. Although the penetration of Indian insurance is high at 5.2%, it lags behind other Asian countries like Japan (9.9%), South Korea (10.4%) and Singapore (6.8%) (Sinha, 2011). A study by Swiss Re Sigma (2011) found that Life insurance penetration (total premium \$ as a percentage of GDP) in the United States was 3.5 in 2010 (compared to 9.5 in the United Kingdom, 7.4 in France, and 8.0 in Japan). Only between 7 and 9 million Americans have private long-term care insurance (America's Health Insurance Plans/LifePlans, Inc., 2012). According to Ernst and Young (2014), in 2013 insurance penetration in developed countries such as Australia was 4.2%, Hong Kong - 11.5%, Japan 11%,

Korea – 11.6%, New Zealand – 6.1%, Singapore – 5.8% and Taiwan - 17%. A study by Banne and Bhola (2014) found that in 2012, life insurance penetration in India which is the major indicator of the growth of insurance in the country was just 5.17 % compared to Japan 9.2%, Taiwan 15.0% S. Korea 6.9% (IRDA, 2013). One of the important reasons for low penetration is unawareness of the Indian people about the need of insurance in their life. It is true that with the establishment of IRDA and with the entry of private sector insurance companies, life insurance market is witnessing the introduction of innovative, need based and customer friendly products (Banne & Bhola, 2014).

Report by Ukiri (2013) identified innovation as a key factor that aided the deepening of health insurance penetration in Nigeria. The study revealed that innovation played a leading and pivotal role in the evolution of Health Insurance and the drive to achieve universal health coverage in Nigeria. With a population of about 170 million people, the ability to innovate and come up with different products to meet the needs and affordability requirements of the wide and diverse market segments that exist in the country was crucial. There needs to be a concerted effort industry-wide, from all Health Management Organisations (HMOs), to move away from this trend if Nigeria was to progress beyond the current 4 percent Health Insurance market penetration statistics that is often quoted for the country.

Ukiri (2013) called for innovation in the area of channel development, which in her view is a requirement for offering health insurance products to previously under-served market segments. This would open up new opportunities for the entire industry. The study observed the fact that the informal private sector had largely been ignored by Health Insurance companies till date and the focus of most HMOs had been on a maturing and over-served corporate market segment. The study also found that there was room for innovation in the use of marketing channels and the way HMO products are being offered to the market (Ukiri, 2013). Collins (2013) did a study on Mobile Insurance as a source of Innovation and found that the use of mobile phones in insurance

is usually related to the self-service capabilities insurers can deploy for agents and for upper-income groups for services such as quote, bind, policy document issue, claims and printing of debit notes. Mobile technology is being used in emerging markets to innovate as a means of distribution and collection, especially to low-income consumers through micro insurance products, as there is usually 70 per cent mobile penetration but insurance penetration is below 5 per cent. Mobile operators benefit as well, as they are able to turn 'pay as you go' customers into annual subscription contracts (Collins, 2013).

Gundaya, Ulusoy, Kilic and Alpkan (2011) in their study on the effects of innovation types on firm performance found that innovativeness is one of the fundamental instruments of growth strategies to enter new markets, to increase the existing market share and to provide the company with a competitive edge. Motivated by the increasing competition in global markets, companies have started to grasp the importance of innovation, since swiftly changing technologies and severe global competition rapidly erode the value added of existing products and services. Thus, innovations constitute an indispensable component of the corporate strategies for several reasons such as to apply more productive processes, to perform better in the market, to seek positive reputation in customers' perception and as a result to gain a sustainable competitive advantage (Gundaya et al., 2011). Metcalfe (2008) stated that when the flow of newness and innovations desiccates, firms' economic structure settles down in an inactive state with little growth. Therefore, innovation plays a significant role in creating the differences of performance and competition among firms, regions and even countries. The study by Fagerberg, Mowery, and Nelson. (2014) revealed that innovative countries had higher productivity and income than the less innovative ones. OECD (2015), reports pointed out that companies that developed innovations in a more decisive way and rapidly, had also more qualified workers, paid higher salaries and provided more conclusive future plans for their employees. In fact, the effects of innovations on firm performance differ in a wide spectrum of sales, market share, and profitability to productivity and efficiency (OECD, 2015). McAdam and Keogh (2012) investigated the relationship between firms'

performance and its familiarity with innovation and research. They found out that the firms' inclination to innovations was of vital importance in the competitive environments in order to obtain a higher competitive advantage.

Siba (2012) examined the effects of the major innovations and patents to various corporate performance measures such as accounting profitability, stock market rates of return and corporate growth. The observed direct effects of innovations on firm performance are relatively small, and the benefits from innovations are more likely indirect. Innovation has a considerable impact on corporate performance by producing an improved market position that conveys competitive advantage and superior performance (Gundaya et al., 2011). A large number of studies focusing on the innovation-performance relationship provides a positive appraisal of higher innovativeness resulting in increased corporate performance (Gavrea, Ilieş & Stegorean, 2011). Many of these research embrace more or less a positive association between innovations and firm performance, but there are also some studies indicating a negative link or no link at all (Rejda, 2008; Pagach & Warr, 2010; Ogilo, 2012).

Until the late 1970s, the Insurance industry in Kenya operated in a rather stable environment (Gitau, 2013). There was little demand for services, the products offered were standardized, government supervision was minimal and competition relatively low. However, following the issuance of the government directive in 1978 which required all foreign insurance companies to be incorporated in Kenya by 1980 and the introduction of the insurance act CAP 487 of the laws of Kenya, the industry has since experienced tremendous challenges (Gitau, 2013). Many insurance companies sprung up in the 1980s and many more companies were incorporated in the 2010s following the liberalization of the economy. This move has seen the number of registered insurance companies grow from 15 in 1978 to 39 in 2001 and more than 40 in 2012. This, together with the collapse of the giant state owned Kenya National Assurance (in 1996) has intensified competition in the industry (Gitau, 2013).

According to the insurance industry report 2009 from AKI the penetration of insurance in Kenya was very low at only 2.54 percent of Gross Domestic Product (GDP) compared to 2.57 percent in 2005. Long-Term (life) insurance recorded a penetration ratio of 0.76 percent while that of general insurance was 1.78 percent. The Insurance industry in Kenya also faced difficult economic environment in 2011 with a penetration of 3.02% compared to 3.1% in 2010. Currently, the penetration of insurance in Kenya is estimated at 3.44% (Manyara, 2014) which compared to Malaysia which has an estimated 41% of the population covered by some form of life insurance, Kenya has less than 1% of the population insured. The penetration ratio reveals existing coverage and growth challenges for insurance market in a given country.

KPMG (2013) reported that in 2011, total premiums in Kenya were equal to 3.2% of GDP while according to Swiss Re Sigma (2012), about 63% of the market was for non-life insurance products and 43% of the non-life insurance market was for motor insurance (26% is commercial and 17% was private), while almost 20% is for personal accident insurance. Insurance companies compete for a limited market characterized by low penetration (Mbogo, 2010). Cut throat competition in the motor and group life classes of insurance led these sections to perform dismally in 2013 due to price undercutting. Motor insurance recorded a loss of over Sh600 million while group life's growth was lower than that recorded in 2012 (Okulo, 2014). The Insurance Industry faced a difficult economic environment in 2012 with the overall gross premium declining by 0.8% in real terms (Kamau, 2012). Emerging markets had an average growth of 1.3%, (Swiss Re-sigma, 2012).

Okulo's (2014) report draws data from a Swiss Re global industry survey which showed that Kenya's insurance density, the measure of premium per capita stood at \$35, way below South Africa's \$1025. Manyara (2014) in a report for the Kenya Broadcasting Corporation observed that increase in insurance penetration was minimal compared to similar economies in Africa and globally. Although insurance penetration is currently low, there is great potential for the industry owing to recent discovery of oil and gas and

the vastly growing real estate business. Medical insurance recorded the highest growth in gross premiums of 59.3% to Kshs 21 billion in 2013 up from Ksh. 13 billion in 2012 which is basically from state corporations and incorporated companies (Manyara, 2014).

Gitau's (2013) study on the strategies adopted by Kenyan Insurance companies to Alleviate low Insurance penetration using a descriptive survey research design and analysis done using descriptive statistics to establish the causal relationship. The study determined the factors causing low insurance uptake in Kenya and the challenges faced by the Insurers in marketing their products and the strategies that the Kenyan Insurance companies can adopt to enhance Insurance uptake. The study observed that there is general lack of creativity and innovations among Insurance companies which causes unhealthy competition. A report by UAP Insurance Kenya (2013) on Delivering Insurance through Mobile platform indicated that Insurance penetration is at 3.4.0% in Kenya and most companies have not adopted innovative marketing strategies. The report found Initiatives such as improved regulatory framework, innovative products, adoption of alternative distribution channels, enhanced public education and use of technology have contributed to the improved penetration level in Kenya.

According to AKI (2013) report there are 51 insurance companies as at the end of 2013, 23 companies wrote non-life insurance business only, 11 wrote life insurance business only while 12 were composite (both life and non-life). There were 170 licensed insurance brokers, 24 Medical Insurance Providers (MIPs) and 4862 insurance agents. Other licensed players included 140 investigators, 92 motor assessors, and 21 loss adjusters, 3 claims settling agents, 10 risk managers and 27 insurance surveyors. The penetration of insurance in Kenya is estimated at 3.44% which is quite low given that the population of Kenya now stands at over 40 million and is much below both the continent and the global penetration of 3.6% and 6.28% respectively (AKI, 2013).

Despite the fact that there are many Kenyans without any form of insurance cover, underwriters have not come up with products to fully tap the available market

(Ohnemus, 2009). In Kenya, 53% of Kenyans who have incomes between US\$ 2 and US\$ 10 per day, representing 10.8 million adults do not have any form of insurance and Insurance companies have not come up with products to tap this market and also that below US\$ 2 a day mark (Smith, Chamberlain, Smit, Ncube & Chelwa, 2010). Studies done by Anja *et al.* (2010) show that 96% (4 million) of adults that belong to a societies that provides some type of welfare function currently do not have any form of insurance (Anja, Doubell, Herman, Sandisiwe, & Grieve, 2010). According to Anja *et al.* (2010) eight insurance companies were either liquidated or placed under statutory management. They started with the liquidation of Kenya National Assurance Company (KNAC) (in 1996), followed by Access Insurance, Stallion Insurance, Liberty Insurance, Lakestar Insurance, United Insurance and Standard Assurance Kenya Limited. Invesco Assurance Company was placed under statutory management, but underwent a change in ownership structure and was not liquidated.

A study done by Kiraka, Kobia and Katwalo (2013) involved determining the causal effect of financial innovation on financial performance of insurance companies in Kenya where financial performance was measured by Return on Assets. The study found that many firms especially in the insurance industry make use of financial innovation strategies to keep pace with changing environments. The results also indicated that the relationship between new products and financial performance is insignificant and that operation processes and system innovations are statistically significant in explaining return on assets of insurance companies.

1.2 Statement of the Problem

The insurance industry in Kenya faces low insurance penetration in terms of market share, product diversification among other measures (AKI, 2013). According to Financial Sector Deepening Kenya (2009) only 6.8% of Kenya population has purchased insurance cover with an overwhelming 93.2% never having embraced insurance cover either in life or property. Despite the fact that Insurance penetration is a global problem

with developed markets like UK at about 11% and USA at about 8.6%, it is a more serious problem in Kenya given that the penetration is as low as 3.4% which is below the continent penetration of 3.65% (Swiss Re, 2013). The penetration of insurance in Kenya is too low estimated at 3.44% compared to other African countries such as South Africa with a penetration rate of 14%, Namibia 8% and Mauritius 5.94% (Manyara, 2014). According to Minambo, (2014), Kenya with a population of over 40 million people, all the 43 licensed banks shares 20 million banks accounts among themselves while 51 licensed insurance companies shares only one million life policies among themselves. Hence there is a need for a radical change in the insurance industry for it to gain more market share and penetration and grow as big as banking industry. Low penetration results to bigger exposure on Small Medium enterprises in terms of both man made and natural calamities threatening their survival. For example Ngara Fire, Gikomba Fire, Mukuru Kwa Njenga resulting to loss of billions of money and creating unemployment and increase in crime rate resulting to declining Economic growth (GoK, 2014).

Certain organizational forms have been identified as being suited to driving innovation. Early work into the capacity of organizations to cope with innovation is dominated by the findings of Burns and Stalker (2011); Lawrence and Lorsch (2007) and Aiken and Hage (2011). Innovation strategy is a key ingredient to performance of organizations in developed nations (Didier & Olsson, 2011). Later work into the innovative capacity of organisations has identified the need for quite new organizational forms. These “new-style” internal organizational forms had already been predicted by Miles and Snow (2008) in relation to pursuing “innovator” and “prospector” business strategies. Studies done on the Insurance Industry in Kenya include: Wanjohi (2002) who focused on strategic planning by Insurance companies in Kenya; Lengopito (2004) did a survey on strategic responses to increased competition in the healthcare industry; Wairegi (2004) sought to establish the strategic responses by Life Insurance Companies in Kenya to

changes in the environment; Ogolla (2005) carried out a study on application of generic strategies by Insurance companies in Kenya;

Mwangi (2010) covered strategic issue management in Insurance companies in Kenya; Kitur (2006), carried out a survey of strategic role of ICT among Insurance Companies in Kenya . All these studies have focused on different areas, other than the role of innovation on insurance penetration. With the signing up of the East Africa Protocol accord in 2010, the territorial limits of operation have widened, and there is need for innovative strategic approaches of reaching these new markets and increase penetration. This study seeks to bridge low insurance penetration in Kenya and methodological gaps available in the literature by assessing the role of innovation strategy on insurance penetration in Kenya.

1.3 Research Objectives

1.3.1 General Objective

The general objective of the study is to assess the role of innovation strategy on insurance penetration in Kenya.

1.3.2 Specific Objectives

1. To establish the role of product innovation strategy on insurance penetration in Kenya
2. To establish the role of market innovation strategy on insurance penetration in Kenya
3. To determine the role of technological innovation strategy on insurance penetration in Kenya
4. To evaluate the role of process innovation strategy on insurance penetration in Kenya

1.4 Research Hypotheses

1. H₁₀: Product innovation strategy has no role in insurance penetration in Kenya.
2. H₂₀: Market innovation strategy has no role in insurance penetration in Kenya.
3. H₃₀: Technological innovation strategy has no role in insurance penetration in Kenya.
4. H₄₀: Process innovation strategy has no role in insurance penetration in Kenya.

1.5 Significance of the Study

The study may provide an insight to the management of insurance companies on how the industry is performing in relation to overall economy and how their companies are performing in relation to the industry. It shall enable them to know the variables that contribute most to the penetration enhancement and focus on them in their strategic plans and allocate more resources for their implementation to achieve more insurance penetration. The study shall be valuable to policy makers since they may have a great understanding on the role of innovation strategy on insurance penetration. The information from this study shall enable the regulatory body to come up with a framework and programs aimed at enabling increased growth.

The findings of the study shall be significant to the insurance brokers and agents who act as intermediary between the client and the insurance companies, as it may give them a feel of their performance in relation to the industry. Insurance brokers and agents get their incomes from commissions paid to them by the underwriters therefore the change in penetration rates shall have effects on their profitability and revenues generated. The findings of this study may enable them understand the industry they are in better. Most banks in Kenya have been licensed as Insurance agents (bancassurance). They sell insurance products on behalf of insurance companies and in return they are paid commissions. This study shall be useful to them in that they derive part of their revenue

from here. The scholars and researchers shall have empirical information which shall enable them understand the role of innovation strategy on insurance penetration.

1.6 Scope of the Study

The study focused on the Insurance Companies in Nairobi, Kenya licensed to carry out underwriting business. These insurance Companies are more involved in the insurance activities and they have experience and more understanding of insurance and insurance products. The choice of insurance companies in Nairobi Kenya was informed by the fact that all the insurance companies in Kenya have their headquarters in Nairobi and the managers to be interviewed were stationed at the headquarters (AKI, 2013). According to Minambo (2014), Kenya with a population of over 40 million people, all the 43 licensed banks shares 20 million banks accounts among themselves while 51 licensed insurance companies shares only one million life policies among themselves. Hence there is a need for a radical change in the insurance industry for it to gain more market share and penetration and grow as big as banking industry. According to KPMG report (2013), there were 43 banks in Kenya with penetration of 27% which was far above that of the insurance industry hence need to study and understand why insurance penetration is too low despite the fact that insurance companies are more than the banks. The list of insurance Companies was obtained from insurance regulatory authority reports,(2014). According to the Insurance Regulatory Authority, there are 51 licensed insurance companies in Kenya who formed the population under study.

1.7 Limitation of the Study

The study was faced with a number of challenges which included the following:

The organization confidentiality policy which restricted some respondents from giving the information through the questionnaire as it was regarded as against the organizational policy to give confidential information to outsiders. This was mitigated by assuring the respondent of utmost confidentiality and disclosing the academic

purpose and intention of the study. An introduction letter from the university was presented to the organization management that helped to avoid suspicion and enabled the the organization managers to disclose much of the information sought by the study. Some respondents did not complete the questionnaire correctly because some issues were not understood properly and this was mitigated by explaining issues not clear to the respondents.

Inadequate responses to questions and unexpected occurrences like respondents proceeding on leave before completing the questionnaire. This was mitigated by constant engagement with the respondent and make clarification of issues not understood. To ensure high response rate, some questionnaire were mailed to the respondent and constant follow up done. So the respondents answered the question and emailed it back even when they were on leave. There were errors in the information provided which led to ultra –vires data. This was mitigated through data cleaning.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The focus of this study is to advance the understanding of the relationship between innovation strategies and insurance penetration in Kenya. This chapter provides a review of the literature. The specific areas covered here are theoretical review, conceptual framework, the empirical review of past studies, critique of the existing literature and research gap.

2.2 Theoretical Framework

Theories are formulated to explain, predict, and understand phenomena and, in many cases, to challenge and extend existing knowledge, within the limits of the critical bounding assumptions (Torraco, 2004).

2.2.1 Marketing Theory

This theory was advanced by Philip Kotler in 1967 which stipulates that Marketing is a social and managerial process by which individuals and groups obtain what they need and want through creating, offering and exchanging products of value with others (Kotler & Keller, 2015). According to Kotler (1967), marketing was an essential part of economics and saw demand as influenced not only by price but also by advertising, sales promotion, sales force, direct mail and various middlemen such as agents,retailers and wholesalers operating as sales and distribution channels.

Organization's marketing task is to determine the needs, wants and interests of target markets and to achieve the desired results more effectively and efficiently than competitors, in a way that preserves or enhances the consumer's or society's well-being

Kotler (1967). Profit motives are linked to the satisfaction of consumer wants and society's well-being (Kotler & Keller, 2015). In order to market effectively, Kotler believes the marketing purpose of elevating consumer well-being has to be put at the heart of company strategy and be practiced by all managers (Kotler, 1967). Organizations compete one another strategically to distinguish themselves in the area of service and quality within a market. Successful organizations strongly focus on the service paradigm with investment in people, technology, personnel policy and remuneration systems for their employees. This is very important as the behaviour of the employees can have a direct influence on the quality of the service (McCathy, 1975).

In the 1960s, the American marketer, Jerome McCarthy, provided a framework by means of the marketing mix: the 4 P's which include Price, Promotion, Product and Place which marketers can draw up a good marketing plan and improve operating results visibly by using the right combination and variables (Wilson, Zeithaml, Bitner, & Gremler, 2012).

Booms and Bitner's insight in relation to physical products and services led to an extension of the traditional marketing mix (4Ps) and added three important factors which included, People, Process and Physical Evidence, that make the services marketing mix and hence making the 7Ps of marketing (Booms, & Bitner, 1981). Product innovation and marketing innovation are usually regarded as two distinct issues: marketing scientists tend to take product innovation as given and do not worry about the decision on investing in product innovation at all while economists assume that any product innovation is successful, independent of the effort which is used to bring it to consumers (Beard & Easingwood, 1996). Several factors influence firms' decisions concerning product innovation and marketing innovations: the degree of substitutability, the number of competitors and market size (Beath, Katsoulacos & Ulph, 1997). The marketing of product innovation decreases with both the degree of product substitutability and the number of competitors while it increases with increasing market size. Market size has a positive and highly significant effect on firms' propensity to introduce product

innovation and also their effort in marketing the innovation (Mikes & Kaplan, 2014). Market concentration has a significantly positive effect on product innovation only and does not significantly affect effort used to market the product innovation (Hameeda & Al Ajmi, 2012).

In this study, the findings revealed that majority of respondents indicated that their companies had developed new products in the last five years which agrees with Kotler (1967) assertion that product was an essential part of economics and saw demand as influenced not only by price but also by advertising, sales promotion, sales force, direct mail and various middlemen such as agents,retailers and wholesalers operating as sales and distribution channels. Hence this theory is linked to specific objective number two, the role of product innovation strategy on insurance penetration in Kenya.

2.2.2 The Resource Based Theory

An outstanding theory in innovation study is the Resource Based Theory (Penrose, 1959) that posits that competitive advantage arises from organizational resource and capabilities that underlie and determines a firm's capacity for innovation. A firm is considered as a coordinated bundle of resources and its capability to exploit the resources a source of sustainable competitive advantage (Teece *et al.*, 1997). Firms obtain competitive advantage from unique bundles of tangible and intangible assets that are rare, valuable, imitable and sustainable. Firm resources are those assets connected semi-permanently to a firm and include human, social, technological, knowledge, physical and financial (Ernst & Young, 2012).

A firm's own resource provides a much more stable context in which to develop its innovation activity and shape its market (Ellul & Yerramilli, 2010). When firms have resources that are valuable, rare and not easily copied, they achieve a sustainable competitive advantage mostly in the form of innovative new products (Trott, 2008). The presence of different organizational resources and capabilities positively affects the

innovation process and capacity of firms. Organizational resources provide the input that is combined and transformed by capabilities to produce innovation. Financial resources are among the most important bundles or resources for a firm and can be used to expand a firm's capacity to support innovative activities especially R & D while lack of financial resources may act as a barrier to innovation. Internal financial resources are more conducive to R&D activities than external funds (Yang, 2011).

Another key resource for firm's competitiveness is the knowledge based resources (Wang et al., 2009; Lee & Sukuco, 2007; Wiklund & Shepherd, 2003). Knowledge facilitates the discovery of ideas and exploitation of opportunities for innovation and can be used to manipulate, transform and develop the other resources for competitiveness in the market (Gilbert et al., 2008; Kaya & Patton, 2012). Knowledge allows firms to accurately predict the nature and potential of changes in the environment and the appropriateness of strategic actions and provides a foundation for the accumulation and development of other resources by the firm (Price, Stoica & Boncella, 2013). These resources include knowledge created by the firm internally and that acquired by the firm from other sources of knowledge. A high stock of qualified employees with advanced skills and knowledge increases the innovation capability of a firm (Vijayakumar & Tamizhselvan, 2010). The resource based view focuses on the link between firms' resources and innovation and how the resources affect the ability of the firm to innovate is organized to exploit the resources (Malik, 2011).

In this study, 87% of the respondents indicated that their companies had allocated resources for marketing. This is in agreement with the marketing theory where financial resources are regarded as the most important bundles or resources for a firm that can be used to expand a firm's capacity to support innovative activities especially R&D while lack of financial resources may act as a barrier to innovation. Internal financial resources are more conducive to R&D activities than external funds (Yang, 2011).

Therefore the findings of specific objective number two, the role of marketing innovation strategy where 87% of the respondents indicated that their companies had allocated resources for marketing agrees with this theory.

2.2.3 Rodger's Diffusion of Innovation Theory

Diffusion of innovations was advanced by Everett Rogers in 1962 and seeks to explain how, why, and at what rate new idea and technology spread. Rogers argues that diffusion is the process by which an innovation is communicated over time among the participants in a social system (Rogers, 1962). Rogers further asserts that four main elements influence the spread of a new idea: the innovation itself, communication channels, time, and a social system and this process relies heavily on human capital (Rogers, 1983). The innovation must be widely adopted in order to sustain itself. The categories of adopters are innovators, early adapters, early majority, late majority, and laggards (Noel, 2009).

