UNIVERSITY OF NAIROBI

SCHOOL OF COMPUTING AND INFORMATICS

A mobile based system to curb customer exploitation in insurance firms
(A case of a local Insurance Company, Kenya)

By

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A Research Project Submitted to the School of Computing and Informatics in
Partial Fulfillment of the Requirements of the Masters of Science Degree in
Distributed Computing Technology of University of Nairobi

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DECLARATION

I declare that this project is my original work and to the best of my knowledge, the work has not been submitted for any other award in any University.

Signature. _____   Date_____

Chelangat Scholastica

P53/86645/2016

This Project has been submitted in partial fulfillment for the requirement for the Award of a Master's Degree in Distributed Computing Technology of the University of Nairobi with my approval as the University Supervisor.

Signature: _____   Date_____

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DEDICATION

This project is dedicated to my dad Mr. Morugoiwo, my late Mum Mrs. Morugoiwo and not forgetting my beloved siblings. Your encouragement made this possible.

To my lovely husband your support, prayers and your encouragement, am forever greatful.

God bless all of you.

ACKNOWLEDGEMENT

This study was made possible due to the dedication of my supervisor support from my family and encouragement from my friends. I would like to extend my heartfelt gratitude to my project Supervisor Dr. CKC for regular guidance throughout this research.

I would like to acknowledge the significant impact and support in his continuous guidance and outstanding supervision, counsel, advice, support, patience and for continuously being available during research project period.

ABSTRACT

The purpose of this study was to establish a way in which customers seeking insurance products and services in Kenya can be protected from exploitation through use of a mobile based system. The study first explored the existing exploitation mechanism that customers seeking insurance products and services were experiencing. The study also identified the existing gaps not addressed by current ICT systems used by insurance firms in Kenya, and explore whether a system can be effective in curbing customer's exploitation. The study adopted a descriptive research design. The focus was on a local insurance company, in Nairobi. The study collected data though a questionnaire and interviews. The designed questionnaire was tested for reliability and validity so as to determine the weaknesses of the research instrument before going to the field to collect data. The data was analyzed using descriptive statistics and presented using percentages and frequency tables. The study found out that majority of the respondents indicated that they experienced cases of customers exploitation occasionally. The most common forms of customer exploitation were non-disclosure of insurance product information, mis-selling of insurance products and fraud where customers are duped by unscrupulous agents or sales people. The study found out that the insurance company had not put measures to protect customers from exploitation. Majority of the respondents revealed that a system can be effective in curbing customers' exploitation in insurance firms to a great extent. The study concludes that customer seeking insurance products and services are occasionally exploited by the brokers, agents, or sales persons. Some of the major cases of customers exploitation include non-disclosure of the information pertaining to the insurance product or service a customer is seeking for. The developed mobile based system was able to solve these challenges experienced by the customers. On the part of mis-selling, the mobile based system aids in the selling process, where once the agent enters in the details of the customer, and the product he or she is seeking, the premium is calculated automatically by the system. The customer also gets the details of the product/service he or she has signed up for immediately after the transaction is completed, via am SMS. It is also difficult for the agent or the sales person to dupe the customer or commit a fraud since the system can show the agent who served the customer; since the agent has to login first using his 'Agent ID', before serving the customer. It is therefore easy to know who conducted the transaction on the behalf of the customer. In addition, the mobile based system enhanced efficiency.

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LIST OF ACRONYMS AND ABBREVIATIONS

AKI   Association of Kenya Insurers

GDP   Gross Domestic Product

IAIS   International Association of Insurance Supervisors

ICT   Information and Communication Technology

IRA   Insurance Regulatory Authority

OECD   Organization for Economic Co-operation and Development

PwC   PricewaterhouseCoopers

SPSS   Statistical Package for Social Sciences

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Insurance markets are important in both the micro and macro-economies of most developed nations. At the micro-economic level, insurance facilitates risk-taking by both individuals and firms. Providing indemnification for losses increases the marginal productivity of capital by removing the need for holding large contingency funds, and in this way leads to a more efficient allocation of resources (Curak *et al.,* 2011). This supports risk-averse individuals in making large purchases such as real estate, and encourages innovation by firms in risk-producing activities (Tennyson, 2011). At the macro-economic level, insurance premium contributes to growth of gross domestic product (GDP) especially in developed countries (OECD, 2017). Insurance as a percentage of GDP is typically less in developing countries, but many of these markets are growing at a rapid pace. Insurance market development has been shown to be related to overall economic development, and is a driver of economic growth (Curak *et al.,* 2009).