Rogers argues that the attributes and characteristics of the innovation itself are important in determining the manner of its diffusion and the rate of its adoption (Rogers, 1995). Borrowing from the work of Thomas and Znaniecki (1927) he notes that it is what potential adopters perceive to be the attributes of an innovation that is the important thing (Kunreuther & Pauly, 2012). In the case of technological innovation, and almost all innovations studied fall into this category and the rate of its usage is important for organizational growth and development (Noel, 2009). Rogers (1995) outlines two components to be considered: a hardware aspect consisting of a tool that embodies the technology as a physical object, and a software aspect comprising this tool's information base. Rogers outlines five important characteristics of an innovation which, he argues, affect its diffusion: relative advantage, compatibility, complexity, trialability and observability.

In relation to the insurance industry, normalization and standardization procedures reduce uncertainty and create network effects that increase the profitability of adoption (David, 1985; David & Greenstein, 1990) showing that compatibility standards constitute a factor likely to favour innovation diffusion. The insurance system may also reduce the risk, at least for some sectors like medicines. Rogers (1995) as cited by Ahmed, Zeng, Sinha, Flavell and Massoumi (2011) suggests that, in almost all cases, a considerable degree of re-invention does occur and so rather than a linear model of communication, a convergence model would perhaps be more appropriate. In this study, the findings indicates that 88% of the respondents concur that technological innovation contributes to insurance penetration and this in line with Rogers difusion theory where Noel, (2009) asserts that technological innovation the rate of its usage is important for organizational growth and development. Therefore the objective number three, the role of technological innovation strategy has a role on insurance penetration confirms this theory.

2.2.4 Evolutionary Theory of Economic Change

This theory is concern with processes of long-term and progressive change (Nelson, 1961). It analyzes the capabilities and behavior of business firms operating in a market environment and the broad perspective provided by an evolutionary theory analysis is useful in analyzing a wide range of phenomena associated with economic change stemming either from shifts in product demand or factor supply conditions, or from innovation on the part of firms (David, 1974). This theory focuses on different aspects of economic change and the response of firms and the industry to changed market conditions, economic growth, and competition through innovation. Sanjaya Lall saw economic development as an evolutionary process, with technological learning at its heart. It argues that only an evolutionary theory fits what is known about how technological learning progresses.

It develops a view that long-run economic change must be understood as involving the co-evolution of technologies in use and the institutional structures supporting and regulating these (Mazzoleni & Nelson, 2007). According to Nelson (2008) technological advancement and innovation were the key driving forces to macro-economic growth.

Evolutionary theory is used to analyze and critique the strategic process of process innovation (Evans, 2011). Process innovation can be strengthened as a theory - and practice-oriented process through the incorporation of evolutionary theory in the scenario narrative process, and in the subsequent implementation phases in response to environmental change. Then, the concepts of variation, selection, retention, organizational learning and inertia are used to analyze process innovation as a strategic process. Because process innovation mirrors modes of variation and selection at the organizational level, evolutionary theory is a useful approach for assessing the plausibility of scenario narratives and strengthening the theoretical foundation of process innovation as a process (Evans, 2011). By utilizing an evolutionary framework throughout the process innovation process, this method has a better chance of encouraging exploratory strategic thinking without reinforcing non-blind variation or inertial practices. Concepts including inertia can also be used to better address bias and myopia in the process innovation process (Omwenga, 2010). Additionally, evolutionary theory can be used to assess how entities learn from the outcomes of process innovation as the environment changes over time (Evans, 2011).

2.2.5 Herman Kahn Scenario Thinking Theory

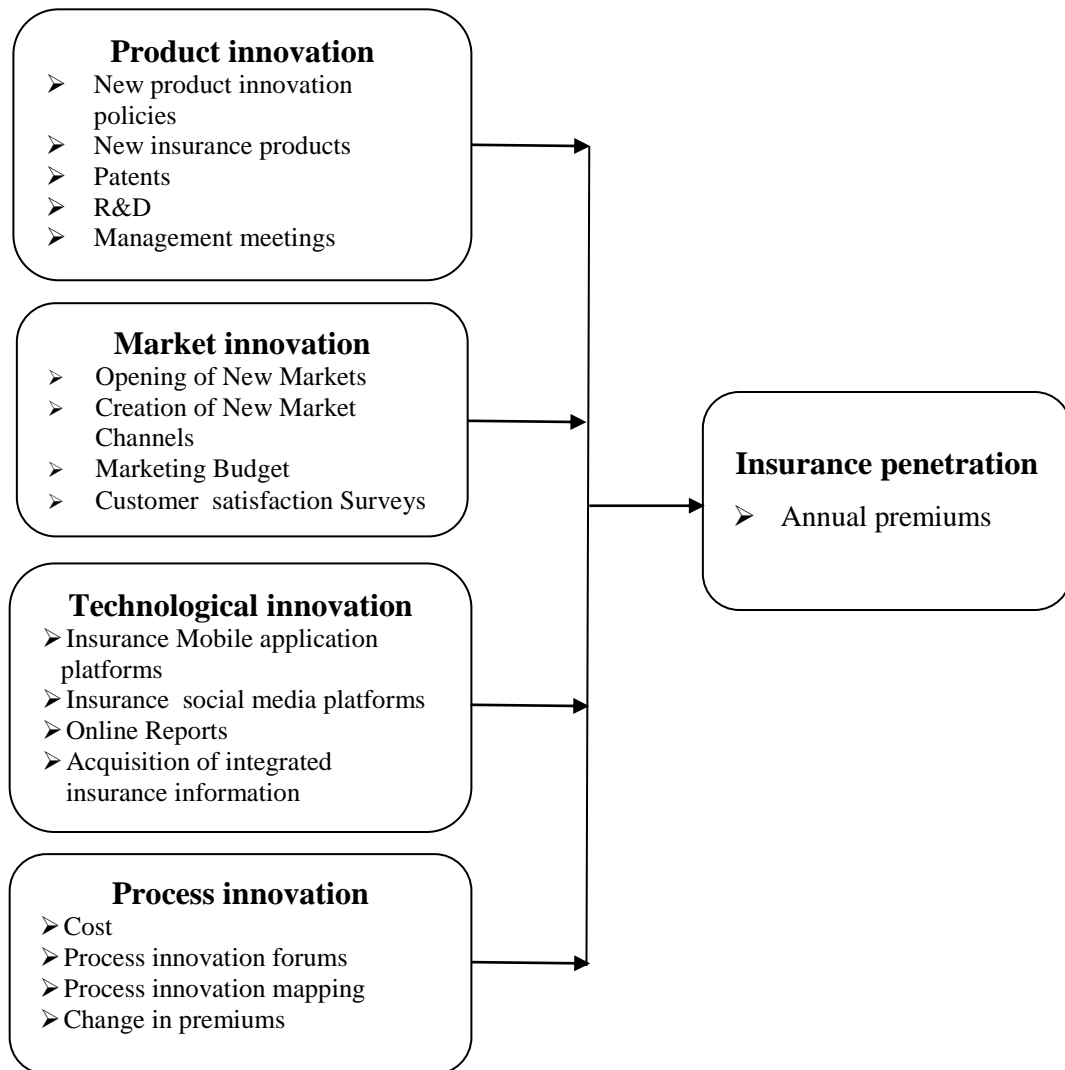
Many theories are identified in process innovation discipline but in this study Herman Kahn's scenario thinking is considered for discussion. Herman Kahn is a prominent personality in process innovation discipline. Herman Kahn's theories contributed to the development of the nuclear strategy but later moved from military practice to business environment (Kinuthia, 2010). Theoretically Herman Kahn's scenario thinking can be summarized as: imagining, proposing or desiring a state of being of an object (world, a

society or an organization) in a future within a given time period by studying and analyzing the past or present values of variable attributes of the object under consideration and how those attributes may vary under certain conditions in a projected time period (Karanja, 2011). This analysis gives the scenario planner an understanding of an imagined future in order to make appropriate decisions.

State of being, time period and object attributes are the variables in Herman Kahn's scenario theory, that interact with one another to determine the future behavior of an object in a dynamic environment (Quang, 2014). The need for an object to exhibit certain behavior is the starting point. This behavior should be observable within a definite period of time in future. And to have a rough idea of such behavior the current behavior must be known through the analysis of the current values of the attributes of the object. By knowing the current values of the attributes, the process innovator is given a fair knowledge about the possible behaviors of the object in the future, hence different futures (Hobbs, Legraw & Veit, 2010).

2.3 Conceptual Framework

According to Bogdan and Biklen (2013), a conceptual framework is a basic structure that consists of certain abstract blocks which represent the observational, the experiential and the analytical/synthetical aspects of a process or system being conceived. The interconnection of these blocks completes the framework for certain expected outcomes. The conceptual framework presents the relationship between the independent variables and the dependent variable (Young, 2009). This is as shown in Figure 2.1.



Independent Variables

Dependent Variable

Figure 2.1: Conceptual Framework

Market Innovation Strategy

Charumathi (2012) reported that new products introduced in the last five years generated 41% of company's sales and 39% of company's profits. Besides these benefits, NPD offers other benefits like the positive impact on company image, the opening up of new

markets and the provision of a platform for further new products (Storey & Easingwood, 2009). Accordingly, Quadros, Furtado, Roberto and Franco (2010) in a study on technological innovation in Brazilian industry found that innovations are done in general to meet production and marketing goals as improvement in product quality, reduction in production cost, increase in market share and new market structures, creation of new markets, and increase in production flexibility (Quadros et al., 2010).

Technological Innovation Strategy

Measuring the efficiency of the technological innovation activities is not new in literature but the empirical evidence is scarce. Choi (2010) estimated the efficiency of R&D collaborations with Spanish public research centers. They considered firm revenue, number of employees and R&D expenditures as inputs and total income, new employees and patents as the outputs of the R&D collaborations. They observed that efficiency varied depending on firm size, and the level of firm knowledge. With the aim of analyzing the efficiency behavior of 15 industries in China, Guan et al. (2016) considered R&D, learning, manufacturing, marketing and organization as innovation inputs and market share, sales growth, export rate, profit growth, productivity and new product rate as the outputs of what he defined as technological innovation capability. They concluded that only 16% of the firms were technical efficient.

Process innovation Strategy

Prospective is not philanthropy in any organization, but rather reflection with a view to clarifying action, especially action of a strategic nature. It is always tempting to take desires for reality. Although visions of the future or scenarios appear desirable, the choices and strategic direction of an organization do not necessarily match a single proactive vision (Mwatuwano, 2012). Yusuf and Dansu (2014) define scenarios as a tool for addressing the uncertainty of the future in order to facilitate the adaptation of the organization.

Process innovation helps organizations to make sense of their current situation through the analysis of multiple equally plausible futures. It does not prescribe action, but enhances organisations' capabilities to mobilise resources and achieve greater innovativeness (Yegon, Gekara & Wanjau, 2014). To be efficient, process innovation needs to give sufficient attention to the political and cultural realities of the organization in order to yield good evaluation of the future and generate commitment from all members of the organization to the elaborated strategies.

The process innovation exercise should assemble and use the information residing in the collective wisdom of the organization. Process innovation should generate actions which the organization is politically and culturally comfortable with. Finally, it should incorporate the specific core issues for the organization in a viable strategy (Wright *et al.*, 2008). One advantage of process innovation is that it simplifies the complex information about future possibilities in a limited number of possible states including unique combinations of trends, conditions and driving forces (Schoemaker, 2005). This, however, does not mean that scenarios exclude data – they rather explore various uncertainties with equal weight. Another advantage is that process innovation allows for the change of several variables at a time, without keeping constant the others. Thus they help planning when the situation of the organization is very complex or includes elements which cannot be formally modeled and captured by computer stimulation.

Product Innovation Strategy

Customers are often seen as the basis of a company's profitability (Fischer, 2011). The efficient allocation of limited resources to maximize value requires focusing on relationship oriented customers and strong, long-lasting customer retention (GSAM Insurance, 2013). According to Gronroos, (1990), customer perceived service quality has two dimensions: the functional dimension (process), which denotes “how” in the customer-seller interaction and the technical dimension (outcome), which relates to “what” in the actual service provision. Evidence supports the notion that service

management is concerned with not only the technical but also the functional quality (Kang, 2006). Kang and James (2004) found that the technical and functional dimensions of service quality are both important predictors of customer satisfaction. Auma (2013) reported that both dimensions influence overall satisfaction, although they found stronger evidence for the effect of functional quality. Waweru and Kisaka (2012) proposed that interaction orientation leads to high levels of customer satisfaction. For instance, studies have shown that empowering individual customers to develop their own unique experience enhances their satisfaction (Kimali, 2012; Abdalla, 2012). Ramani and Kumar (2008), in a survey of 211 samples in 107 firms, found that a superior interaction orientation is likely to result in greater customer satisfaction.

Insurance Penetration

Insurance penetration (value of total insurance premiums (life and non-life)/GDP) is used to measure the amount of funds that are available to insurance companies (Rejda, 2004). Different insurance companies, however, may have very different liability structures and may thus have different preferences for the assets that they hold (Makove, 2013). Life insurance companies that offer contracts with a substantial savings component, such as whole life contracts, might have a preference for long term debt. In contrast, insurance companies that offer term life and property and casualty insurance tend to have shorter term obligations, and thus, are expected to hold shorter-term debt (KPMG, 2014). Unfortunately, we do not have data that allows us to distinguish between the different sectors of the insurance industry.

2.4 Empirical Review

This is the literatures or previous studies that relate or argue positively with the current studies hypothesis and variables.

2.4.1 Product Innovation Strategy and Insurance Penetration

In Iran, Pishgar, Dezhkam, Ghanbarpoor, Shabani and Ashoori (2013) in their study on the impact of product innovation on customer satisfaction and customer loyalty in the construction industry found that the efficient allocation of limited resources to maximize value requires focusing on relationship oriented customers and strong, long-lasting customer retention. Pishgar et al. (2013) observed that customer orientation has typically been measured by self-reports from service employees. Customer orientation has also been shown to have a positive impact on performance. They observed that improving customer is one of the major challenges in the whole construction industry. Pishgar et al. (2013) concluded that innovation management and customer orientation have been widely recognized as key factors in enhancing customer satisfaction and business performance.

Preissl (2009) conducted a study in Germany on what makes service innovation different and found that a large part of the poor understanding of innovation in services can be attributed to the informal nature of research and development (R&D) in New Service Development (NSD). Measuring innovation is often done by having a look at R&D efforts, for example expenditures on R&D, number of employees, patents, sales of imitative and innovative products and new product announcements. These measurements are unfavorable for determining the level of innovation in services. As Preissl (2009) points out, the R&D department is often not the major innovative contributor in a service driven company. An R&D department may not even exist. Patenting a service is possible to a varying extent in different countries and is not widely used to protect intellectual property in many services industries. Therefore it is natural to find a large discrepancy between the numbers of patents awarded to product innovations in relation to service innovations.

This study sought to determine the amount of variation in insurance penetration explained by product innovations. Regression analysis was conducted. The results are shown that the calculated R value was 0.507. R^2 Value was 0.257 which means that 26% of the corresponding variation in insurance penetration can be explained by change in Product innovation. Hence product innovation strategy is an important ingredient enhancing insurance penetration in Kenya. This is in agreement with the studies by Pishgar et al. (2013) who concluded that innovation management and customer orientation have been widely recognized as key factors in enhancing customer satisfaction and business performance.

2.4.2 Market Innovation Strategy and Insurance Penetration

Hollanders and Evangelista (2012) using a feasible approach, conducted a study on promises and pitfalls of organisational and marketing innovation found that organisational and marketing innovations are deployed by a considerable share of European enterprises in order to gain economic success and competitive advantage. But due to the highly complex nature and strong reference to related fields of product innovation (in the case of marketing) and technical process innovation (in the case of organisational innovation), their economic effects are more likely to become visible as indirect effects in terms of “enablers” and “prerequisites” for innovation. Nevertheless, the findings show that organisational and marketing innovation can also contribute to firms’ direct economic performance in terms of sales growth and increases in productivity. Based on the analysis of selected organisational concepts, the findings also depict that different organisational measures vary in their linkage to different economic performance dimensions (Hollanders & Evangelista, 2012).

This study sought to determine the amount of variation explained by Market innovation strategy on insurance penetration. The amount of variation in insurance penetration explained by market innovation strategy was determined by conducting a regression analysis that found out that 35.5% of the corresponding variation in insurance

penetration can be explained by change in market innovation strategy. Hence market innovation strategy is an important ingredient enhancing insurance penetration in Kenya. This is in agreement with findings by Hollanders and Evangelista (2012) whose findings show that organisational and marketing innovation contributed to firms' direct economic performance in terms of sales growth and increases in productivity.

2.4.3 Technological Innovation and Insurance Penetration

Didier and Olsson (2011) in a study on micro insurance and the importance of an inclusive approach in service innovation understood the important role of process improvements with the help of technology to achieve service innovation by analyzing the innovation by first observing the endogenous and exogenous drivers that lead to innovation. The findings enabled the articulation of the main advantage of technological innovation, which is, that stakeholders do not start from zero, they do not start with nothing. Every firm has its own base of knowledge, which they share to achieve a common goal. In the case of micro insurance for instance, a success factor was the ability to reuse an existing platform of payment. The high penetration of mobile technology on emerging markets was particularly important here due to the lack of infrastructure and the search for cost reduction. Didier and Olsson (2011) also observed that each stage of innovation mean threats, challenges and opportunities for the firms, which need to adapt and clearly define their strategies. However, the fact that the stakeholders do not start from zero but can also achieve a base by leveraging existing knowledge advances the pace of innovation and minimizes risk of innovation by going where the stakeholder has not gone before and subsequently the risk of not innovating, which in this case would leave a large market unserved (Didier & Olsson, 2011).

In order to empirically test the effect on technological innovation efficiency on firm performance, Claudio, Teresa and Cristina (2013) used the Survey of Business Strategy (SBS), which is a firm-level panel data set of Spanish manufacturing firms covering the period from 1990 to 2005. The study found that the use of the innovation outputs

without considering the effort needed to achieve them might be overestimate their effect on firm performance. The results show that there are few efficient firms in the Spanish manufacturing sector indicating that there is much room for improving the efficiency of the technological innovation process. The results also show the importance of the measuring the technological innovation efficiency as determinants of firm performance rather than the merely inclusion of innovation inputs or outputs. The study recommends that it is of a major importance to know the importance of technological innovation in order to evaluate how firms are developing one of the most important activities that are central for business success, the technological innovations (Claudio et al., 2013).

This study sought to determine the amount of variation in insurance penetration explained by Technological innovation strategy. Regression Analysis was conducted to determine the amount of variation in insurance penetration explained by Technological innovation strategy. The showed that 58% of the corresponding variation in insurance penetration can be explained by change in Technological innovation strategy. Consequently technological innovation strategy is a key ingredient enhancing insurance penetration in Kenya. This study is in agreement with study by Claudio, Teresa and Cristina (2013) who recommended that it is of a major importance to know the importance of technological innovation in order to evaluate how firms are developing one of the most important activities that are central for business success, the technological innovations (Claudio et al., 2013).

2.4.4 Process innovation Strategy and Insurance Penetration

A study by Baraev (2009) on future process innovation in strategic management in the mobile telecommunication industry found that process innovation could be successfully used for understanding the structural uncertainties and unpredictable events in rapidly changing business environments, when applied for strategic vision and strategic option planning, and demonstrated its limitations in comparison with another future planning method forecasting. The main impact of the process innovation was in expanding

mental models of decision makers and it was found in practice that understanding shareholders' mindsets by involving them in the process was extremely critical for success of the process innovation project. Experimenting with modifications of the process innovation methodology during case study also discovered benefits in development of the process innovation strategy in iterative approach when workshops were followed by desk research or field research work.

Odemba (2013) carried out a study on the Factors Affecting Uptake of Life Insurance in Kenya using a descriptive and cross-sectional survey research design. The study revealed that most customers prefer life insurance products with both risk and saving components and that most life insurance companies live in urban areas and not rural areas. The study also revealed that most customers prefer to pay their premiums through mobile money, especially Mpesa because of the convenience that comes with mobile money. The study revealed that high cost of premiums and inefficiency in claims settlement are the major factors hindering the penetration of life insurance in Kenya. Other major factors affecting penetration of life insurance include poor customer service, the complicated nature of life insurance products, poor sales agents' integrity and lack of disposable income for most Kenyans (Odemba, 2013).

This study sought to determine the amount of variation in insurance penetration explained by Process innovation strategy. Regression analysis was conducted to determine the amount of variation in insurance penetration explained by Process innovation strategy which depicted that. 32% of the variation in insurance penetration can be explained by Process innovation strategy. Consequently process innovation is a key ingredient enhancing insurance penetration in Kenya. This study is in agreement with study by Baraev (2009) on future process innovation in strategic management in the mobile telecommunication industry found that process innovation could be successfully used for understanding the structural uncertainties and unpredictable events in rapidly changing business environments.

2.4.5 Insurance Penetration

A measure of the development of an insurance sector is insurance penetration, defined as gross premium income (GPI) as a percentage of gross domestic product (GDP). According to Mahul et al. (2009), insurance penetration rate is expressed as the ratio between insurance premium volume and GDP; non- life insurance penetration is expressed as the ratio between non- life insurance premium volume and GDP. Mahul et al. (2009) noted that the agricultural insurance penetration rate is lower than the non- life insurance penetration in all groups of countries classified by development status. Thus financial penetration is a subset of the financial deepening. The gap decreases with development level. Developing countries economies rely heavily on agriculture however agricultural insurance has taken a long time to take off . According to Honohan (2014), the United States and many European countries have had some form of crop or livestock insurance for more than a century and are mature markets with high penetration rates.

2.5 Critique of Existing Literature

The study by Pishgar, Dezhkam, Ghanbarpoor, Shabani and Ashoori (2013) on the impact of product innovation on customer satisfaction and customer loyalty in the construction industry in Iran found that customer orientation has a positive impact on performance. However, the study was conducted in the Islamic state of Iran on the construction industry while the current study seeks a Kenyan perspective of the insurance sector. Hollanders and Evangelista (2012) did a study on promises and pitfalls of organisational and marketing innovation and found that organisational and marketing innovations are deployed by a considerable share of enterprises in order to gain economic success and competitive advantage. However, the study was done on European enterprises while the current study focuses on insurance penetration in Kenya.

The study by Didier and Olsson (2011) on micro insurance and the importance of an inclusive approach in service innovation greatly enriched the current study by enabling the articulation of the main advantage of technological innovation. However, the study was carried out in the first world nation of Germany while the current study seeks the state of affairs in a developing economy. The study by Baraev (2009) on future process innovation in strategic management found that process innovation could be successfully used for understanding the structural uncertainties and unpredictable events in rapidly changing business environments. However, the study focused on the mobile telecommunication industry while the current study is on the insurance sector.

2.6 Research Gaps

The study by Pishgar, Dezhkam, Ghanbarpoor, Shabani and Ashoori (2013) on the impact of product innovation on customer satisfaction and customer loyalty in the construction industry in Iran found that customer orientation has a positive impact on performance. However, the study was conducted in the Islamic state of Iran on the construction industry while the current study seeks a Kenyan perspective of the insurance sector.

Hollanders and Evangelista (2012) in their study on promises and pitfalls of organizational and marketing innovation on European enterprises in Europe found that organizational and marketing innovations are deployed by a considerable share of enterprises in order to gain economic success and competitive advantage.

The study by Didier and Olsson (2011) on micro insurance and the importance of an inclusive approach in service innovation in Germany found that technological innovation is key to the success of organizations. The study by Baraev (2009) on future process innovation in strategic management on mobile telecommunication industry found that process innovation could be successfully used for understanding the structural uncertainties and unpredictable events in rapidly changing business environments. All

these studies were done in developed economies and none of them focused on the role of innovation strategy on insurance penetration. This study was carried out in a developing economy which is different from the developed economies.

2.7 Summary

This chapter has reviewed the different theories which support the independent variables. The marketing theory states that the marketing of product innovation decreases with both the degree of product substitutability and the number of competitors while it increases with increasing market size. Also, market size has a positive and highly significant effect on firms' propensity to introduce product innovation and also their effort in marketing the innovation. The Resource Based Theory (Penrose, 1959) is an outstanding theory in innovation study that posits that competitive advantage arises from organizational resource and capabilities that underlie and determines a firm's capacity for innovation. When firms have resources that are valuable, rare and not easily copied, they achieve a sustainable competitive advantage mostly in the form of innovative new products (Trott, 2008).

In reviewing technological innovation, Roger in his Diffusion of Innovation Theory argues that the attributes and characteristics of the innovation itself are important in determining the manner of its diffusion and the rate of its adoption (Rogers, 1995). In relation to the insurance industry, normalization and standardization procedures reduce uncertainty and create network effects that increase the profitability of adoption (David, 1985; David & Greenstein, 1990).

Evolutionary theory has been used to analyze and critique the strategic process of process innovation (Evans, 2011). By utilizing an evolutionary framework throughout the process innovation process, this method has a better chance of encouraging exploratory strategic thinking without reinforcing non-blind variation or inertial practices. The state of being, time period and object attributes are the variables in

Herman Kahn's scenario theory, that interact with one another to determine the future behavior of an object in a dynamic environment (Kortea & Chermack, 2007).

In reviewing the product innovation strategy variable, Kang and James (2004) found that the technical and functional dimensions of service quality are both important predictors of customer satisfaction while Prahalad and Ramaswamy (2004) and Urban (2004) observed that empowering individual customers to develop their own unique experience enhances their satisfaction. On the market innovation strategy variable, Storey & Easingwood (2009) asserted that NPD offers other benefits like the positive impact on company image, the opening up of new markets and the provision of a platform for further new products. While reviewing the technological innovation strategy, the study has presented by the Didier and Olsson's (2011) study that found that each stage of innovation mean threats, challenges and opportunities for the firms, which need to adapt and clearly define their strategies.

On future process innovation, Baraev (2009) has found that process innovation could be successfully used for understanding the structural uncertainties and unpredictable events in rapidly changing business environments, when applied for strategic vision and strategic option planning. In assessing insurance penetration, Odemba (2013) has revealed that most customers prefer life insurance products with both risk and saving components and that most life insurance companies live in urban areas and not rural areas. The chapter has also critiqued the reviewed literature and also presented a research gap where all the reviewed studies were done in developed economies and none of them focused on the role of innovation strategy on insurance penetration while the current study seeks a Kenyan perspective of the prevailing phenomenon.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodological concerns used in conducting this research and provides a justification for each step taken. It involves the general research perspectives, data collection, and summary of statistical measurement methods, validity, reliability and hypothesis testing.

3.2 Research Philosophy

Research philosophy refers to the assumptions and beliefs that govern the way we view the world (Saunders et al., 2007). Two main research philosophical views are positivism and phenomenological perspective. Positivism has to do with the situation where knowledge or the world is thought to exist independent of people's perceptions of it and that science uses objective techniques to discover what exist in the world" (Hatch & Cunliffe, 2006). Positivism uses logical, quantitative, more objective scientific methods to test hypothetically-deductive generalizations. On the other hand, phenomenological or interpretive philosophy holds that "reality of the world is thought to arise out of the creation and exchange of social meaning during the process of social interactions" (Hatch & Cunliffe, 2006). Phenomenological perspective uses qualitative, more subjective, naturalistic approaches in inductively and holistically to understand human experiences in context-specific settings (Amaratunga, Baldry, Sarshar & Newton, 2002).

In this study positivism was used more than phenomenological perspective because innovation strategy and penetration constructs as pertaining to Kenya's insurance industry can be examined objectively through the use of established theoretical frameworks and structured instruments to assess and analyze it, upon which generalizations were made from the findings

3.3 Research Design

The research design refers to the overall strategy that is chosen to integrate the different components of the study in a coherent and logical way, thereby, ensuring that the research problem is effectively address; it constitutes the blueprint for the collection, measurement, and analysis of data. It is worthy to note that research problem determines the type of design that should be used (Nachamias, 2010). The function of a research design is to ensure that the evidence obtained enables the researcher to effectively address the research problem logically and as unambiguously as possible(Saunders, Lewis & Thornhill, 2012). According to Cooper and Schindler (2003), A research design is the set of methods and procedures used in collecting and analysing measures of the variables specified in the research problem. The design of a study defines the study type (descriptive, correlation, semi- experimental, experimental, review, meta-analytic) and data collection methods and a statistical analysis plan. Research design is the framework that has been created to find answers to research questions (Cooper & Schindler, 2003). Research methodology is characterized by procedures and methods for arriving at results and findings and tools for proofing or disproving such, knowledge (Saunders, Lewis & Thornhill, 2007). The research methodological approaches a researcher chooses to conduct a research could be affected by the researcher's philosophical perspectives and paradigm. Descriptive research design was used in this study which is a method of collecting information by interviewing or administering a questionnaire to a sample of individuals Orodho (2003). It can also be used when collecting information about people's attitudes, opinions habits or any other social issues (Orodho, 2003). Research design is a roadmap of how one goes about answering research questions (Kothari, 2004). This type of research describes what exists and may help to uncover new facts and meaning. The purpose of descriptive research is to observe, describe and document aspects of a situation as it naturally occurs (Nachamias, 2010).This involves the collection of data that provided an account or description of individuals, groups or situations. Instruments to obtain data in descriptive

studies include questionnaires, interviews (closed questions) and observation (checklists). The characteristics of individuals and groups such as nurses, patients and families may be the focus of descriptive research. It can provide a knowledge base which can act as a springboard for other types of quantitative research methods (Saunders, Lewis & Thornhill, 2012).

Sekaran and Bougie (2010) observe that a good research design has a clearly defined purpose and has a consistency between the research questions and the proposed research method. The choice of this design is appropriate for this study since it utilized a questionnaire as a tool of data collection. This is supported by (Mugenda & Mugenda, 2003) who assert that this type of design enables one to obtain information with sufficient precision so that hypothesis can be tested properly. It is also a framework that guides the collection and analysis of data. (Kothari, 2004) observes that a descriptive research design is used when data is collected to describe persons, organizational settings or phenomenon.

3.4 Target Population

Population refers to an entire group of persons or elements that have at least one thing in common. It also refers to the larger group from which a sample is taken (Orodho, 2003). A population can also be defined as including all people or items with the characteristic one wishes to understand. Mugenda and Mugenda (2003) define population as the entire group of individual or objects having common observable characteristics. The target population of this study was 228 managers from Marketing, IT, Underwriting and Finance departments drawn from the 51 insurance Companies which have headquarters in Nairobi Kenya and licensed by Insurance regulatory authority to underwrite insurance business. Managers from these insurance companies were used as unit of observation. The choice of these officers is based on the fact from AKI (2013) that they have a vast knowledge of the matters relating to insurance industry and are best placed to offer valuable information to the study without biasness. The list of the target population was

obtained from the Insurance regulatory authority (2013). According to Makove, (2013), there are 228 managers in Marketing, IT, Underwriting and Finance departments in the insurance industry in Kenya. These managers were used as the unit of observation while the insurance companies were used as the analysis.

3.5 Sampling Technique

Population refers to the source material or device from which necessary information may be drawn. It is a list of all the individuals from whom information may be obtained and may include individuals, households or institutions (Bryman & Bell, 2003). In reality if the population is so large, there is simply not enough; time, energy, money, labour or man power, equipment, access to suitable sites to measure every single item or site within the parent population or whole sampling frame (Ramani & Kumar, 2008). Therefore an appropriate sampling strategy is adopted to obtain a representative, and statistically valid sample of the whole (Ramani & Kumar, 2008).

Sampling technique refers to the method used to obtain a sample from the population. Three main types of sampling technique include; random, systematic and stratified sampling. Random sampling is used when the population is homogeneous and is the least biased of all sampling techniques, there is no subjectivity - each member of the total population has an equal chance of being selected and the sample can be obtained using random numbers (Bryman & Bell, 2003). Systematic sampling method is used where samples are chosen in a systematic, or regular way and the population is homogeneous. The population is evenly or regularly distributed in a spatial context, for example every two metres along a transect line or they can be at equal or regular intervals in a temporal context, for example every half hour or at set times of the day or they can be regularly numbered, for example every 10th house or person (Bryman & Bell, 2003).

Stratified sampling method is used when the parent population or sampling frame is made up of sub-sets of known size. These sub-sets make up different proportions of the total, and therefore sampling should be stratified to ensure that results are proportional and representative of the whole (Mugenda & Mugenda, 2003). Since the population was not homogeneous the study adopted stratified sampling technique. Stratified random sampling is used where the population from which the sample is drawn is not homogeneous (Orodho, 2003). Stratification was used to divide the units of observation into different strata namely, the marketing, underwriting, finance and IT managers of the surveyed insurance companies so as to draw randomly a predetermined number of units. Stratification aims to reduce standard error by providing some control over variance (Mugenda & Mugenda, 2003).

3.6 Sampling Frame and Sample Size

3.6.1 Sampling Frame

According to Babbie (2009) a sampling frame can be defined as the list consisting of the units of the population. The sampling frame describes the list of all population units from which the sample is selected (Bryman & Bell, 2003). Basically, a sampling frame is a complete list of all the members of the population that we wish to study (Orodho, 2003). According to Kerlinger and Lee, (2000) it is the physical representation of the target population and comprises all the units that are potential members of the sample.

A study may have a differing unit of observation and units of analysis: for example, in community research, the research design may collect data at the individual level of observation but the level of analysis might be at the neighborhood level, drawing conclusions on neighborhood characteristics from data collected from individuals (Lwanga & Lemeshow (1991). Together, the unit of observation and the level of analysis define the population of a research enterprise (Blalock, 1972). In this case the unit of observation were the marketing, IT, finance and underwriting managers of

insurance companies in Kenya while unit of analysis was the insurance companies. The unit of analysis is the major entity that is being analyzed in a study. It is the 'what' or 'who' that is being studied. In social sciences research, typical units of analysis include individuals, groups, social organizations and social artifacts (Babbie, 2009). In this case the unit of analysis was the insurance companies in Kenya. According to the AKI report, (2013) there are 51 licensed insurance companies in Kenya underwriting insurance services.

3.6.2 Sample Size

A sample is a set of data collected or selected from a population by a defined procedure. The elements of a sample are known as sampling units or observations. Typically the population is very large, making census or a complete enumeration of all the values in the population either impractical or impossible. The sample usually represents a subset of manageable size. Samples are collected and statistics are calculated from the samples, so that one can make inferences or extrapolations from the sample to the population (Orodho, 2003). Sample size determination is the act of choosing the number of observations to include in a statistical sample (Orodho, 2003). The sample size is an important feature of any empirical study in which the goal is to make inferences about a population from a sample (Cooper & Schindler, 2003). In practice, the sample size used in a study is determined based on the expense of data collection, and the need to have sufficient statistical power (Cooper & Schindler, 2003).

According to Hosmer and Lemeshow (1989) sample size is established using the formula given here below:

$$n = \frac{N}{1 + N(e)^2}$$

Where n = sample size

N= sample population

e = precision.

According to Lind, Marchal and Wathen (2008), a precision of 10%, 30% or even 50% can be used depending on the size of the population. For small population like in this case, a precision of 10% is appropriate Lind, Marchal, and Wathen (2008).

To ensure that all the information needed for the study was obtained, all the insurance companies were surveyed and managers in these firms from whom information was sought were chosen using stratified random sampling as indicated in Table 3. 2.

Table 3.1: Sampling Frame

Category	Population	Precision	Sample size
Marketing managers	63	0.1	39
Underwriting managers	63	0.1	39
Finance managers	51	0.1	34
IT managers	51	0.1	34
Total	228		146

3.7 Data Collection Tool

Creswell (2003) defines data collection as a means by which information is obtained from the selected subjects of investigation. Data was collected using primary and secondary sources. Primary data was collected using a questionnaire administered to the managers of insurance companies selected through stratification. A total of 146 questionnaires were administered to the respondents and only 128 managers duly filled and submitted the completed questionnaires. This translates to a response rate of 87.67% which the researcher considered adequate for analysis. According to Cooper and Schindler (2003), a response rate of between 30% and 80% of the total sample size is sufficient for use in making generalizations about the entire population.

According to Blumberg, Cooper and Schindler (2011), a questionnaire is a powerful tool to collect primary data since it allows respondents to express their opinion freely. According to Mugenda and Mugenda (2003), questionnaire is important tool in collecting primary data since respondents give information freely without being coerced. Secondary data was obtained from annual reports of the insurance companies, AKI and IRA.

A semi-structured questionnaire was used to collect primary data. This was appropriate because it allowed the participants to provide feedback that was slightly more expansive than a simple close-ended question, but that was much easier to quantify than a completely open-ended response (Bryman & Bell, 2003). Questionnaires have advantages over some other types of surveys in that they are cheap, do not require as much effort from the questioner as verbal or telephone surveys, and often have standardized answers that make it simple to compile data (Gillham, 2008). The questionnaire contained both open-ended and close-ended questions. According to Blumberg, Cooper and Schindler (2011), a questionnaire is a powerful tool to collect primary data since it allows respondents to express their opinion freely.

On the other hand, data collection procedure is the means by which the required data or information is gathered during the research. The questionnaires were administered individually by the researcher to all respondents. Care and control was exercised to ensure that most of the questionnaires issued to the respondents are received. To achieve this, a register of questionnaires was maintained showing the ones which were issued and the ones received. The questionnaire was administered using a drop and pick later method to the sampled respondents.

Secondary data was obtained from various reports from the professional and regulatory bodies such as Association of Kenya Insurers and Insurance Regulatory Authority reports respectively.

3.8 Pilot Study

A pilot study, pilot project or pilot experiment is a small scale preliminary study conducted in order to evaluate feasibility, time, cost, adverse events, and effect size (statistical variability) in an attempt to predict an appropriate sample size and improve upon the study design prior to performance of a full-scale research project Martyn, (2010). A pilot study is a standard scientific tool for 'soft' research, allowing scientists to conduct a preliminary analysis before committing to a full-blown study or experiment Martyn (2010).

This study included a pilot test to pretest and validate the questionnaire. According to Mugenda and Mugenda (2003) pilot test is necessary for the validity of a study instrument. A pilot test was conducted using questionnaires administered to selected managers. A total of 23 managers drawn from marketing, IT, finance and underwriting departments (10% of 228) were selected using simple stratified random sampling. According to Mugenda and Mugenda (2003), 10% of the population is sufficient for the pilot study.

The pilot study was undertaken to pretest data collection instrument for validity and reliability (Foddy, 1994). According to (Orodho, 2003) a pilot study is necessary for testing the reliability of data collection instruments. (Cooper & Schindler, 2001) explains reliability of research as determining whether the research truly measures that which it was intended to measure or how truthful the research results are. Pilot study is thus conducted to detect weakness in design and instrumentation and to provide accurate data for selection of a sample (Young, 2009).

3.8.1 Validity

According to Blumberg, Cooper and Schindler (2011), validity is the degree to which a test measures what it is intended to measure. Mugenda and Mugenda (2003) define validity as the accuracy and meaningfulness of inferences, which are based on the research results. There are three types of validity, these are Content-related, Criterion-related and Construct validity. The validity of the questionnaire was determined using construct validity method. Construct validity is the degree to which a test measures an intended hypothetical construct (Mugenda, 2003). Using a panel of experts familiar with the construct, the experts can examine the questionnaire and decide what that specific question is intended to measure (Kothari, 2005).

The study used experts in the field of insurance and issued them with the questionnaires. The experts were required to assess if the questionnaires helps in establishing the role of innovation strategy on insurance penetration in Kenya. The coefficient of data gathered from the pilot study was computed with assistance of Statistical package of social Sciences (SPSS). A coefficient of ≥ 0.6 portrayed that the data collection instruments was valid (Klein & Ford, 2003). The recommendations from the insurance experts from the pilot study respondents were used to improve on data collection instruments. Data validity played an important role towards generalization of the gathered data to reflect the true characteristics of the study problem.

To enhance validity of the instrument, a pre-testing (pilot study) was conducted on 23 respondents who were 10% of the respondents. According to Mugenda and Mugenda (2003) 10% of the population is sufficient for a pilot study. The reasons behind pre-testing was to assess the clarity of the instrument items so that those items found to be inadequate in measuring the variables were either discarded or modified to improve the quality of the research instrument thus increasing its validity. During the pre-testing study after each respondent completed filling the questionnaire, each question item was discussed with him/her to determine: suitability, clarity and relevance for the purpose of the study. The pilot data was not included in the actual study.

3.8.2 Reliability

Reliability of a measuring instrument is the degree of consistency with which it measures whatever it is meant for (Fink, 2003). Mugenda and Mugenda (2003) define reliability as a measure of the degree to which a research instrument yields consistent results or data after repeated trial. There are three best known ways to obtain a reliability coefficient. They are: the test-retest, equivalent-forms and internal consistency methods. The researcher adopted an internal consistency method.

However reliability in the research can be influenced by random error. Random error is the deviation from a true measure due to factors that have not been effectively addressed by the researcher. As random error increases, reliability decreases. These errors might arise from inaccurate coding, ambiguous instructions to the subjects, interview fatigue and interview bias. The aforementioned pilot sample was used to assess reliability of questionnaire using cronbach's alpha. Reliability of a research instrument was assessed using cronbach's alpha.

Cronbach's alpha is a coefficient of internal consistency. Suppose that we assume a sum of K components (K -items or test lets) $X=Y_1+Y_2+\dots+Y_k$. Cronbach's α

$$\alpha = \frac{K}{K-1} \left(1 - \frac{\sum_{i=1}^K \sigma_{Y_i}^2}{\sigma_X^2} \right)$$

where σ_X^2 the variance of the observed total test scores, and $\sigma_{Y_i}^2$ the variance of component i for the current sample of persons.

If the items are scored 0 and 1, a shortcut formula is

$$\alpha = \frac{K}{K-1} \left(1 - \frac{\sum_{i=1}^K P_i Q_i}{\sigma_X^2} \right)$$

Where P_i is the proportion scoring 1 on item i , and $Q_i = 1 - P_i$. This is the same as KR-20.

Alternatively, Cronbach's α can be defined as

$$\alpha = \frac{K\bar{c}}{(\bar{v} + (K-1)\bar{c})}$$

Where K is as above, \bar{v} the average variance of each component (item), and \bar{c} the average of all covariance's between the components across the current sample of persons (that is, without including the variances of each component). However, greater number of items in the test can artificially inflate the value of alpha and a sample with a narrow range can deflate it, so this rule of thumb should be used with caution.

Table 3. 2: Cronbach's alpha

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent (High-Stakes testing)
$0.7 \leq \alpha < 0.9$	Good (Low-Stakes testing)
$0.6 \leq \alpha < 0.7$	Acceptable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

If the α value is ≥ 0.60 , it can be concluded that the instrument is reliable (Cronbach, 1951).

3.9 Data Analysis and Presentation

Completed questionnaires were edited for completeness and consistency. The process of data analysis involved several stages namely; data coding, data cleaning and analysis. Responses in the questionnaires were tabulated, coded and processed by use of Statistical Package for Social Science (SPSS). The responses from the open-ended questions were listed to obtain proportions appropriately; the response was then reported by descriptive narrative. Descriptive statistics such as mean and standard deviation were used to quantify the data. Tables, pie-charts, and graphs were used to present responses and facilitate comparison. Content analysis is defined by Creswell (2003) as a technique for making inferences by systematically and objectively identifying specific characteristic of messages and using the same approach to relate trends. According to Mugenda and Mugenda (2003) the main purpose of content analysis is to study the existing information in order to determine factors that explained a specific phenomenon. According to Kothari (2004), content analysis uses a set of categorization for making valid and replicable inferences from data to their context. Content analysis was used to compare findings by other scholars to draw conclusions and recommendations.

Regression models (linear and multiple) were used to show relationship between independent and dependent variables. The regression equations used were:

A) Linear $Y = \beta_0 + \beta_1 X_1 + e$, $Y = \beta_0 + \beta_2 X_2 + e$, $Y = \beta_0 + \beta_3 X_3 + e$ and $Y = \beta_0 + \beta_4 X_4 + e$,

B) Multiple $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$

Where Y is the dependent variable (Insurance penetration), β_0 is the regression coefficient, β_1 , β_2 , β_3 , & β_4 are the slopes of the regression equation, X_1 is product innovation strategy, X_2 is market innovation strategy, X_3 is technological innovation strategy and X_4 is scenario plan strategy while e is an error term.

Descriptive statistics such as mean and standard deviation were used to quantify the data. Tables, pie-charts, and graphs were used to present the data.

3.10 Hypothesis Testing

Hypothesis is a statement made about the value of a population parameter. The population is so large that it may not be possible to study all the items or persons in the population (Mason, Lind & Marchal, 1999). Hypothesis testing is procedure based on sample evidence and probability theory used to determine whether the hypothesis is a reasonable statement and should not be rejected or is unreasonable and should be rejected (Gonick & Smith, 1993).

According to Mason and Lind (1996), there are five steps in hypothesis testing which include stating null (H_0) and alternative hypothesis (H_1), selecting the level of significance or risk, the test statistics, decision rule and making a decision. According to Mason, Lind and Marchal, (1999), 0.05 level of significance is used for consumer research project, 0.01 for quality assurance and 0.10 for political polling. In this case therefore, 0.05 significance level was used since we are establishing why consumption of insurance is low.

For a large population that is more than 30, z-test is carried out (Lind, Marchal, & Wathen, 2008). In this case therefore, a z-test was adopted.

H₀: Innovation strategy has no role in insurance penetration in Kenya

H₀: $\mu=0$

H₁: Innovation strategy has role in insurance penetration in Kenya

H₁: $\mu\neq 0$

Level of significance is 0.05 ($p<0.05$) and the test statistic will be z-test where

$$Z = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$$

Decision rule: Accept Null hypothesis if $-1.96 \geq z \leq 1.96$

H₁₀: Product innovation strategy has no role on insurance penetration in Kenya.

H₁₀: $\mu=0$

H₁₁: Product innovation strategy has a role on insurance penetration in Kenya.

H₁₁: $\mu\neq 0$

Level of significance is 0.05 and the test statistic was z-test where

$$Z = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$$

Decision rule: Accept Null hypothesis if $-1.96 \geq z \leq 1.96$

H2₀: Market innovation strategy has no role in insurance penetration in Kenya.

H2₀: $\mu=0$

H2₁: Market innovation strategy has a role in insurance penetration in Kenya.

H2₁: $\mu\neq 0$

Level of significance is 0.05 and the test statistic was z-test where

$$Z = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$$

Decision rule: Accept Null hypothesis if $-1.96 \geq z \leq 1.96$

H3₀: Technological innovation strategy has no role in insurance penetration in Kenya.

H3₀: $\mu=0$

H3₁: Technological innovation strategy has a role on insurance penetration in Kenya.

H3₁: $\mu\neq 0$

Level of significance is 0.05 and the test statistic was z-test where

$$Z = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$$

Decision rule: Accept Null hypothesis if $-1.96 \geq z \leq 1.96$

H₄₀: Process innovation strategy has no role on insurance penetration in Kenya

H₄₀: $\mu=0$

H₄₁: Process innovation strategy has a role on insurance penetration in Kenya

H₄₁: $\mu\neq 0$

Level of significance is 0.05 and the test statistic was z-test where

$$Z = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$$

Decision rule: Accept Null hypothesis if $-1.96 \geq z \leq 1.96$

3.11 Diagnosis Tests

The researcher conducted various diagnostic tests to ensure that the assumptions of CLRM were not violated and appropriate model chosen for analysis in the event that CLRM assumption were not compromised. Estimating the probit models when the CLRM assumptions are violated would result in inefficient, inconsistent parameters estimates. This section presents the various diagnostic tests conducted: coefficient of correlation test, normality test, heteroscedasticity test, , multicollinearity test and autocorrelation test.