The Insurance market especially in Africa is expected to grow since there is a deliberate move by the players in terms of improved regulations product development, and insurance education (AIB Capital, 2018). However, as far as trust goes, insurance companies are faring well. Globally, consumers trust insurance companies less than banks (Galatro, 2017). Studies have shown that many consumers do not understand even the most basic insurance language, nor have a clear understanding of how to choose a plan that's right for them. This leads to exploitation of consumers. Although some insurance companies may gain by exploiting consumers' lack of understanding, ambiguity will ultimately sacrifice customer loyalty. A study by Galatro (2017) shows that insurance companies offering trust-worthiness, support, patience, and technological versatility are most appealing to consumers.

The insurance intermediaries are an important source of information for consumers, and a potential remedy to consumer information disadvantages. However, intermediaries are

also in a position to exploit consumers' lack of information for their own financial gain (Tennyson, 2011). To protect consumers from high-pressure sales tactics or mis-selling, 48 of the 73 countries reporting data to the International Association of Insurance Supervisors (IAIS) mandate a "cooling off period (within which the policyholder may withdraw from the contract) for life insurance policies; 25 countries mandate a cooling off period for non-life policies (IAIS, 2010).

Consumer lack information about insurance transactions leads to the potential for insurer or agent misrepresentation of products or manipulation of consumers. If consumers lack confidence that insurers provide products and services that meet quality expectations, consumer willingness to purchase will be greatly reduced. For these reasons, while legal and regulatory restrictions on insurers' market conduct are important to protect consumers and promote the efficient functioning of insurance markets (Tennyson, 2011) technological innovations in product/service design and delivery are essential to meet customers' expectations of simplicity and foster transparency (PwC, 2012). Customers are demanding their interactions regarding personal data, claim history and billing issues and that they should be handled professionally and quickly.

Insurance industry in Kenya is framed by the Insurance Act No. 487 of 1984, which was amended seven times between 2003 and 2014 and revised in 2013 which covers registration assets liabilities solvency and investments inspection rates claims assignment brokers, reinsurance and other aspects. In recent years' insurance penetration and accessibility have been improving steadily in Kenya. Currently the industry has 51 players, 8,698 agents and 216 brokers. The overall insurance penetration in Kenya as at 2017 was 2.71 per cent which is a drop from 2.75 per cent in 2016 (AKI Report, 2017). The uptake of insurance products in Kenya still remains low as compared to other developing economies in Africa such as South Africa whose penetration is 13.7 per cent and Namibia which is at 7.5 per cent. However, there has been a raft of legal changes in the industry aimed at making the market more robust, including the ongoing implementation of risk-based capital(Muchiri, 2018).

The establishment of Insurance Regulatory Authority which ensures proper product delivery handles customer complaints and regulates the product pricing has also highly boosted the growth of the industry (Muchiri, 2018). The Ire's 2013-18 strategic plan has three goals' promoting consumer education and protection' promoting an inclusive competitive and stable insurance industry; and offering quality customer service. The regulators' priorities include improving risk management along with widening access and reaching new audiences including though careful use of technology and improved oversight (Koloba, 2018).

Insurance customers are increasingly demanding simplicity transparency and speed in their transactions with businesses including insurance agents. The emergence of online and mobile technology is continuing to fuel the change in customer expectations (PwC, 2012). Customer satisfaction with a company's services is often seen as the key to a company's success and long-term competitiveness. The insurance industry is getting a lot of attention as Customer satisfaction in the context of relationship marketing customer satisfaction is often viewed as a central determinant of customer retention (Covelo & Trapani, 2012).

As revealed by AKI Report (2017), the Kenya's insurance sector plans to use technology and the digital revolution to push growth and deeper penetration since customers are becoming more discerning and therefore could hugely shape how insurance operate in the future. Innovation continues to be the only way for insurers to stay relevant in the ever-evolving consumer market. A rapid increase of smartphones and other software development tools has been seen as the emergence of innovative digital platforms that offer users and potential client's better information and transparency where important data is concerned. Technology has unearthed numerous opportunities that are not only exciting to consumers but also solving a number of challenges.