3.11.1 Coefficient of Correlation

Coefficient of correlation measures the strength of relationship between two set of variables Pearson and Robinson (2007). Pearson coefficient of correlation r was used to test the relationship between independent variables namely product innovation strategy, market innovation strategy, technological innovation strategy and process innovation strategy with the dependent variable (insurance penetration). The correlation coefficient

assumes a value between -1 and +1 inclusive. A correlation coefficient of -1 or +1 indicates a perfect correlation while a coefficient of zero indicates no relationship Pearson and Robinson (2007).

3.11.2 Normality Test

The normality test was conducted using the Jarque-Bera (JB) and normality graph. The results indicate that the residuals were normally distributed. To further establish whether the residuals were normally distributed the study adopted the Jarque-Bera test which is a more conclusive test than the graphical inspection approach of testing for normality. (Gujarati, 2003; Razali & Wah, 2011).

3.11.3 Test for Heteroscedasticity

The study further conducted heteroscedasticity test to test the assumption that the residuals have a constant variance (they should be homoscedastic). The Modified Wald test was used to test for heteroskedasticity where the null hypothesis of the test is that error terms have a constant variance (i.e. should be Homoscedastic). If the p-value \leq 0.05 then it may be concluded that the observations have constant variance or do not have the problem of heteroscedasticity (Gujarati, 2003; Razali & Wah, 2011).

3.11.4 Multicollinearity

To test for multicollinearity the study used VIF. This study adopted the rule of thumb for VIF value of 10 as the threshold. The VIF values of greater than 10 indicated presence of multicollinearity (Field, 2009).

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the analysis of findings and the discussion of the study as set out in the research methodology. This chapter begins by analysing and presenting the response rate and illustrating the designation of the respondents. The main findings are presented in relation to the overall objective of this study which was to establish the role of innovation strategy on insurance penetration in Kenya. Discussions are based on the study objectives which were: 1.To establish the influence of product innovation strategy on insurance penetration in Kenya; 2.To establish the role of market innovation strategy on insurance penetration in Kenya; 3.To determine the role of technological innovation strategy on insurance penetration in Kenya and 4.To evaluate the influence of process innovation strategy on insurance penetration in Kenya.

4.2 Response Rate

An analysis of the study's response rate was carried out showing the actual number of participants who took part in the study. The sample size for this study was 146 managers working in the insurance industry including; Marketing managers, Underwriting managers, Finance managers, and IT managers. 146 questionnaires were dispatched to the companies but only 128 managers duly filled and submitted the completed questionnaires. This translates to a response rate of 87.67% which the researcher considered adequate for analysis. According to Cooper and Schindler (2003), a response rate of between 30% and 80% of the total sample size is sufficient for use in making generalizations about the entire population.

4.3 Findings of the Pilot Study

A pilot test was carried out to establish the reliability and validity of the data collection tools. The pilot test aims at establishing construct validity and reliability of the data collection instruments (Mugenda & Mugenda, 2003). A total of 23 respondents took part in the pilot study. According to Cooper and Schindler (2003), the pilot group can range from 10 to 100 subjects depending on the method to be tested but it does not need to be statistically selected. This was in line with descriptive research design methodology employed in this research project.

4.3.1 Reliability Test

In this study to ensure the reliability of the instrument Cronbach's Alpha was used. Cronbach Alpha value is widely used to verify the reliability of the construct. Therefore, Cronbach Alpha was used to test the reliability of the proposed constructs. The findings indicated that All constructs depicted that the value of Cronbach's Alpha are above the suggested value of 0.6 thus the data collecting tool was reliable (Nunnally & Bernstein, 1994; Nunnally, 1974). On the basis of reliability test it was supposed that the scales used in this study is reliable to capture the constructs. Findings of the reliability test are shown in Table 4.1.

Table 4.1: Reliability Test

	Cronbach's Alpha
Product Innovation Strategy	0.697
Market Innovation Strategy	0.814
Technological Innovation Strategy	0.751
Process innovation	0.644

4.3.2 Construct Validity

Construct validity is established by relating measuring instruments to a general theoretical framework in order to determine whether the instrument is tied to the concepts and theoretical assumptions they are employing (Nachmias & Nachmias, 2008). SPSS version 20 programme was used as the tool of analysis to test the relationship between the dependent variable and the four independent variables. As most item total correlations were reasonably high, the construct validity of the instruments was considered reasonable (Brown, 2000).

4.4 Demographic Information

4.4.1 Gender of the Respondent

The study sought to find out the gender of the respondents. From the findings as shown in Figure 4.1, 60% of the respondents were male while only 40% of the respondents were female. This response indicates that there is a slightly equal distribution of gender. In addition it shows that both genders were well involved in this study and thus the finding of the study did not suffer from gender bias.

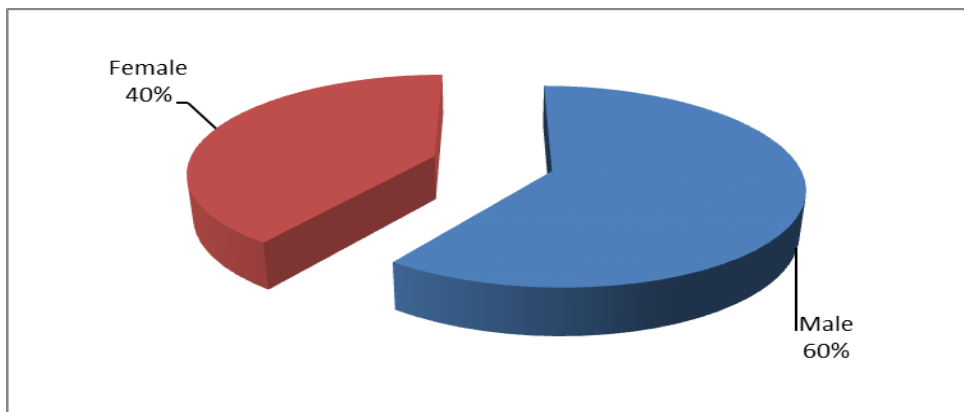


Figure 4.1: Gender of respondents

4.4.2 Respondents' Designation

Respondents in the study were drawn from several departments. Figure 4.2. indicates that 32% of the respondents were drawn from the marketing department, 31% from Underwriting, 20% from ICT and 17% of the respondents from the finance departments. This implies that relevant information sought by the study was obtained from the targeted departments.

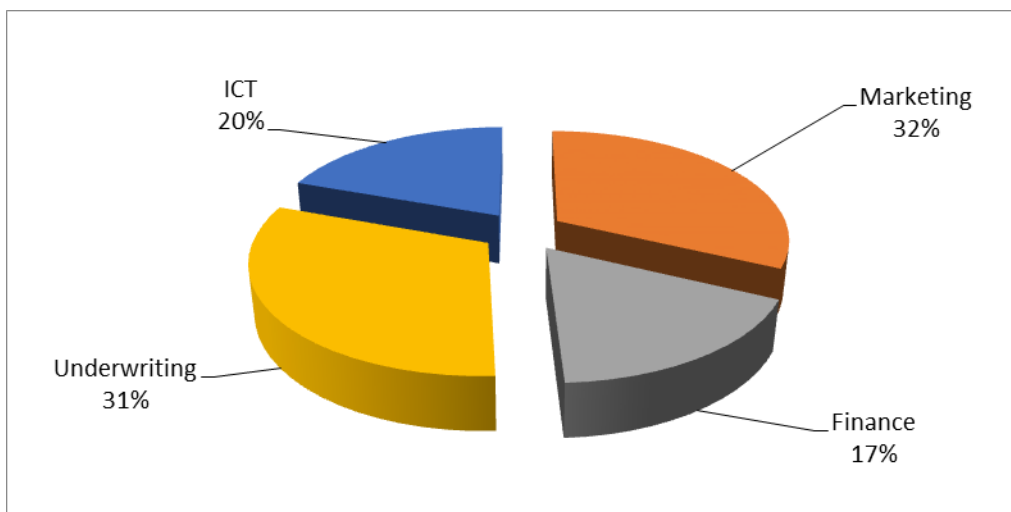


Figure 4.2: Respondents' Designation

4.4.3 Years of experience in insurance companies in Kenya

The research was also interested in the years of experience of the respondents in insurance companies in Kenya and was analyzed as shown in the Figure 4.3. Most (46.7%) of the respondent had worked in the organization for a period of 1-5years, 33.3% had worked for 6-10 years, 13.3% for a period of 10 and above years while 6.7% had worked for less than 1 year. According to Holman (2008) working duration is associated with greater output, in a given industry. It can be inferred that the level of experience in working in the Insurance industry is a factor that influence insurance penetration.

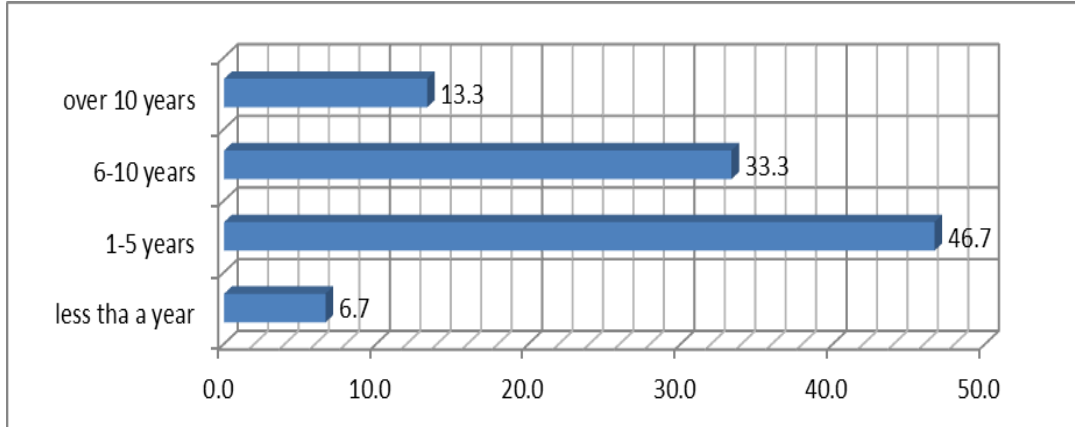


Figure 4.3: Years of experience in insurance companies in Kenya

4.4.4 Level of education

Education is paramount in enabling the respondents to conceptualize issues related to growth of corporate governance. It was established from the study that 40.9% of the respondents had bachelors, 31.8 % had certificate/diplomas, 18.2% had post graduate, 4.5% of the respondents had O/A level while 4.5% had other specifications in the level of education. This is shown in Figure 4.4.

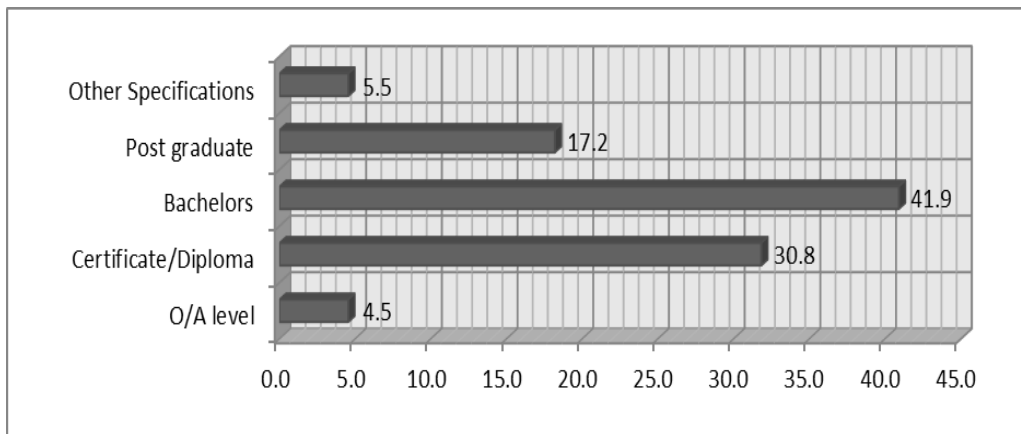


Figure 4.4: Level of education

Apparently from the Figure 4.4 findings it shows that majority of respondents working in insurance companies in Kenya have bachelor degree qualifications. This implies that they are capable to conceptualize and respond authoritatively to issues and influence of product innovation strategy on insurance penetration in Kenya. These findings agree with Katz (1992) findings that those with higher education are more successful as they have more knowledge and have modern managerial skills making them more conscious of the reality of the business work. Therefore it can be inferred that level of education is a critical driver in realization of insurance penetration in Kenya.

4.5 Descriptive Findings from Study Variables

4.5.1 Product Innovation Strategy

H₁₀: Product innovation strategy has no role on insurance penetration in Kenya.

H₁₁: Product innovation strategy has a role on insurance penetration in Kenya.

i) Does your Company have policies for new insurance products?

The study sought to find out whether companies surveyed had policies for new insurance products. From the findings the study revealed that majority (72%) of the respondents indicated that their companies had policies for new insurance products while the remaining 28% indicated that their companies lacked policies for new insurance products. According to Drejer (2002) in their study on situations for innovation management: towards a contingency model found that companies' policy for new products is a key factor that influences penetration of the product in the market. Further, Hultink and Robben (2005) in their study on the influence of compulsory insurance products drive on the growth of non-life insurance in Turkey they found that companies with policies for new products reported higher penetration of the product in the market. Therefore it can be inferred that policies for new products is an important factor that influences insurance penetration.

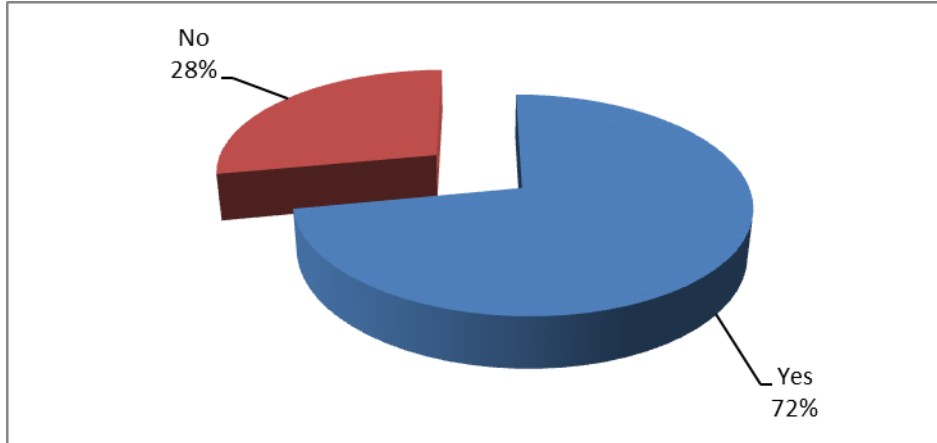


Figure 4.5: Whether companies had policies for new insurance products

ii) What is the level of new insurance products in the last five years?

From Figure 4.6, majority (61%) of the respondents indicated that their insurance companies had developed between 3 and 5 insurance products in the last five years, 26% had developed between 1 and 2 insurance products, 5% had developed over 5 insurance products while 8% had not developed any product in the past 5 years. According to Freel and Robson (2009) in their study on small firm innovation, growth and performance found that companies that regularly developed new products reported high rates of product penetration. Further, Banne and Bhola (2014) in their work on awareness of life insurance among sample customers, they also found out that companies that regularly developed new products reported higher product penetration. It can therefore be inferred that development of new products is a key factor contributing to insurance penetration.

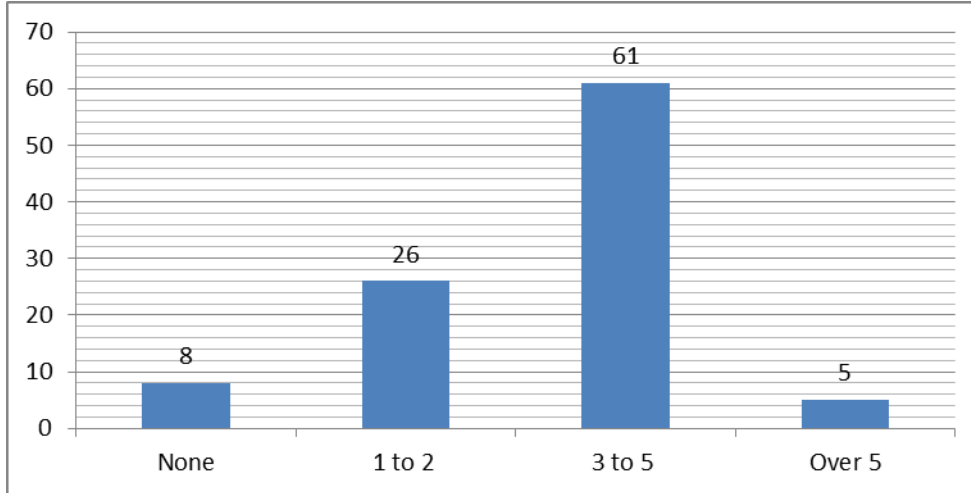


Figure 4.6: Frequency of new insurance products in the last five years

iii) Has your organization patented your insurance products?

Findings revealed that none of all the companies surveyed had patented their insurance products. This implies that all the firms are missing out on profitability from intellectual property rights (IPRs) arising from registered patents. This contrasts with findings by Teece (2005) in their critique on technological innovation typology and innovativeness terminology where they found that intellectual property rights (IPRs) from patents greatly influenced product penetration. This implies that Kenyan firms should ensure they register their patents to gain on profitability from intellectual property rights hence increasing insurance penetration.

iv) Does your firm have any budget for research and development?

From Figure 4.7, 86% of respondents indicated that their companies had operational budgets for research and development. Fourteen percent (14%) indicated that their companies did not have operational budgets for research and development. According to Hitt, Hoskisson and Kim (2007) in their study on the effects on innovation and firm performance in product-diversified firms, they found that product research and

development was positively correlated to insurance penetration with a correlation rate of 0.069. This implies that product research and development is a vital ingredient enhancing better insurance penetration.

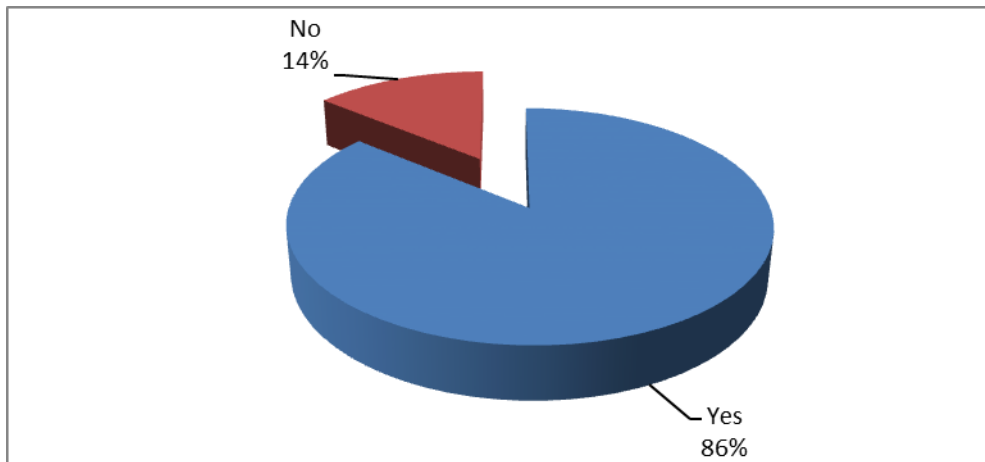


Figure 4.7: Whether firms had a budget for research and development

v) Research and Development Budgetary Estimates

From Figure 4.8, 64% of the companies had a budget estimate of between 10 to 30 million Kenya Shillings, 23% had a budget estimate of between 3 and 10 million Kenya Shillings, while 9% had a budget estimate of between 500,000 and 3 million Kenya Shillings. Only 4% of the companies had a budget estimate of over 30 million Kenya Shillings. According to Johnne and Davies (2000) in their study on innovation in medium-sized insurance companies research and development efforts, e.g. expenditures on research and development found that research and development is vital in ensuring firms have differentiated product and service innovation leading to insurance penetration.

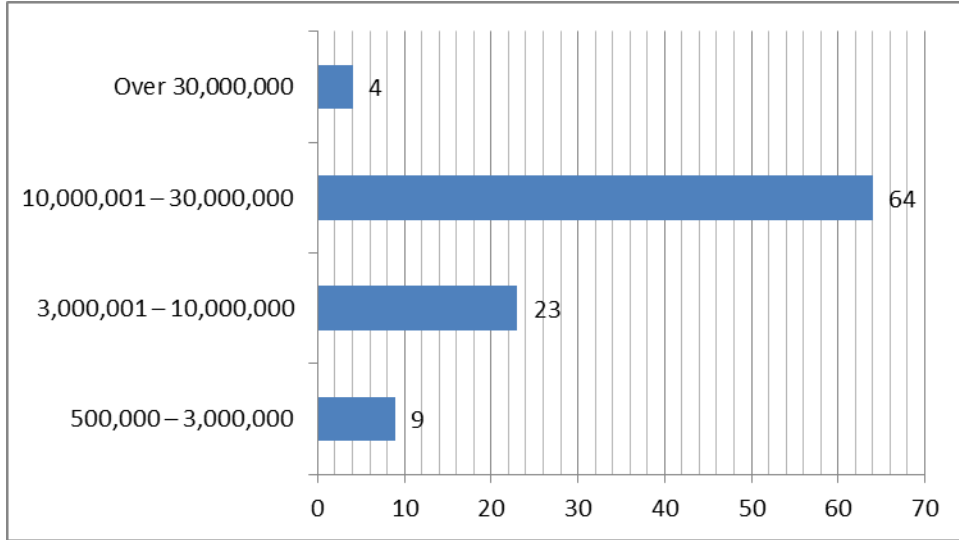


Figure 4.8: Research and Development Budgetary Estimates

vi) Do management have meetings to discuss product innovation strategies?

Figure 4.9 shows that 86% of the respondents indicated that their companies had meetings to discuss product innovation strategies, while the other 14% indicated that their companies did not hold meetings to discuss product innovation strategies. According to Hitt, Hoskisson and Kim (2007) in their study on the effects on innovation and firm performance in product-diversified firms, management meetings on product innovation strategies was positively correlated to product penetration. This is also in agreement with a study by Hultink and Robben (2005) on the influence of compulsory insurance products drive on the growth of non-life insurance in Turkey where they found that management meetings on product innovation strategies led to successful product penetration. It can therefore be inferred that management meetings on product innovation strategies was positively correlated to insurance penetration.

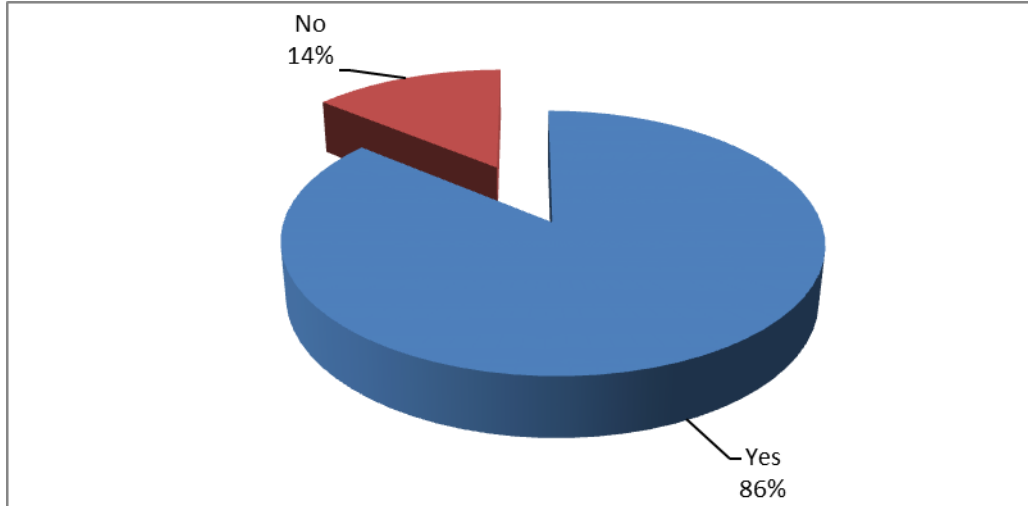


Figure 4.9: Whether management had meetings to discuss product innovation strategies

vii) Frequency of meetings to discuss product innovation strategies

According to Figure 4.10, majority (64%) of the respondents indicated that meetings to discuss product innovation strategies were held in their companies on a monthly basis, 32% on a quarterly basis, 2% on a weekly basis while the other 2% indicated that meetings to discuss product innovation strategies were held in their companies annually. According to Pishgar, Dezhkam, Ghanbarpoor, Shabani and Ashoori (2013), in their research on the impact of product innovation on customer satisfaction and customer loyalty, increased frequency of management meetings on product innovation strategies led to increased product penetration. Drejer (2002) in their study on situations for innovation management: towards a contingency model also found that meetings to discuss product innovation strategies is a key factor that influences penetration of the product in the market. Therefore, it can be inferred that meetings on product innovation strategies is an important factor contributing to insurance penetration.

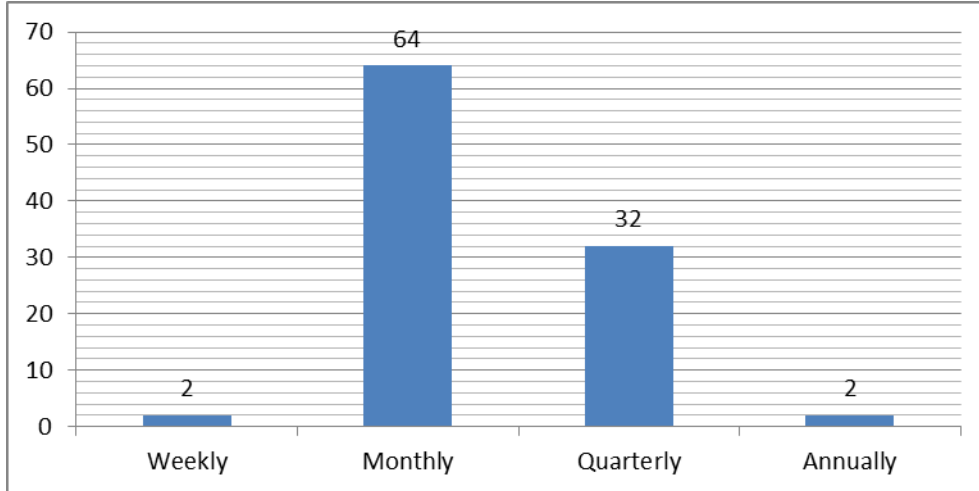


Figure 4.10: Frequency of meetings to discuss product innovation strategies

viii) Influence of product innovation strategies on Insurance penetration

The findings in Table 4.2 revealed that respondents agreed that regular management meetings allows managers to strategize on new product innovations as shown by a mean of 4.33 and a standard deviation of 1.66; that new product innovation policies contribute to improved insurance penetrations as shown by a mean of 4.23 and a standard deviation of 1.31; that sustained research and development helps in development of new insurance products thus accelerating penetration as shown by a mean of 4.14 and a standard deviation of 1.36 and that new insurance products are important for insurance penetration as shown by a mean of 3.97 and a standard deviation of 1.11. This in agreement with a study conducted by Edgett (2006) on new product development process for commercial financial services where they found that new product innovation policies contributed to improved insurance penetrations. Therefore new product innovation policies are important for greater insurance penetration.

Table 4.2: Extent to which respondents agreed with various statements on the influence of product innovation strategies on Insurance penetration

Statements	Mean	Std deviation
New product innovation policies contribute to improved insurance penetrations	4.23	1.31
New insurance products are important for insurance penetration	3.97	1.11
Sustained research and development helps in development of new insurance products thus accelerating penetration	4.14	1.36
Regular management meetings allow managers to strategize on new product innovations thus enhancing insurance penetration	4.33	1.66

Regression Co-efficient of Product innovation and insurance penetration

The study sought to determine the amount of variation in insurance penetration explained by product innovations. Regression analysis was conducted. The results are shown in Table 4.3. The calculated R value was 0.507. R^2 Value was 0.257 which means that 26% of the corresponding variation in insurance penetration can be explained by change in Product innovation. The findings imply that 74% of variation in insurance penetration can be explained by other factors other than Product innovation.

Table 4.3: Linear Estimation of Product innovation

R	R Square	Adjusted R square	Std. Error of the Estimate
.860	.739	.740	628.49040

ANOVA for Product innovation and Insurance Penetration

The study sought to establish the level of significance within the regression model. A one way analysis of variance (ANOVA) was used as a basis for tests of significance. ANOVA provided information about levels of variability within the regression model. The findings shown in Table 4.4 show that the ANOVA for the linear model of Product innovation and insurance penetration has an F-value of 5.198 which is significant with p-value $0.038 < 0.05$ meaning that the model is significant in the prediction of insurance penetration. The study therefore rejects the null hypothesis that there is no significant relationship between Product innovation strategy and insurance penetration and confirms that there is a positive and significant relationship between Product innovation strategy and insurance penetration.

Table 4.4: ANOVA for Product innovation strategy and insurance penetration

	Sum of squares	Df	Mean Square	F	Sig.
Regression	2053209.144	1	2053209.144	5.198	.038
Residual	5925002.765	15	395000.184		
Total	7978211.909	145			

Regression Co-efficient of Product innovation strategy and insurance penetration

The study sought to establish the level Product innovation strategy can predict insurance penetration. The findings are shown in Table 4.5. Analysis of the regression model coefficients established a positive beta co-efficient of 0.290 with a p-value $=0.002 <$

0.05 and a constant of 2.156 with a p-value = 0.0001 < 0.05 indicating that Product innovation strategy contributes significantly to the model. The regression equation is presented as: $Y = 2.156 + 0.29X_1$;

Where

Y = Insurance penetration

X₁ = Product innovation strategy

The regression equation implies that insurance penetration increase by 69% with an increase of a unit of Product innovation strategy.

Table 4.5: Regression Coefficients of Product innovation strategy and insurance penetration

	Coefficients				
	B	Std. Error	Beta	T	Sig.
(Constant)	2.156	.130		16.585	.000
Product innovation strategy	.290	.031	.707	9.35	.002

4.5.2 Market Innovation Strategy

H₂₀: Market innovation strategy has no role in insurance penetration in Kenya.

H₂₁: Market innovation strategy plays a role in insurance penetration in Kenya.

i) Does market innovation contribute to insurance penetration?

From Figure 4.11, 89% of the respondents indicated that market innovation contributed to insurance penetration while 11% indicated that market innovation did not contribute to insurance penetration. According to John and Davies (2004), in their paper on Mobile insurance as a source of innovation found that incremental market innovation enabled firms to provide appropriate offers and yield greater revenues enhancing greater product penetration. In addition, Hollanders and Evangelista (2012) in their study on organisational and marketing innovation also found that market innovation contributed to product penetration. It can therefore be inferred that market innovation is a key driver for insurance penetration

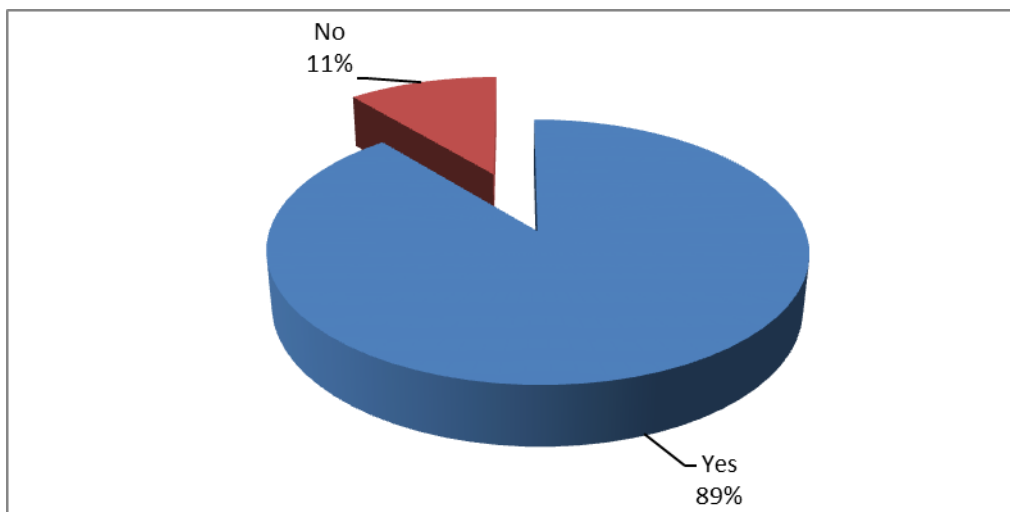


Figure 4.11: Whether market innovation contributes to insurance penetration

ii) If the answer s to question i) above is yes, to what extent does market innovation contribute to insurance penetration?

According to Figure 4.12, 39% of the respondents indicated that market innovation contributed to insurance penetration to a great extent, 24% to a very great extent, 24% to a moderate extent, 10% to a little extent while 3% felt that innovation did not contribute

to insurance penetration. This agrees with findings by Beard and Easingwood (2003) in their paper on marketing action and launch tactics for high–technology products where they found that market innovation contributed to product penetration. This implies that market innovation strategy is very important in as far as insurance penetration is concerned, thus the need to be involved during the requirement and specification development stage.

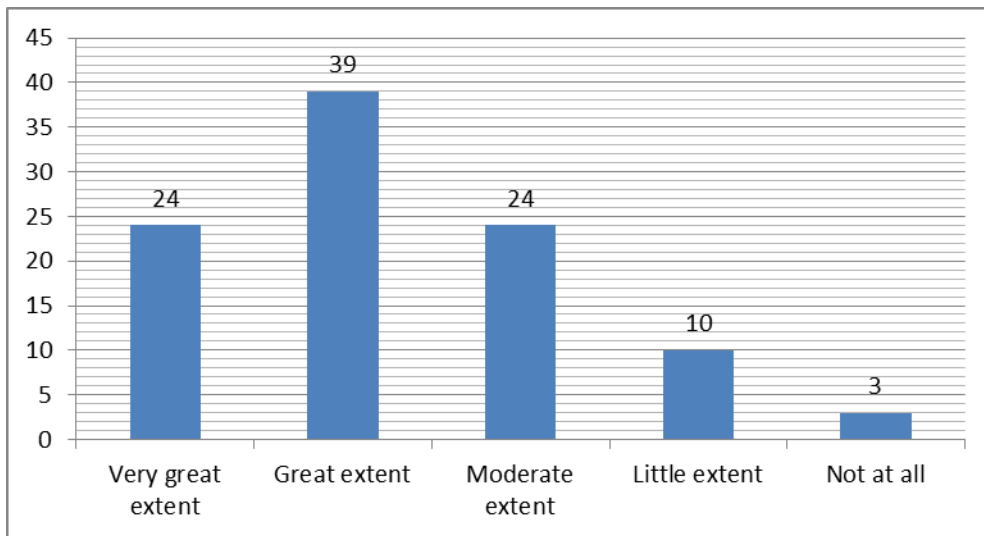


Figure 4.12: Extent to which market innovation contributes to insurance penetration

iii) What is the level of new market segments for insurance products in the last five years?

From Figure 4.13, 39% of the respondents indicated that their companies had ventured into between 4 to 6 new market segments for insurance products in the last five years, 37% had ventured into between 1 and 3 new market segments for insurance products in the last five years, 14% had ventured into over 6 new market segments for insurance products in the last five years, while 10% had not ventured into any new market segments for insurance products in the last five years. This is in agreement with a study

by Chandler and Hanks (2004) on market attractiveness, resource-based capabilities, venture strategies, and venture performance where they found that a firm's ability to exploit new market segments led to greater product penetration. Further, in a study by Prahalad and Ramaswamy (2004) on co-creating unique value with customers it was found out that companies that had ventured new market segments reported higher rates of product penetration. This therefore implies that venturing new market segments is a key driver for insurance penetration.

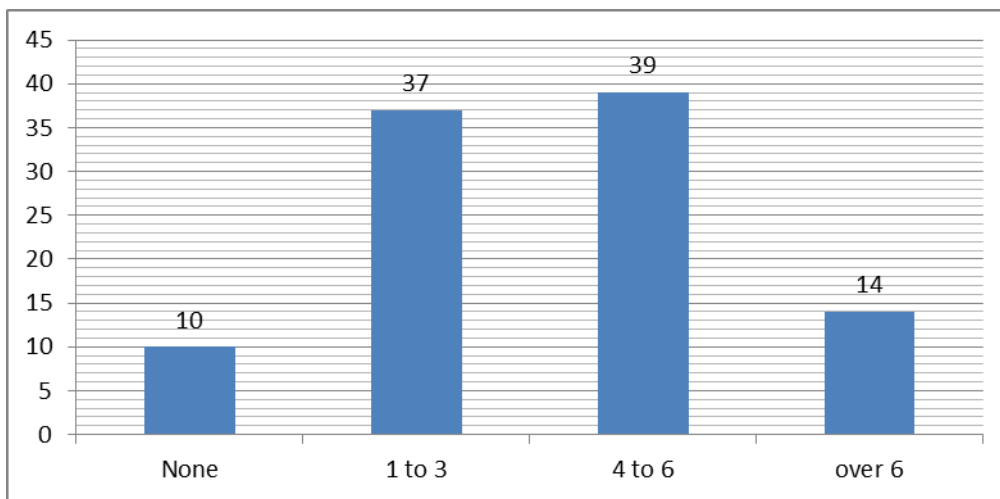


Figure 4.13: Level of new market segments for insurance products in the last five years

iv) Does your organization have new marketing channels in the last five years?

According to Figure 4.14, 83% of respondents indicated that their companies had developed new marketing channels in the last five years while 17% had not. According to Quadros, Furtado, Roberto and Franco (2010), in their study on technological innovation in Brazilian industry found that firms that had developed new marketing channels reported increased product penetration. Further Mbogo (2010) in his study on how insurance companies sought strategies to attract customers, he found that firms that had developed new marketing channels in the last five years retained customers leading

to more product penetration. It can therefore be inferred that development of new marketing channels is a vital ingredient leading to increased insurance penetration.

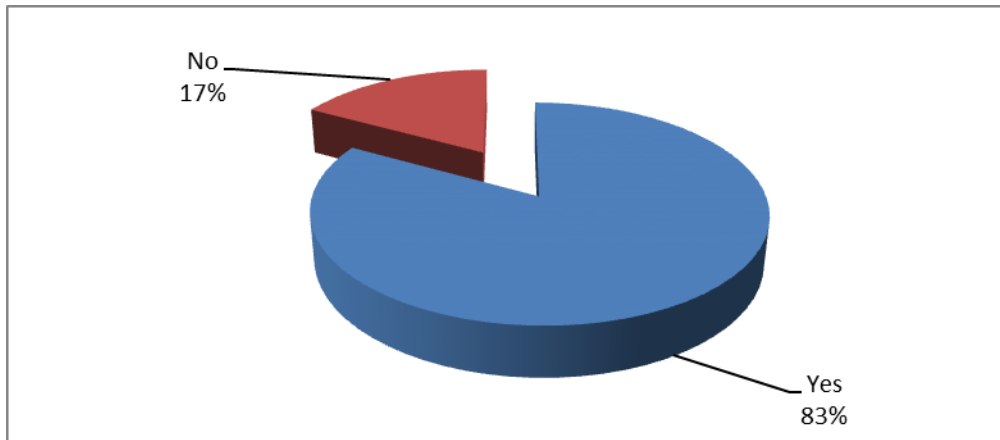


Figure 4.14: Whether the organizations had new marketing channels in the last five years

v) Does your firm have any marketing budget?

From Figure 4.15, 87% of the respondents indicated that their companies had marketing budgets while 13% did not have. This is in agreement with a study by Ramani and Kumar (2008) on interaction orientation and firm performance where they found that firms that allocated resources for marketing in their budgets reported greater product penetration compared to those that lacked a marketing budget. It can therefore be inferred that marketing is a critical contributor to insurance penetration.

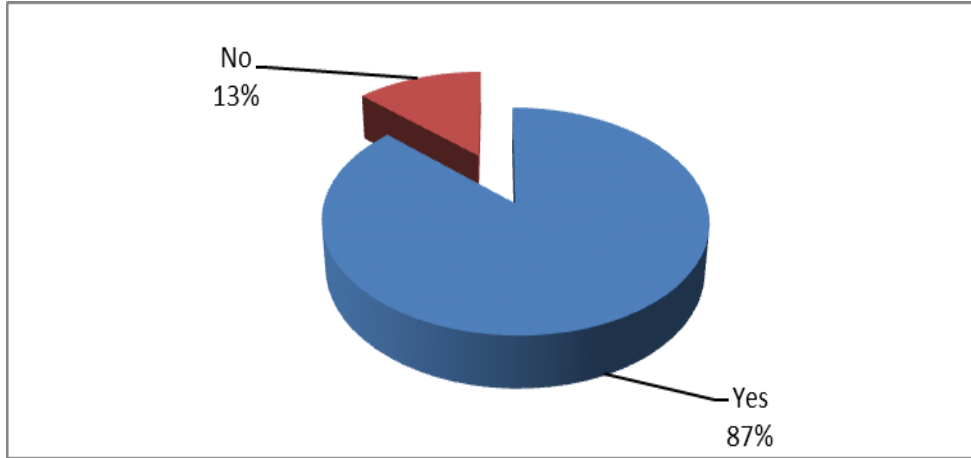


Figure 4.15: Whether the firm had a marketing budget

vi) Marketing Budgetary Estimates for Companies Surveyed

Figure 4.16 reveals that 33% of the respondents indicated that the marketing budgetary estimates for their companies was between 10 and 20 million Kenya Shillings, 29% between 20 and 30 million Kenya Shillings, 19% between 5 and 10 million shillings, while 19% had marketing budgetary estimates of over 30 million Kenya Shillings. According to Hollanders, and Evangelista (2012) in their study on organisational and marketing innovation, they found that companies that had allocated marketing resources in their budgets reported greater product penetration. Therefore, allocating marketing resources in budgetary estimates is a very important factor contributing to insurance penetration.

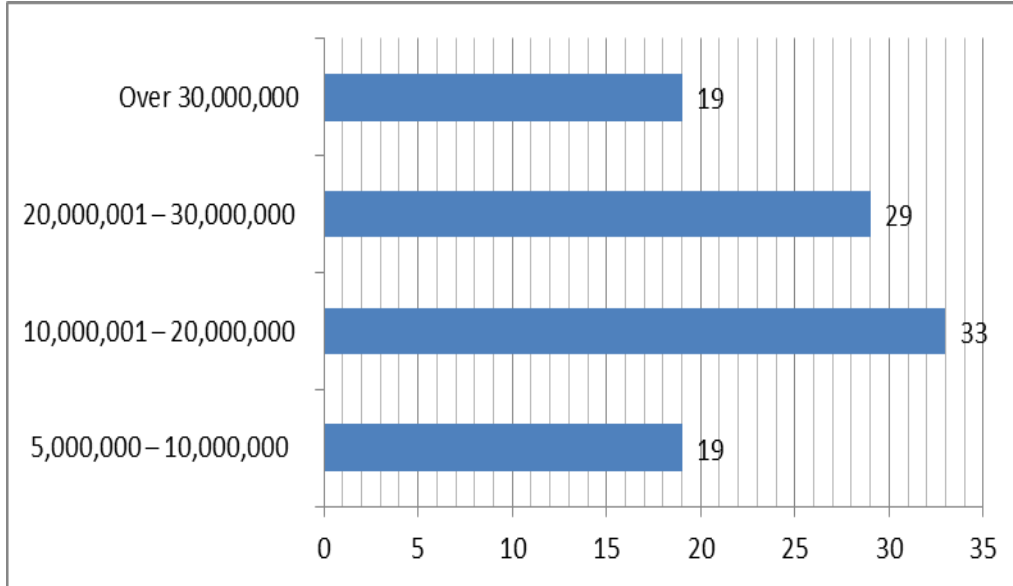


Figure 4.16: Marketing Budgetary Estimates for Companies Surveyed

vii) Does your firm carry out customer satisfaction survey?

According to Figure 4.17, 87% of the respondents indicated that their firms carried out customer satisfaction surveys while 12% did not. This agrees with Mbogo (2010) in his study on how insurance companies sought strategies to attract customers where he found that firms that conducted customer satisfaction surveys retained customers leading to more product penetration. This also agrees with Johne and Davies (2004) in their paper on mobile insurance as a source of innovation where they found that conducting customer satisfaction surveys enabled firms to satisfy their customers thus yielding greater revenues which enhanced greater product penetration.

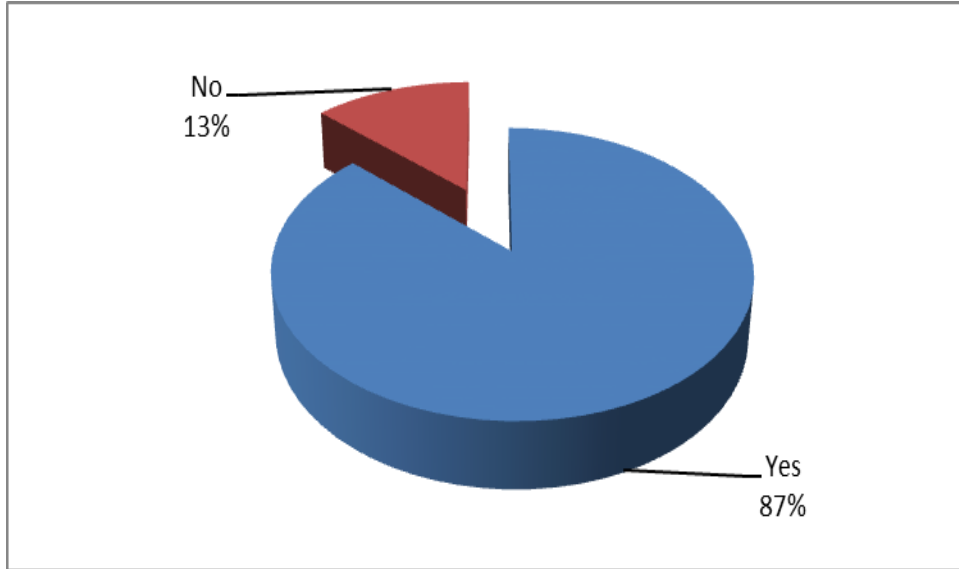


Figure 4.17: Whether the firm carries out customer satisfaction survey

viii) Frequency of Customer Satisfaction Surveys

The findings in Figure 4.18 revealed that majority (43%) of the customer satisfaction surveys were conducted monthly, 41% of the firms conducted them on a quarterly basis, 14% on an annual basis while 2% conducted the customer satisfaction surveys in periods greater than annually. The findings collate with Banne and Bhola (2014) in their work on awareness of life insurance among sample customers where they found that firms that frequently conducted customer satisfaction surveys reported higher product penetration. It can therefore be inferred that conducting customer satisfaction surveys is an important factor contributing to insurance penetration.

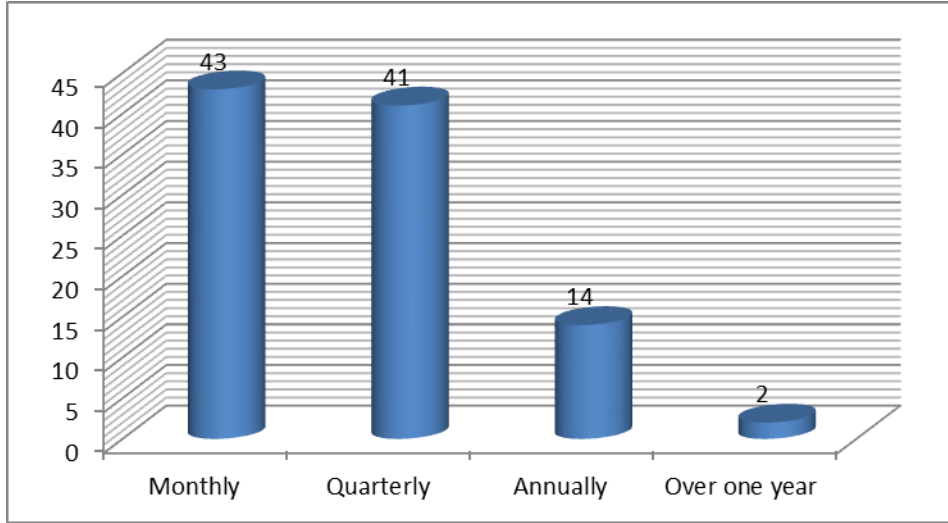


Figure 4.18: Frequency of Customer Satisfaction Surveys

ix) Influence of marketing innovation strategy on insurance penetration

Table 4.6: Respondents level of agreement with various indicators relating to the influence of marketing innovation strategy on insurance penetration

Statement	Mean	Stdev
Budget Allocations	3.94	1.37
New Markets	4.30	1.35
New marketing channels	3.98	1.47
Customer surveys	3.75	1.25

The findings revealed that respondents agreed that entrance to new markets led to more insurance penetration as shown by a mean of 4.30 and a standard deviation of 1.35; that new marketing channels contributed to improved insurance penetrations as shown by a mean of 4.23 and a standard deviation of 1.31; that sustained research and development helps in development of new insurance products thus accelerating penetration as shown

by a mean of 4.14 and a standard deviation of 1.36 and that new insurance products are important for insurance penetration as shown by a mean of 3.97 and a standard deviation of 1.11. According to Prahalad and Ramaswamy (2004) in their paper on co-creating unique value with customers found that companies that had allocated marketing resources in their budgets and ventured new markets reported higher rates of product penetration. Therefore, allocating marketing resources in budgets and venturing new markets are key drivers of insurance penetration. The findings are also in agreement with Quadros et al. (2010), in their study on technological innovation in Brazilian industry where they found that firms that had developed new marketing channels and also conducted customer surveys had an advantage over those that did not on product penetration. It can therefore be concluded that developing new marketing channels and conducting frequent customer surveys are important factors contributing to insurance penetration.

x) Regression Analysis for Market innovation strategy and insurance penetration

The study sought to determine the amount of variation explained by Market innovation strategy on insurance penetration. The results are shown in Table 4.7.

Table 4.7: Model Summary for Market innovation strategy

R	R Square	Adjusted R Square	Std. Error of the Estimate
.596 ^a	.355	.312	585.71368

The amount of variation in insurance penetration explained by market innovation strategy was determined by conducting a regression analysis. The calculated R is 0.596 and R² 0.355 which implies that 35.5% of the corresponding variation in insurance penetration can be explained by change in market innovation strategy. The rest 64.5% can be explained by other factors that are not in the model.

ANOVA for Market innovation strategy and insurance penetration

The study sought to establish the level of significance of Market innovation strategy on insurance penetration. The findings are shown in Table 4.8. One way analysis of variance (ANOVA) with 1 degree of freedom results was used to form a basis for tests of significant. The ANOVA for the linear model of market innovation strategy and insurance penetration has an F-value 8.256 which is significant with a p-value $0.012 < 0.05$ meaning the model is significant in the prediction of insurance penetration. The study therefore rejects the null hypothesis that there is no significant relationship between Market innovation strategy strategy and insurance penetration and confirms that there is a positive and significant relationship on Market innovation strategy and insurance penetration.

Table 4.8: ANOVA for Market innovation strategy and insurance penetration

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2832304.165	1	2832304.165	8.256	.012
Residual	5145907.745	15	343060.516		
Total	7978211.909	145			

Regression Coefficient of Market innovation strategy and insurance penetration

The study sought to establish the level Market innovation strategy can predict insurance penetration. The findings are shown in Table 4.9. An analysis of the regression model coefficients indicate a positive beta-co-efficient of 0.170 with a p-value $0.003 < 0.05$ and a constant of 3.216 with a p-value $0.000 < 0.05$. Therefore market innovation strategy contributes significantly to the model.

The regression equation follows as:

$$Y = 3.216 + 0.17X_2, \text{ where,}$$

Y = Insurance penetration

X₂ = Market innovation strategy

The regression equation implies that insurance penetration increase by 7% with an increase of a unit of Market innovation strategy.

Table 4.9: Regression Coefficient of Market innovation strategy and insurance penetration

	<u>Coefficients</u>				
	B	Std. Error	Beta	T	Sig.
Constant	3.216	0.410		7.844	.000
Market innovation strategy	0.170	0.058	.896	2.931	.003

4.5.3 Technological Innovation Strategy

i) Does technological innovation contribute to insurance penetration?

According to Figure 4.19, 88% of the respondents indicated that technological innovation contributes to insurance penetration while 12% indicated it did not. In a study by Claudio, Teresa, and Cristina (2013) on whether technological innovation efficiency mattered for firm performance, they found that technological innovation efficiency helped firms increase profitability while enhancing product innovation. Therefore, it can

be concluded that technological innovation is an important factor influencing product innovation.

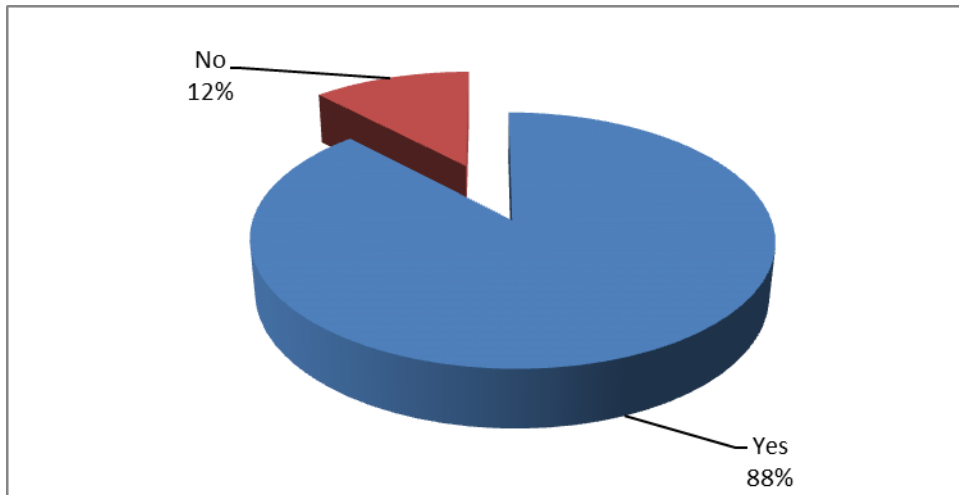


Figure 4.19: Whether technological innovation contributed to insurance penetration

ii) To what extent does technological innovation contribute to insurance penetration?

From Figure 4.20, majority (39%) of the respondents indicated that technological innovation contributed to insurance penetration to a very great extent, 37% to a great extent, 12% to a moderate extent, 8% to a little extent while 4% of them felt that technological innovation did not contribute to insurance penetration at all. This agrees with findings by Guan, Yam, Mok and Ma (2006) in their study of the relationship between competitiveness and technological innovation capability based on DEA models where they found that technological innovation contributed to product penetration. It can therefore be inferred that technological innovation is a very useful factor that influences insurance penetration.

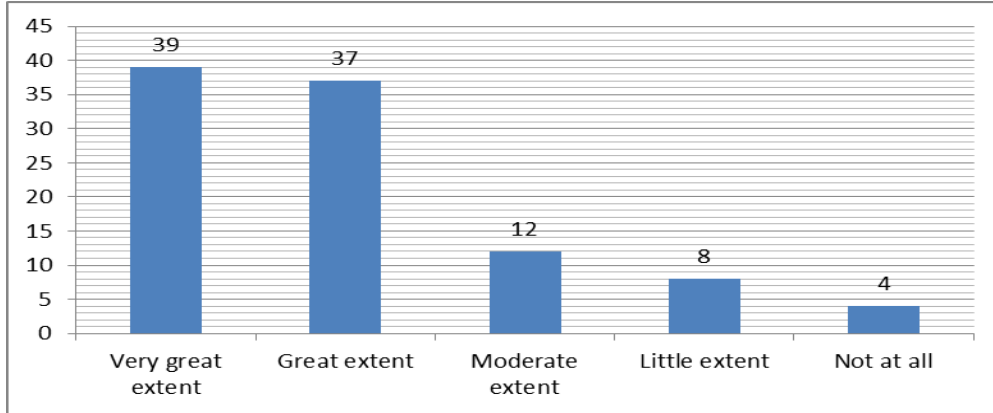


Figure 4.20: Extent to which technological innovation contributed to insurance penetration

iii) Does organization have ICT platform?

From Figure 4.21, majority (83%) of the respondents indicated that their organisations had ICT platforms while 17% did not. According to Quadros, Furtado, Roberto, and Franco, (2010) in their study on technological innovation in Brazilian industry, they found that organisations with ICT platforms reported higher product penetration. It can therefore be concluded that ICT platform greatly influences insurance penetration.

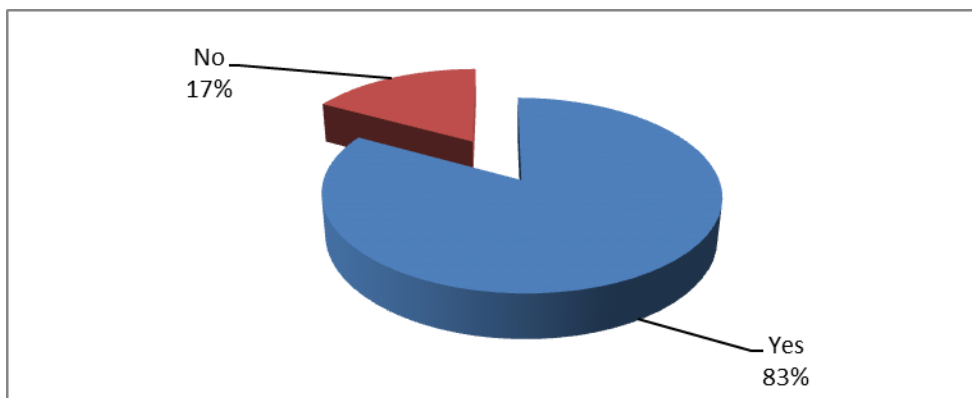


Figure 4.21: Whether the organisations had ICT platforms

iv) Do you share your ICT platform with your clients?

As shown in Figure 4.22, 92% of the respondents indicated that their organisations shared ICT platforms with their clients while 8% did not. This agrees with findings by Ukiri (2013) in their paper on how innovation, technology deepened health insurance penetration in Nigeria', Avon Healthcare Limited. He found that firms that had shared ICT platforms with their clients recorded greater sales and deepened health insurance penetration. Therefore, it can be inferred that sharing ICT platforms with clients deepens insurance penetration.

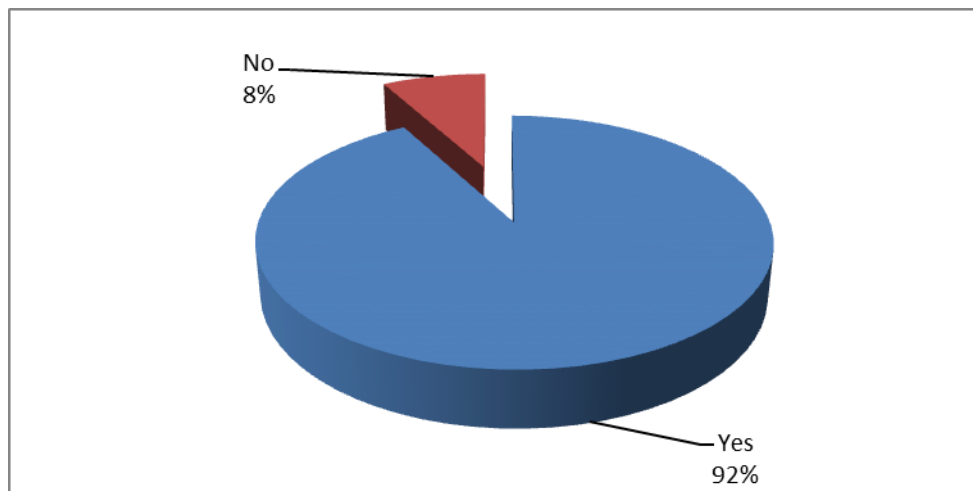


Figure 4.22: Whether the organisations share ICT platforms with clients

v) Does your organization use mobile platform to transact business?

The study further determined whether the organizations used mobile platforms to transact business. As revealed in Figure 4.23, 87% of the organizations used mobile platforms to transact business. Sixteen (13%) did not. This is in agreement with a report by UAP Insurance Kenya (2013) on delivering insurance through mobile platform where it was found that organizations that used mobile platforms to transact business recorded increased insurance penetration. It can therefore be concluded that use of mobile platforms to transact business deepens insurance penetration

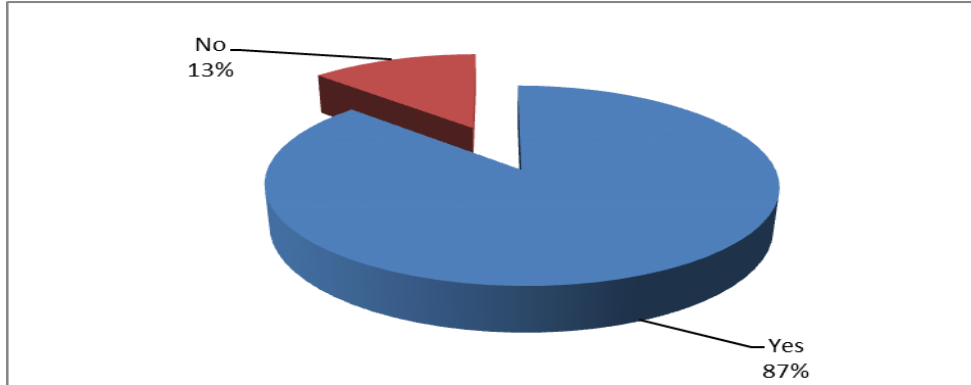


Figure 4.23: Whether the organizations used mobile platforms to transact business

vi) Does your firm use SMS platform to transact business?

According to Figure 4.24, 84% of the respondents indicated that their firms used SMS platforms transact business. Sixteen (16%) did not. According to Drejer (2002) in their study on situations for innovation management: towards a contingency model found that firms that used SMS platforms to transact business reported increased penetration of the product in the market. It can therefore be inferred that use of SMS platforms to transact business is a vital ingredient leading to increased insurance penetration.

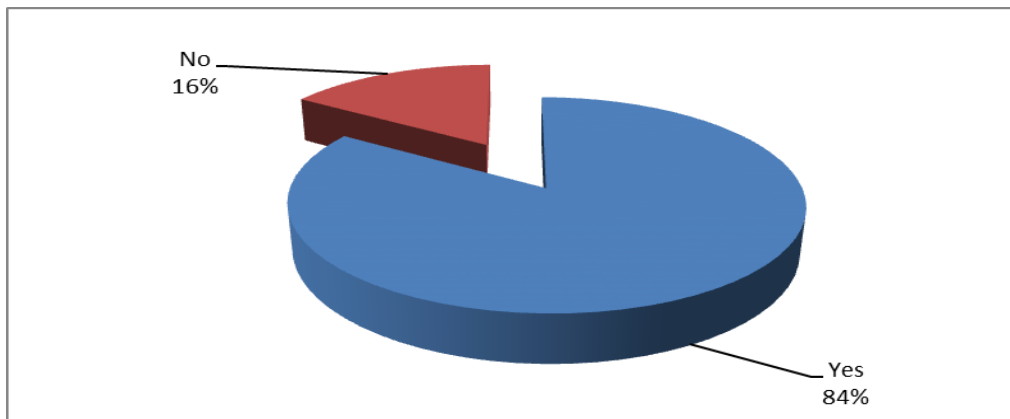


Figure 4.24: Whether the firms used SMS platforms to transact business

vii) Does your firm have budget for ICT?

According to Figure 4.25, 86% of the respondents indicated that their organisations had a budget for ICT while 14% did not. According to Kiraka, Kobia and Katwalo (2013) in their study on micro, small and medium enterprise growth and innovation in Kenya, they found that firms that had a budget for ICT had reported higher product penetration. Therefore it can be concluded that ICT is one of the aspects of technological innovation strategy that greatly influences insurance penetration.

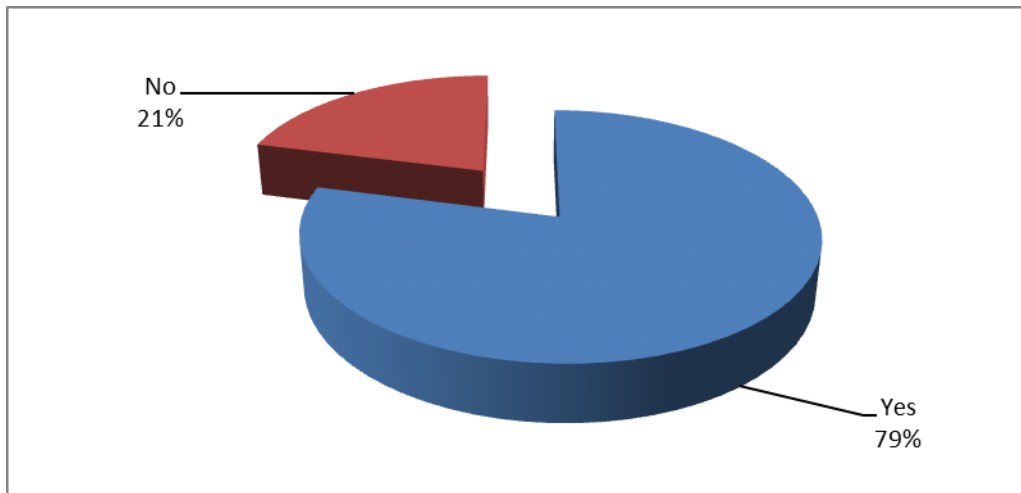


Figure 4.25: Whether the firms had a budget for ICT

viii) ICT budgetary estimates

From Figure 4.26, 64% of the companies had a budget estimate of between 10 to 30 million Kenya Shillings, 23% had a budget estimate of between 3 and 10 million Kenya Shillings, while 9% had a budget estimate of between 500,000 and 3 million Kenya Shillings. Only 4% of the companies had a budget estimate of over 30 million Kenya Shillings. This agrees with studies by Johne and Davies (2000) in their study on innovation in medium-sized insurance companies ICT budgetary estimates found that

ICT is vital in ensuring firms have unique product and service innovation leading to insurance penetration. Therefore it can be concluded that ICT budgetary estimates is one of the aspects of technological innovation strategy that greatly influences insurance penetration.

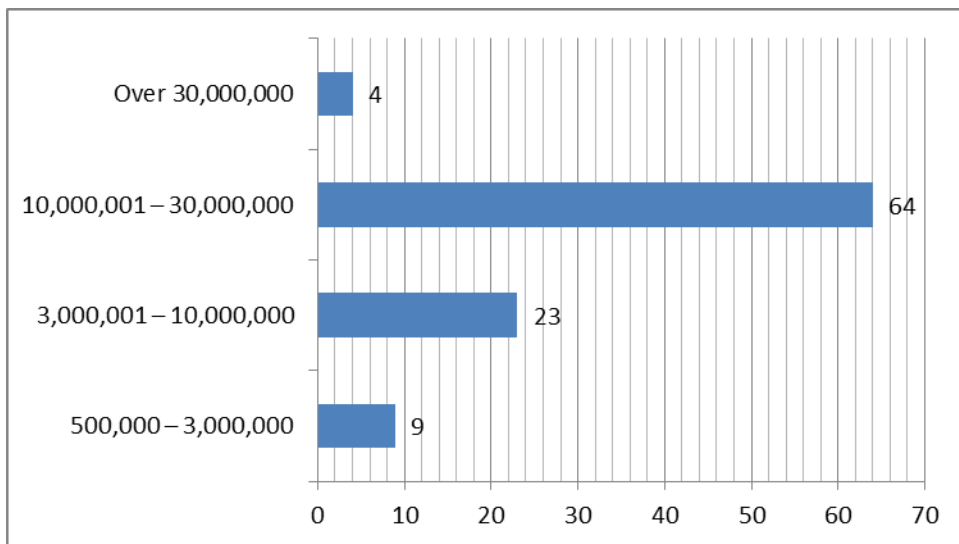


Figure 4.26: ICT budgetary estimates

ix) Influence of technological innovation on insurance penetration

The respondents' views were sought on their levels of agreement with specific indicators of technological innovation on insurance penetration. As the findings presented in table 4.10 below indicate, the respondents agreed that turn around time influences insurance penetration as shown by a mean of 5.03 and a standard deviation of 1.86; that mobile platform usage improved insurance penetrations as shown by a mean of 4.71 and a standard deviation of 1.50; that SMS platform usage enhances insurance penetration as shown by a mean of 4.02 and a standard deviation of 1.36 and that budgetary allocation is important for insurance penetration as shown by a mean of 3.87 and a standard deviation of 1.21. Lastly, on the ICT platform enhancing insurance penetration, the

respondents agreed with this as shown by a mean of 3.64 and a standard deviation of 1.09. This is in agreement with a report by UAP Insurance Kenya (2013) on delivering insurance through mobile platform where it was found that organizations that used mobile platforms to transact business recorded increased insurance penetration. Further, Drejer (2002) in their study on situations for innovation management: towards a contingency model found that firms that used SMS platforms to transact business reported increased penetration of the product in the market. In addition Kiraka, Kobia and Katwalo (2013) in their study on micro, small and medium enterprise growth and innovation in Kenya, they found that firms that had a budget for ICT had reported higher product penetration. It can therefore be inferred that turn around time, mobile platform usage, SMS platform usage, budgetary allocation and ICT platform are vital ingredients leading to increased insurance penetration.

Table 4.10: Respondents level of agreement with indicators relating to the influence of technological innovation on insurance penetration

Statement	Mean	Std Dev
Turn Around Time	5.03	1.86
Mobile platform usage	4.71	1.50
SMS platform usage	4.02	1.36
Budgetary allocation	3.87	1.21
ICT platform	3.64	1.09

Regression Analysis of Technological innovation strategy and insurance penetration

The study sought to determine the amount of variation in insurance penetration explained by Technological innovation strategy. The results are shown in Table 4.11. Regression Analysis was conducted to determine the amount of variation in insurance

penetration explained by Technological innovation strategy. The calculated R value 0.759, R^2 value 0.577 meaning that 58% of the corresponding variation in insurance penetration can be explained by change in Technological innovation strategy. The rest, 42%, can be explained by other factors that are not in the model.

Table 4.11: Model Summary of Technological innovation strategy

R	R Square	Adjusted R Square	Std. Error of the Estimate
.759	.577	.548	474.59856

ANOVA for Technological innovation strategy and insurance penetration

The study sought to test the level of significance of Technological innovation strategy on insurance penetration. The results are shown in Table 4.12 A one way analysis of variance (ANOVA) was used to form a basis for tests of significant. The ANOVA for the linear model of Technological innovation strategy and insurance penetration has F-value 20.420 which is significant with p-value $0.000 < 0.05$ meaning the model is significant in the prediction of insurance penetration. We therefore reject the null hypothesis that Technological innovation strategy does not have an effect on the insurance penetration and confirm that there is a positive and significant relationship between technological innovation strategy and insurance penetration.

Table 4.12: ANOVA for technological innovation strategy and insurance penetration

	Sum of squares	Df	Mean square	F	Sig.
Regression	4599555.044	1	4599555.044	20.420	.000
Residual	3378656.866	15	225243.791		
Total	7978211.909	145			

Regression Coefficient of Technological innovation strategy and insurance penetration

The study sought to establish whether technological innovation strategy measures contributed to the regression model. The findings are shown in Table 4.13. Analysis of the regression model coefficients show there is a positive beta co-efficient of .216 with a p-value $0.001 < 0.05$ and a constant of 5.037 with a p-value $0.003 < 0.05$. Therefore technological innovation strategy contributes significantly to the model. Therefore the model can provide information needed to predict insurance penetration from Technological innovation strategy. The regression equation is presented as follows: $Y = 5.037 + .216X_3$ where,

Y = insurance penetration

X_3 = Technological innovation strategy, and

The regression equation implies that insurance penetration increase by 8% with an increase of a unit of Technological innovation strategy.

Table 4.13: Coefficients of Technological innovation strategy and insurance penetration

	<u>Coefficients</u>				
	B	Std. Error	Beta	T	Sig.
Constant	5.037	0.278		18.119	.003
Technological innovation strategy	.216	.067	.459	3.224	.001

4.5.4 Process innovation strategy

i) Has your firm experienced change in cost in last three years?

According to Figure 4.27, 82% of the respondents indicated that they had experienced cost reduction in the last three years while 18% did not. According to Hitt, Hoskisson and Kim (2007) in their study on the effects on innovation and firm performance in product-diversified firms, they found that cost reduction strategy is a very important factor contributing to product penetration. Beard and Easingwood (2003) in their paper on marketing action and launch tactics for high-technology products also found out that cost reduction strategies contributed to product penetration. It therefore implies that cost reduction strategy is a very important factor contributing to insurance penetration

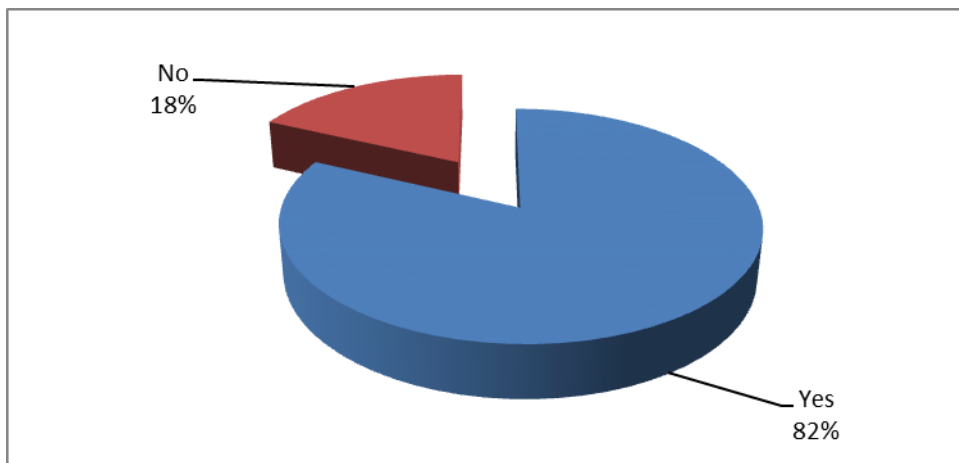


Figure 4.27: Whether the firms had experienced cost change

ii) What contribute to this change?

From Figure 4.28 eighty five percent (85%) of the companies surveyed indicated that the cost reduction was as result process innovation stratey while 15% was due to other factors such engaging inhouse staff in marketing, route planning by marketers and sharing of ICT platform with customers. This agrees with findings by Quadros, Furtado,

Roberto and Franco (2010), in their study on technological innovation in the Brazilian insurance industry found that process innovation strategy was key in influencing insurance penetration. Further, in a book by Rejda (2004), *'The Principles of risk management and insurance'*, asserted that process innovation strategy deepens product penetration. It can therefore be referred that process innovation strategy is positively correlated to insurance penetration

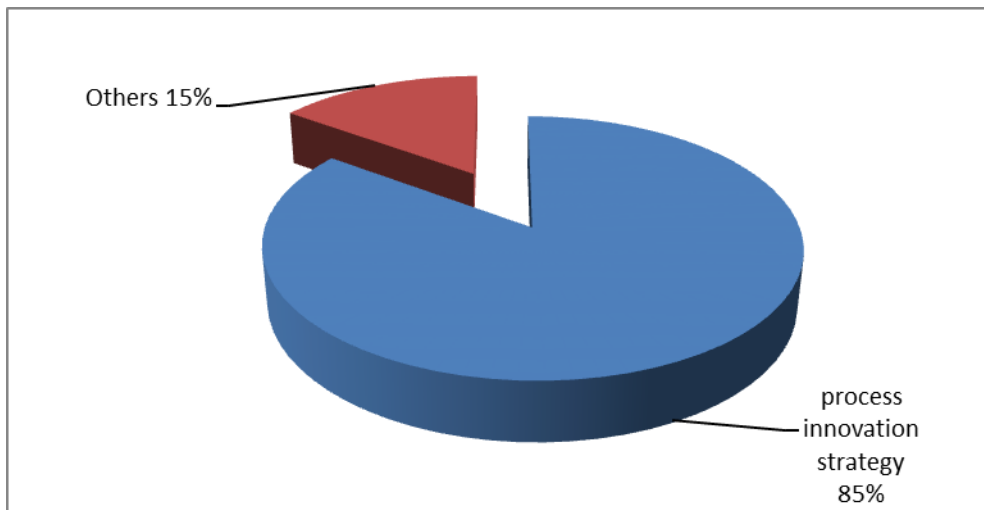


Figure 4.28: Reason for cost reduction

iii) Do you engage your staff in the process innovation Process?

According to Figure 4.29, majority (87%) of the respondents indicated that their companies engaged their staff in the process innovation process while 13% of them did not. This agrees with research findings by Chermack, Lynham, and Van der Merwe (2006) in their paper on exploring the relationship between process innovation and perceptions of learning organization characteristics where they found out that engaging staff in the process innovation process is a key factor influencing penetration of the product in the market. It is also in agreement with a study by Evans (2011) on the role of evolutionary theory in process innovation where it was found out that companies that engage staff in the process innovation process report increased product penetration.

Therefore, staff engagement is a very important aspect of process innovation strategy affecting insurance penetration.

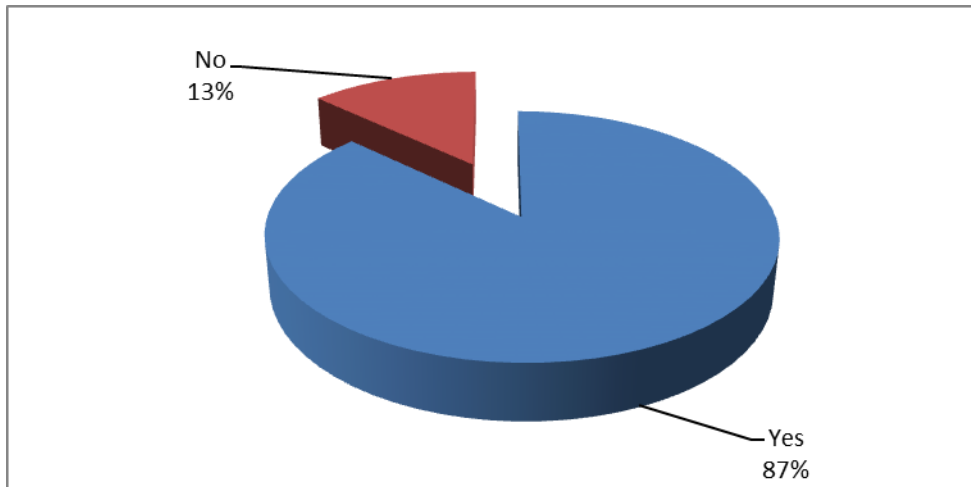


Figure 4. 29: Whether the companies engaged their staff in the process innovation Process

iv) Does your company engage expert consultants in the process innovation process

According to the findings in Figure 4.30, majority (89%) of the companies engaged expert consultants in the process innovation process while 11% did not. This is in agreement with a study by Ogilvy (2006) in their report titled ‘*process innovation as the fulfillment of critical theory in the futures research quarterly*’, where he found out that engaging expert consultants in the process innovation process resulted in greater product penetration. In addition, Kiraka et al. (2013) in their work on micro, small and medium enterprise growth and innovation in Kenya, they that firms that engaged expert consultants in the process innovation process reported higher product penetration. Therefore, engaging expert consultants in the process innovation process is a key factor leading to higher product penetration

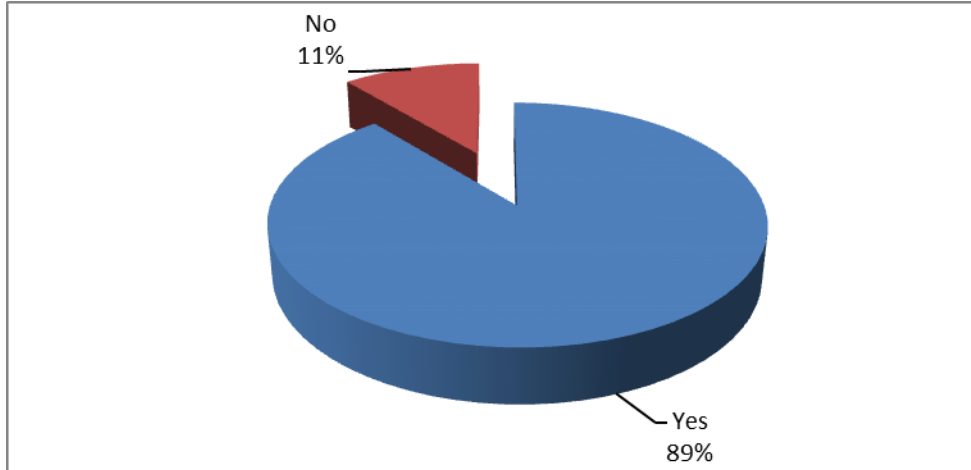


Figure 4.30: Whether the companies engaged expert consultants in the process innovation process

v) Do you have process innovation forum?

According to Figure 4.31, 91% of the respondents indicated that their organisations had process innovation forums while 9% did not. This is in agreement with a study by Baraev (2009) in their paper on future process innovation in strategic management where they found that firms that had process innovation forums reported greater product penetration compared to those that lacked. Further, in a review by Chermack, Lynham, and Ruona (2001) on process innovation: theory, research suggestions, and hypotheses it was also found that firms that had process innovation forums reported higher product penetration. It can therefore be inferred that having process innovation forums is a vital ingredient contributing to insurance penetration.

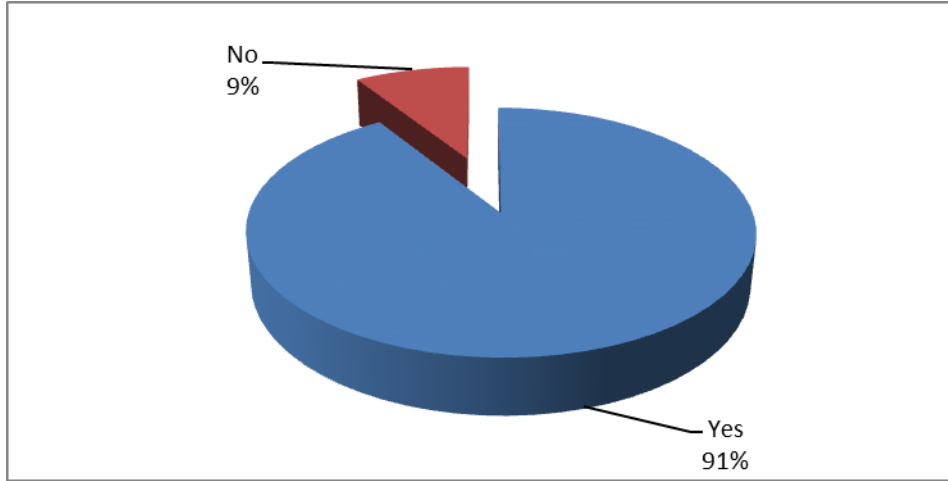


Figure 4.31: Whether the organisations had process innovation forum

vi) Frequency with which process innovation forum were conducted

According to Figure 4.32, it was revealed that majority (53%) of the process innovation forums were conducted quarterly, 24% of the firms conducted them on a monthly basis, 19% on an annual basis while 4% conducted the planning forums in periods greater than annually. This is in agreement with a study by Korte and Chermack (2007) on changing organizational culture with process innovation where they found that firms that conducted process innovation forums on a quarterly basis had greater product penetration, followed by those that conducted them on a monthly basis. Therefore, it can be concluded that conducting regular; quarterly/monthly process innovation forums is an important factor influencing insurance penetration.

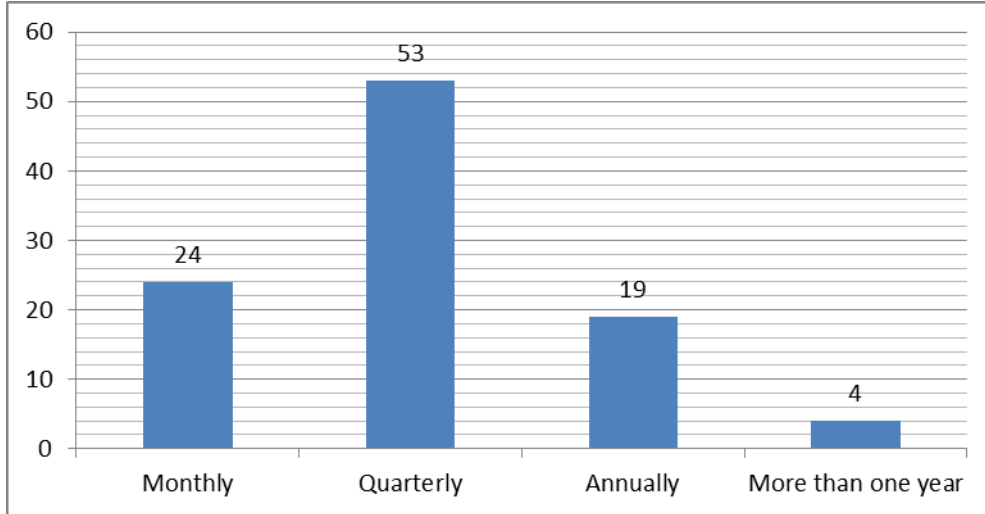


Figure 4.32: Frequency with which planning forums were conducted

vii) Has your organization experienced change in annual premiums in the last three years?

According to Figure 4.33, 91% of the respondents indicated that their organisations had experienced increase in annual premiums in the last three years while 9% did not. According to Ogilvy (2006) in their report titled process innovation as the fulfillment of critical theory in the futures research process innovation strategy resulted in greater product penetration. Further, in their study on market attractiveness, resource-based capabilities, venture strategies, and venture performance, Chandler and Hanks (2004) found that firms that conducted process innovation strategies had reported greater product penetration.

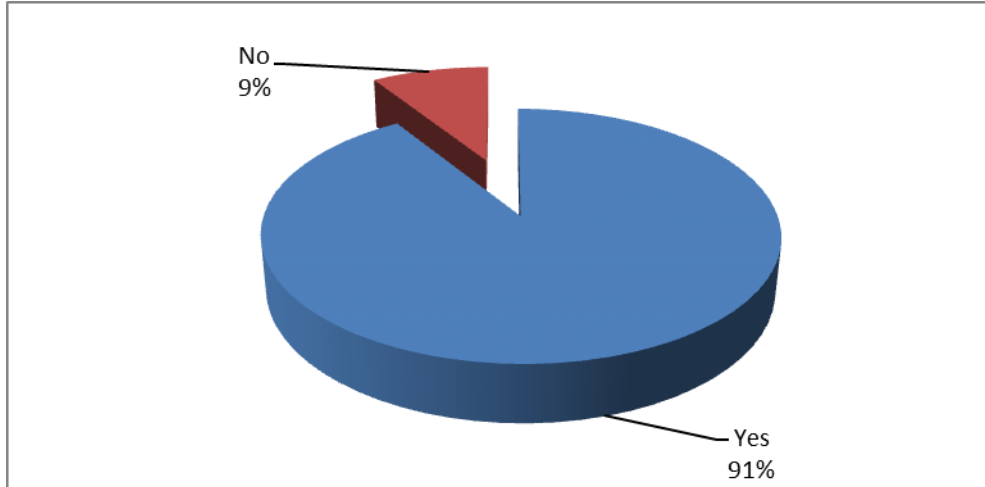


Figure 4.33: Whether the organization experienced change in annual premiums in the last three years

viii) What is the cause of the change in annual premiums?

Figure 4.34 revealed that majority (42%) of the increase in premiums were as a result of process innovation strategy, 34% was attributed to promotions, 15% was attributed to marketing channels and 9% was as a result of past claim settlement history. This collates with findings by Schoemaker (2005) in his paper – ‘*Process innovation: a tool for strategic thinking*’, where he found that firms that had adopted process innovation strategies had greater product penetration. It can therefore be inferred that process innovation strategy has a positive correlation with insurance penetration.

Regression Analysis for Process innovation strategy and insurance penetration

The study sought to determine the amount of variation of Process innovation strategy on insurance penetration. The results are indicated in Table 4.14. Regression analysis was conducted to determine the amount of variation in insurance penetration explained by Process innovation strategy. The calculated R 0.564 while R^2 0.318. This means that 32% of the corresponding variation in insurance penetration can be explained by Process innovation strategy. The rest 68% can be explained by other factors not in the model.

Table 4. 14: Model Summary: Process innovation strategy and insurance penetration

R	R Square	Adjusted R Square	Std. Error of the Estimate
.564	.318	.272	602.38843

ANOVA for Process innovation strategy and insurance penetration

The study sought to test the level of significance of Process innovation strategy on insurance penetration. The results are shown in Table 4.15. A one way analysis of variance (ANOVA) whose results formed the basis for tests of significance was used. The ANOVA for the linear model has F-value 6.986 which is significant with a p-value $0.018 < 0.05$ attesting that the model is significant in the prediction of insurance penetration. The study therefore rejects the null hypothesis that there is no significant relationship between Process innovation strategy and insurance penetration.

Table 4.15: ANOVA for Process innovation strategy and insurance penetration

	Sum of Squares	Df	Mean Square	F	Sig
Regression	2535134.539	1	2535134.539	6.986	0.018
Residual	5443077.370	15	362871.825		
Total	7978211.909	145			

Regression Coefficients of Process innovation strategy and insurance penetration

The study sought to determine the level of contribution of Process innovation strategy on insurance penetration. Table 4.16 shows the findings. Analysis of the regression model coefficients shows a positive beta coefficient of 0.225 with a p-value $0.002 < 0.05$ and a constant of 3.635 with a p-value $0.000 < 0.05$. Therefore process innovation strategy

contributes significantly to the model and the model can provide the information needed to predict insurance penetration from Process innovation strategy. The regression equation is presented as:

$$Y = 3.635 + 0.225X_4$$

Where

Y = Insurance penetration

X₄ = Process innovation strategy

The regression equation implies that insurance penetration increase by 3% with an increase of a unit in Process innovation strategy.

Table 4.16: Coefficient of Process innovation strategy and insurance penetration

Coefficients	B	Std. Error	Beta	T	Sig.
Constant	3.635	.829		4.385	.000
Process innovation strategy	0.225	0.087	.564	2.586	.002

The study adopted the alternate hypothesis that; Process innovation strategy influences insurance penetration in Kenya.

4.5.5 Insurance Penetration

4.5.5.1 Annual Premiums

The respondents' views were sought on the annual premiums attained by their respective insurance companies. The findings as shown on table 4.17 indicate that in the year

2013, the total premiums were 107.2 billion shillings with a mean of 2.10 and increased in the year 2014 with annual premiums of 132.1 billion shillings and a mean of 2.59. In the year 2015, the total premiums recorded for the insurance companies totalled to 180 billion Kenya Shillings and a mean of 3.53 whereas in the year 2016 the premiums increased to 183.1 billion which is a mean of 3.59. The findings compare with those by Amalendu, et al. (2011) who established that most of the insurance companies record higher insurance premiums annually year after year basing factors such as increase in market, changes in product offered as well as changes in economic trail. Hameeda and Al Ajmi (2012) on the other hand maintains a different contention that the premiums may not necessarily imply that the insurance companies are well penetrating thus proposing that there is need to compare the growth rates with the GDP which indicates the gauge at which the insurance companies are penetrating.

Table 4.17: Insurance Annual Premiums

Year	2013		2014		2015		2016	
	Total in Billions	Mean	Total in Billions	Mean	Total in Billions	Mean	Total in Billions	Mean
Annual premiums	107.2	2.10	132.1	2.59	180.0	3.53	183.1	3.59

The findings indicate the comparison between the annual national GDP rates and the Annual Insurance premiums for the period between 2013 and 2016. The findings reveal that as far much as the insurance premiums are increasing, they are still at the lower end as compared to the GDP. This implies that the insurance companies are increasing their sales but the penetration rate is still low. As argued by Wang et al. (2009), insurance penetration is not as much as the sales since there are other factors that enhance the sales away from the penetration. However, to make their growth and performance sustainable,

the firms have to focus on penetration through coming up with innovation strategies that ensure the same.

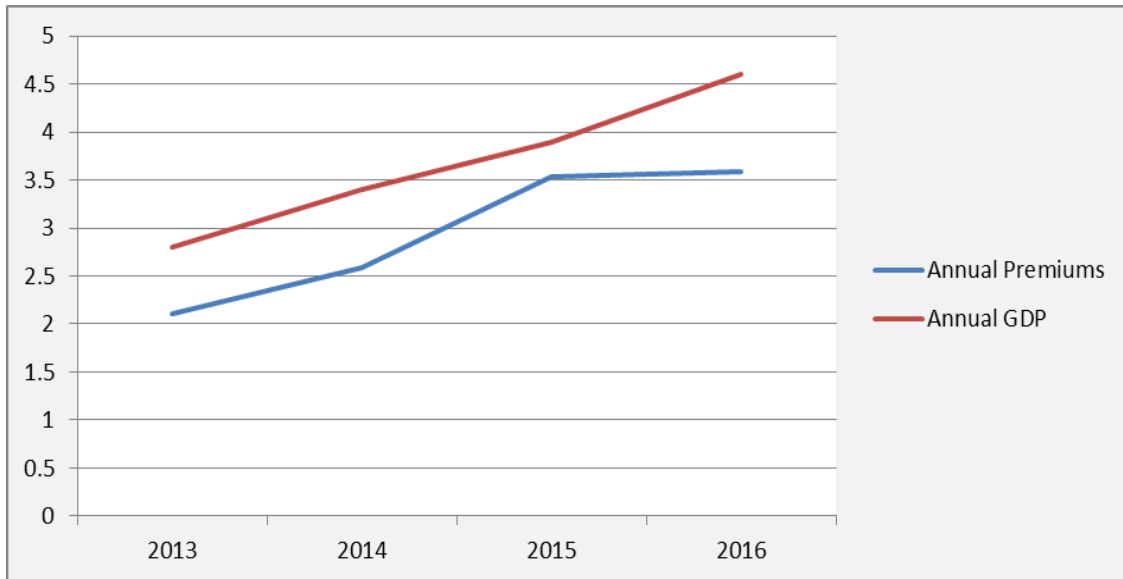


Figure 4. 34: Comparison of GDP and Insurance Premiums

4.6 Overall Model

The study run an overall ordinary least square regression model. All the measures of each independent variables were combined using mean into their respective dependent variable. The four measures of insurance penetration were combined into one measure of insurance penetration in kenya and an ordinary least square regression model was established.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where Y is the dependent variable (Insurance penetration), β_0 is the regression coefficient, β_1 , β_2 , β_3 , and β_4 are the slopes of the regression equation, X_1 is product innovation strategy, X_2 is market innovation strategy, X_3 is technological innovation strategy and X_4 is scenario plan strategy while e is the error term.

The results for the model summary are presented in table 4.17. The study findings presented in table 4.17 indicates that the product innovation strategy, market innovation strategy, technological innovation strategy and process innovation strategy are postively associated with insurance penetration as indicated by a pearson correlation, R value of 0.891.

Table 4.17: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.891	.794	.786	.022

The study also established model fitness by comparing the F-calculated and the F-critical values. The results for F-calculated are presented in table 4.18. The results show F-value of 15.63 which is significant at $0.006 < 0.05$. This signifies that the model is fit.

Table: 4.18: Regression Model Fit

Model	Summary of squares	Df	Mean Square	F	Sig.
Regression	230.69	4	57.67	15.63	0.006
Residual	549.81	141	3.69		
Total	780.50	145			

The regression coefficients are as presented in table 4.19. The results in table 4.19 indicates that relationship between product innovation strategy, market innovation strategy, technological innovation strategy and process innovation strategy was significant. The relationship was positive indicating that an increase in any of the factors results to an improved insurance penetration.

Table: 4.19: Multiple Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.196	.038	.174	5.16	.002
Product innovation strategy	.316	.058	.311	5.45	.000
Market innovation strategy	.286	.063	.281	4.54	.001
Technological innovation strategy	.231	.082	.221	2.82	.003
Process innovation strategy	.148	.011	.125	13.45	.010

The researcher conducted a multiple regression analysis so as to determine the relationship between insurance penetration and the four independent variables.

The regression equation ($Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4$) which now becomes:

$$Y = 0.196 + 0.316 X_1 + 0.286X_2 + 0.231X_3 + 0.148X_4$$

4.6.1 Model Optimization

Based on the results of hypothesis testing, a model optimization was conducted and is presented in Table 4.20.

Table: 4.20: Model optimization

	Objective	Null Hypothesis	Rule	P Value	Comment
1.	To establish the role of product innovation strategy on insurance penetration in kenya	Product innovation strategy has no role on insurance penetration in kenya.	Reject the null hypothesis if P value is less than 0.05	0.000	Reject the null hypothesis
2.	To establish the role of Market innovation strategy on insurance penetration in kenya	Market innovation strategy has no role on insurance penetration in kenya.	Reject the null hypothesis if P value is less than 0.05	0.001	Reject the null hypothesis
3.	To establish the role of technological innovation strategy on insurance penetration in kenya	Technological innovation strategy has no role on insurance penetration in kenya.	Reject the null hypothesis if P value is less than 0.05	0.003	Reject the null hypothesis
4.	To establish the role of process innovation strategy on insurance penetration in kenya	Process innovation strategy has no role on insurance penetration in kenya.	Reject the null hypothesis if P value is less than 0.05	0.010	Reject the null hypothesis

The aim of model optimization was to guide in derivation of the final model (revised conceptual framework) where only the significant variables were included in the model. In the new conceptual frame work, all the variables were included in the model since they werte significant. The reviesd conceptual framework is presented in Figure 4.35.

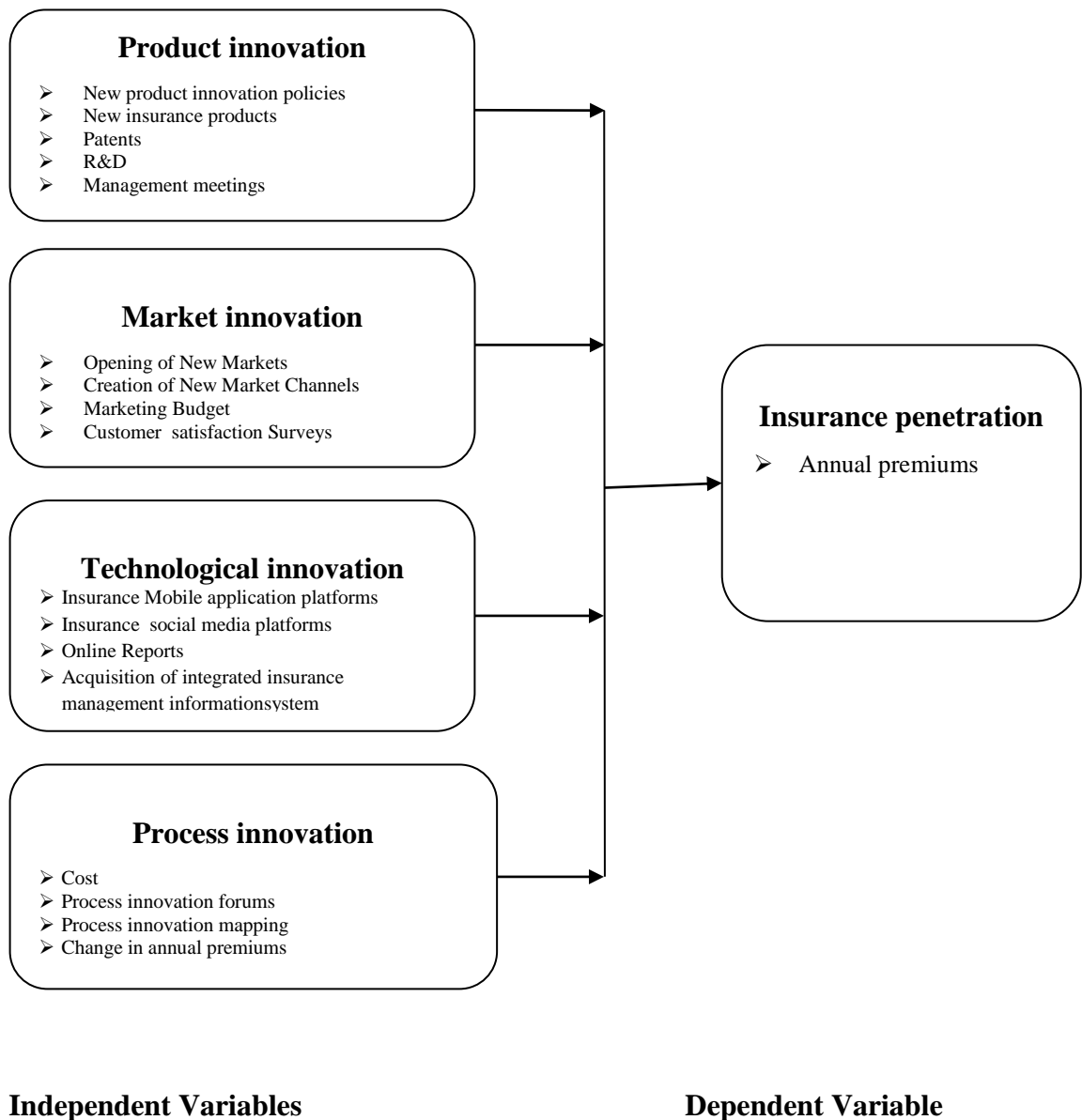


Figure 4.35: Optimized Conceptual Framework

4.7 Diagnostic Tests

4.7.1 Correlation Test

To test for the relationship between the variables, Pearson correlation was used to test the relationship between independent variables namely product innovation strategy, market innovation strategy, technological innovation strategy and process innovation strategy as shown on Table 4.17. The results indicated product innovation strategy, market innovation strategy, technological innovation strategy and process innovation have a coefficients of correlation of 0.731, 0.803, 0.751 and 0.721 respectively which indicates that there is a strong relationship between all the independent variables and dependent (insurance penetration).

Table 4.21: Pearson's Correlation Test

Correlations		Insurance Penetration	Product Innovation	Market Innovation	Technological Innovation	Process innovation
Insurance Penetration	Pearson Correlation	1	.731	.803	.751	.721
	Sig. (2-tailed)		.000	.000	.000	.000
	N	146	146	146	146	146
Product Innovation	Pearson Correlation	.731	1	.753	.791	.691
	Sig. (2-tailed)	.000		.000	.000	.000
	N	146	146	146	146	146
Market Innovation	Pearson Correlation	.803	.753	1	.830	.795
	Sig. (2-tailed)	.000	.000		.000	.000
	N	146	146	146	146	146
Technological Innovation	Pearson Correlation	.751	.791	.830	1	.712
	Sig. (2-tailed)	.000	.000	.000		.000
	N	146	146	146	146	146
Process innovation	Pearson Correlation	.721	.691	.795	.712	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	146	146	146	146	146

The researcher conducted various diagnostic tests to ensure that the assumptions of CLRM were not violated and appropriate model chosen for analysis in the event that CLRM assumption were not compromised. Estimating the probit models when the CLRM assumptions are violated would result in inefficient, inconsistent parameters estimates. This section presents the results of the following diagnostic tests: normality test, heteroscedasticity test, correlation test, multicollinearity test, and autocorrelation test.

4.7.2 Test for Heteroskedasticity

The study further conducted heteroskedasticity test to test the assumption that the residuals have a constant variance (they should be homoskedastic). The Modified Wald test was used to test for heteroskedasticity where the null hypothesis of the test is that error terms have a constant variance (i.e. should be Homoskedastic). The study failed to reject the null hypothesis given that the reported p-value 0.000 was less than the critical value and thus concluded that the observations have constant variance or do not have the problem of heteroskedasticity.

Table 4.22: Test for Heteroskedasticity

<code>. xttest3</code>

Modified Wald test heteroskedasticity
chi2 (42) = 2.4e+09
Prob>chi2 = 0.0000

4.7.3 Multicollinearity

This refers to a situation in which two or more explanatory variables in a multiple regression model are highly linear related. Perfect multicollinearity arises if the correlation between two independent variables is equal to 1 or -1 . In practice, we rarely

face perfect multicollinearity in a data set. More commonly, the issue of multicollinearity arises when there is an approximate linear relationship among two or more independent variables (Brooks, 2008).

To test for multicollinearity the study used VIF (variance inflation factor). This study adopted the rule of thumb for VIF value of 10 as the threshold. The VIF values of greater than 10 indicated presence of multicollinearity (Chatterjee & Price, 1991).

Table 4.23: Results for Multicollinearity Test

	Tolerance	VIF
Product Innovation	0.893	1.119
Market Innovation	0.804	1.241
Technological innovation	0.734	1.362
Process innovation	0.711	1.407

These results indicated that the VIF values of the independent variables were within the threshold of 10. This indicated that there was no threat of multicollinearity problem. The tolerance value was greater than 0.1 ruling out the possibility of multicollinearity (Field, 2009). The result, therefore implied non- existence of a multicollinearity problem among the variable and hence the level of multicollinearity in the model could be tolerated.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusion and recommendations of the study. The general objective of the study was to assess the role of innovation strategy on insurance penetration in Kenya. The specific objectives of the study were; to establish the role of product innovation strategy on insurance penetration in Kenya, to establish the role of market innovation strategy on insurance penetration in Kenya, to determine the role of technological innovation strategy on insurance penetration in Kenya and to evaluate the role of process innovation strategy on insurance penetration in Kenya. The data was analysed and the results of the findings were correlated with both empirical and the theoretical literature available. The conclusions relate directly to the specific objectives of the study and recommendations were deduced from the conclusions and discussions of the findings.

5.2 Summary of the Study Variables

The study sought to investigate the role of innovation strategy on insurance penetration in Kenya. Specifically the study investigated product innovation strategy, market innovation strategy, technological innovation strategy and process innovation strategy. The empirical literature showed that innovation strategy is a key ingredient that enhances insurance penetration in both developed and emerging economies globally. Literature has also revealed that insurance penetration rate is very low in developing economies than in developed economies. A pilot study was undertaken to test the validity and reliability of the data collecting tool.

5.2.1 Product innovation strategy on insurance penetration in Kenya

The study sought to find out the role of product innovation strategy on insurance penetration in Kenya. The findings revealed that product innovation strategy positively influence insurance penetration in Kenya. The results of the inferential statistics such as ANNOVA show that opening of new products policies, new insurance products, research and developmant, management meetings on new products and patents which are indicators of product innovation stragy contribute significantly to insurance penetration in Kenya. The study therefore confirms that there is a positive and significant relationship between product innovation and insurance penetration.

5.2.2 Market Innovation Strategy on Insurance Penetration in Kenya

The study sought to find out the role of market innovation strategy on insurance penetration in Kenya. The findings revealed that market innovation strategy positively influence insurance penetration in Kenya. The results of the inferential statistics such as ANNOVA show that opening of new markets, creation of new market channels, marketing budgets and customer satisfaction surveys which are indicators of market innovation stragy contribute significantly to insurance penetration in Kenya. The study therefore confirms that there is a positive and significant relationship between market innovation and insurance penetration.

5.2.3 Technological Innovation Strategy on Insurance Penetration in Kenya

The study sought to find out the role of technological innovation strategy on insurance penetration in Kenya. The findings revealed that technological innovation strategy positively influence insurance penetration in Kenya. The results of the inferential statistics such as ANNOVA show that insurance mobile application platforms, social media platforms, online reports and acquisition of insurance integrated information which are indicators of technological innovation stragy contribute significantly to

insurance penetration in Kenya. The study therefore confirms that there is a positive and significant relationship between technological innovation and insurance penetration.

5.2.4 Process innovation Strategy on Insurance Penetration

The study sought to find out the role of process innovation strategy on insurance penetration in Kenya. The findings revealed that process innovation positively influence insurance penetration in Kenya. The results of the inferential statistics such as ANNOVA show that hedging practices, process innovation forums, risk management and scenario mapping which are indicators of process innovation contribute significantly to insurance penetration in Kenya. The study therefore confirms that there is a positive and significant relationship between process innovation and insurance penetration in Kenya.

5.3 Conclusions

The study concluded that policy for new products is an important factor that influences insurance penetration. It was also found out that development of new products is a key factor contributing to insurance penetration; and that companies that register their patents gain on profitability from intellectual property rights arising from the patents hence increasing insurance penetration. Further, the findings showed that product research and development is a vital ingredient enhancing better insurance penetration and that management meetings on product innovation strategies was positively correlated to insurance penetration.

The study further concluded that market innovation is a key driver for insurance penetration; that market innovation strategy is very important factor in as far as insurance penetration is concerned, thus the need to be involved during the requirement and specification development stage; that venturing new market segments is a key driver for insurance penetration; that development of new marketing channels is a vital ingredient leading to increased insurance penetration; that marketing is a critical

contributor to insurance penetration; that allocating marketing resources in budgetary estimates is a very important factor contributing to insurance penetration; that carrying out customer satisfaction surveys is positively correlated to insurance penetration; that conducting customer satisfaction surveys is an important factor contributing to insurance penetration; and that conducting frequent customer surveys are important factors contributing to insurance penetration.

The study also concluded that technological innovation is an important factor influencing product innovation; that technological innovation is a very useful factor that influences insurance penetration; that ICT platforms greatly influenced insurance penetration; that sharing ICT platforms with clients deepens insurance penetration; that use of mobile platforms to transact business deepens insurance penetration; that use of SMS platforms to transact business is a vital ingredient leading to increased insurance penetration; that ICT is one of the aspects of technological innovation strategy that greatly influences insurance penetration; and that allocation of ICT budgetary estimates is one of the aspects of technological innovation strategy that greatly influences insurance penetration.

The study further concluded that risk mitigation strategies are very important factors contributing to insurance penetration; that having a risk mitigation department is positively correlated to insurance penetration; that staff engagement is a very important aspect of process innovation strategy affecting insurance penetration; that engaging expert consultants in the process innovation process is a key factor leading to higher product penetration; that having process innovation forums is a vital ingredient contributing to insurance penetration; that conducting regular; quarterly/monthly process innovation forums is an important factor influencing insurance penetration; that conducting process innovation mapping surveys is a very important factor influencing insurance penetration and that carrying out process innovation mapping surveys has a positive correlation with insurance penetration

5.4 Recommendations

The study is a justification of the fact that the role of innovation strategy on insurance penetration in Kenya cannot be underestimated and has contributed to higher insurance penetration in Kenya.

Specifically, the study recommends that:

1. The Insurance Regulatory Authority (IRA) should formulate a well defined regulatory framework to ensure that all the new products are registered and patented to encourage innovation. In addition, Insurance firms in Kenya should allocate adequate resources for research on product innovation in their budgets as this deepens insurance penetration.
2. Insurance firms should venture new market segments to by establishing solid partnerships with banks and agribusiness organisations. Further, insurance firms should allocate adequate resources for market research and development during budgeting to discover new market segments.
3. Insurance firms should organise ICT platforms where new technological innovations can be developed through brainstorming. Further, insurance firms should adopt the use of SMS and mobile platforms to transact business to encourage higher insurance penetration. The firms should also ensure they allocate sufficient funds towards ICT research to encourage new technological innovations.
4. Insurance firms should internally engage their staff in the process innovation process and also engage expert consultants to ensure that the process innovation process becomes a success. Further, they should ensure that there is a functional risk mitigation department since risk mitigation is very important in the process innovation process.

5.5 Areas for future research

This study is a millstone for future research in this area, particularly in Kenya. The findings emphasize the importance of the role of innovation strategy on insurance penetration in Kenya. As such, product innovation, market innovation and technological innovation are key contributors of insurance penetration. Future research will need to be carried in other industries and countries in order to show whether the link between innovation and insurance or product penetration can be generalized.

Available literature indicates that as a future avenue of research there is need to carry out similar research on intellectual capital in other industries and countries in order to establish whether the link between intellectual capital and performance can be generalized.

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APPENDICES

Appendix I: Introduction Letter to Respondents

10th September, 2016

Francis Mutegi,

Jomo Kenyatta University of Agriculture and Technology (JKUAT),

P.O Box 62000-00100,

NAIROBI.

Dear Respondents,

RE: DATA COLLECTION BY FRANCIS MUTEGI

I am the above mentioned PhD student from Jomo Kenyatta University of Agriculture and Technology. In partial fulfillment of the requirements of the award of Doctor of philosophy Degree, I am conducting an academic research on *Role of Innovation Strategy on Insurance Penetration in Kenya*. This letter is to humbly request you to respond to the questions in the attached questionnaire to enable me carry out this research. This is an academic exercise and you are assured of anonymity and confidentiality.

Thanks in advance for your willingness to generously contribute to this research.

Yours faithfully,

Mutegi Francis

Appendix II: Questionnaire

Part A: Demographic Information

1. Kindly tick your gender

Male Female

2. Please indicate the department you work in ?

Marketing Finance Underwriting ICT

3. What is your highest level of education?

Diploma/ HND College

Degree Postgraduate/PhD

4. How long have you worked in your current position?

Less than 1 year 6-10 years

1-5 years Over 10 years

Part B: Product Innovation

5. Does your Company have policies for new insurance products? a) Yes b) No

6. If No, please explain _____

7. What is the level of new insurance products in the last five years?

a) None [] b) 1-2 [] c) 3-5 [] d) Over 5 []

8. Has your organization patented your insurance products? a) Yes [] b) No []

9. If the answer to Q8 is Yes, please indicate the number of patents in the last five years

a) None [] b) 1-2 [] c) 3-5 [] d) Over 5 []

10. Does your firm have any budget for research and development?

Yes [] No []

11. If Yes please indicate your budgetary estimate.

a) 500,000 – 3,000,000 [] b) 3,000,001 – 10,000,000 []

c) 10,000,001 – 30,000,000 [] d) Over 30,000,000 []

12. Do management have meetings to discuss product innovation strategies?

a) Yes [] b) No []

13. If yes in Q15, how often are such meetings?

a) Weekly [] b) Monthly []

c) Quarterly [] d) Annually []

Part C: Market Innovation Strategy

14. Does market innovation contribute to insurance penetration?

Yes [] No []

16. If yes, to what extent does market innovation contribute to insurance penetration?

Very great extent []

Great extent []

Moderate extent []

Little extent []

Not at all []

17. What is the level of new markets for insurance products in the last five years?

a) None [] b) 1-3 []

c) 4-6 [] c) over 6 []

Yes [] No []

18. Does your organization have new marketing channels in the last five years?

19. If yes to Q18, please name the them

20. Does your firm have any marketing budget?

Yes [] No []

21. If yes to Q20, please indicate your budget estimates

a) 5,000,000 – 10,000,000 [] b) 10,000,001 – 20,000,000 []

c) 20,000,001 – 30,000,000 [] d) Over 30,000,000 []

22. Does your firm carry out customer satisfaction survey?

Yes [] No []

23. If yes, how often?

a) Monthly [] b) Quarterly [] c) Annually [] d) Over one year []

24. What is your level of agreement with the following indicators relating to the influence of marketing innovation strategy on insurance penetration? (1 - Strongly agree, 2- Agree, 3-Neutral, 4-Disagree, 5- Strongly Disagree)

Statement	1	2	3	4	5
Budget Allocations					
New Markets					
New marketing channels					
Customer surveys					

Part D: Technological Innovation Strategy

25. Does technological innovation contribute to insurance penetration?

Yes [] No []

26. To what extent does technological innovation contribute to insurance penetration?

Very great extent []

Great extent []

Moderate extent []

Little extent []

Not at all []

27. Does organization have ICT platform?

Yes [] No []

28. If yes to Q27, is it shared with your clients?

Yes [] No []

29. Does your organization use mobile platform to transact business?

Yes [] No []

30. Does your firm use SMS platform to transact business?

Yes [] No []

31. Does your firm have budget for ICT?

Yes [] No []

32. If yes to Q31, please indicate the budgetary estimates

a) Less Than 10m [] b) 11-20m []

c) 21- 30m [] d) Over 30m []

33. Has your organization improved on turnaround time in the last one year?

Yes [] No []

34. What is your level of agreement with the following indicators relating to the influence of technological innovation on insurance penetration? (1 - Strongly agree, 2- Agree, 3-Neutral, 4-Disagree, 5- Strongly Disagree)

Statement	1	2	3	4	5
Turn Around Time					
Mobile platform usage					
SMS platform usage					
Budgetary allocation					
ICT platform					

Part E: Process innovation

35. Has your firm experienced change in cost in last three years?

Yes [] No []

36. If the answer to Q 35 is yes what contributed to the change?

a) Process innovation [] b) Sharing ICT platform with customers
[]

c) Use of staff in marketing [] d) route planning by marketers

37. Do you have process innovation forums?

Yes [] No []

38. If yes to Q37, how often?

a) Weekly [] b) Monthly []

c) Quarterly [] d) Annually []

39. Has your firm experienced change in annual premiums in the last three years?

Yes [] No []

40. If yes in Q 39, What is the cause of the change in annual premiums?

Part F: Insurance Penetration

41. Please indicate the annual premiums for your company for the last four years.

Year	2013	2014	2015	2016
Annual premiums				

42. Please compare the percentage increase/decrease for your company with annual GDP

Year	2013	2014	2015	2016
Premium growth rate				
GDP growth rate				

Appendix III: List of Insurance Companies in Kenya

1. AAR Insurance Kenya Ltd
2. Africa Merchant Assurance Company Ltd.
3. APA Insurance Co. Ltd.
4. Apollo Life Assurance Co. Ltd.
5. British American Insurance Co. Ltd.
6. Cannon Assurance Co. Ltd.
7. Chartis Insurance Co. Ltd.
8. Capex Life Assurance Co. Ltd
9. CFC Life Assurance Co. Ltd.
10. CIC General Insurance Ltd
11. CIC Life Assurance Ltd
12. Continental Reinsurance Ltd
13. Corporate Insurance Co. Ltd.
14. Direct Line Insurance Co. Ltd.
15. East Africa Reinsurance Co. Ltd.
16. Fidelity Shield Insurance Co. Ltd.
17. First Assurance Co. Ltd.

18. General Accident Insurance Co. Ltd.
19. Gateway Insurance Co. Ltd.
20. Geminia Insurance Co. Ltd.
21. ICEA Lion General Insurance Co. Ltd
22. ICEA Lion Life Assurance Co. Ltd
23. Intra Africa Assurance Co. Ltd.
24. Invesco Assurance Company Co. Ltd.
25. Kenindia Assurance Co. Ltd
26. Kenyan Orient Insurance Co. Ltd.
27. Kenya Reinsurance Corporation Ltd.
28. Madison Insurance Co. Ltd.
29. Mayfair Insurance Co. Ltd.
30. Mercantile Life and General Assurance Co. Ltd.
31. Metropolitan Life Insurance (K) Ltd.
32. Occidental Insurance Co. Ltd.
33. Old Mutual Insurance Co. Ltd.
34. Pacis Insurance Co. Ltd.
35. Pan Africa Life Assurance Co. Ltd.

36. Phoenix of East Africa Assurance Co. Ltd.

37. Pioneer Assurance Co. Ltd.

38. Real Insurance Co. Ltd.

39. Resolution Assurance Co. Ltd

40. Resolution Insurance Co. Ltd

41. Shield Assurance Co. Ltd

42. Takaful Insurance Co. Ltd

43. Tausi Assurance Co. Ltd.

44. The Heritage Insurance Co. Ltd.

45. The Jubilee Insurance Co. Ltd.

46. The Kenyan Alliance Insurance Co. Ltd.

47. The Monarch Insurance Co. Ltd.

48. Trident Insurance Co. Ltd.

49. UAP Insurance Co. Ltd - General

50. UAP Insurance Co. Ltd - Life

51. Xplico Insurance Company Ltd