1.2 Problem Statement

One of the challenges facing the insurance firms in Kenya is over pricing of insurance products and services by brokers and agents as they target on grasping a big percentage of the money before its gets to the service providing company. There are also incidences of fraud and abuse of consumers. A research carried out by insure tech company Basmati (2019) revealed that almost 40 percent motor vehicle insurance policies could be fake despite the customers having done payments for the covers. The research showed that 22 percent of motor vehicle insurance policies could not be verified while another 12 percent of the covers simply did not exist in the books of the underwriters despite full payment for the cover and motorists having cover certificates. About 3 percent of the policies were reported to be unpaid and premiums not remitted to the insurance company despite the holders having insurance stickers and 1 percent of the policies were registered as 3rd party covers despite the clients paying for and bearing certificates for comprehensive covers. This problem has escalated because most of these transactions are done manually and policy documents were not given to the clients immediately due to delays in processing them. This exploitation of consumers has led to stagnation as more people shy off from insurance especially those who are clueless on how to directly get to the company (Kwach, 2018).

According to Hussein (2014), these challenges of consumers' exploitation can only be met with a high-performance technological platform service which will not only bring new efficiencies but also better experiences for consumers. A technological system is therefore critical in increasing internal efficiencies and improving customer service hence reducing the customers' complaints that arise from the customer exploitation by agents and brokers.

This study therefore sought to find out the existing exploitation mechanism that customers seeking insurance products and services experience. It also sought to identify existing gaps not addressed by current systems used by insurance firms in Kenya. In addition, the study sought to design a system to address existing gaps which will be implemented and tested with selected users.

1.3 Objectives

The main objective of this study was to design a mobile based system to address existing gaps not addressed by current ICT systems used by insurance firms in Kenya: A Case of a local Insurance Company in kenya.

The study was guided by the following specific objectives:
  i.   To find out the existing exploitation mechanism that customers seeking insurance products and services experience.
  ii.   To identify existing gaps not addressed by current ICT systems used by insurance firms in Kenya.
  iii. To design a system to address existing gaps in insurance firms in Kenya.
  iv.   To implement and test the system to see how useful it is from selected users.

1.4. Research Questions

The study sought to answer the following research questions:
  i.   What are the existing exploitation mechanism that customers seeking insurance products and services experience.
  ii.   What are the existing gaps not addressed by current ICT systems used by insurance firms in Kenya.
  iii. Can designed system address existing gaps in insurance firms in Kenya.
  iv.   Implement and test the system from selected users in curbing customers' exploitation.

1.5. Justification & Rationale of the Study

This study was informed by the challenges facing the customers in the insurance industry in Kenya. Researches for example by Gelato (2017) have shown that consumers are exploited due to consumer lack of insurance information. Most do not understand even the most basic insurance language, or do not have adequate information concerning a certain policy or product they want. As a result, unscrupulous brokers and agents have taken advantage of this to over price insurance products and mis-selling of products. In a country where insurance penetration is at 2.71%, customer satisfaction is key in order to attract new customers and enhance growth of the industry. This study sought to introduce a technological solution to help to curb customers' exploitation in insurance firms in Kenya.

Besides, the study is expected to be of value to the following stakeholders. One is the insurance firms in Kenya. The firms would get enlighten and get insight of how a mobile based system can help to solve some of the challenges that their customers' experience when seeking to buy insurance services and products. The study would therefore inform future decisions on how the insurance firms interact with their customers and how they deliver their products and services to the customers.

The study is also expected to be of significance to the policy makers and the regulator – the Insurance Regulatory Authority (IRA) which is a regulatory body for insurance industry. The body is mandated to ensure consumers of insurance services are protected. As such this study may benefit them as they will get enlighten on how a system can help to curb customers' exploitation which leads to stagnation in growth of the sector as some people shy off from insurance.The study may also be of value to the researchers and scholars as it will add value to the existing body of knowledge systems in curbing of customers' exploitation. This study will also be a source of reference and a basis for future research on the subject matter.

1.6. Scope of the Research Study

The study was conducted in insurance company in Kenya, with a focus on a local insurance company. The Insurance Company is one of the main players in the Kenyan insurance industry' The company was first listed on the Nairobi Securities Exchange (NSE) in 2012. This made it the 6th insurance company to be listed on the Nos and the 60th company to be listed on the Nos overall. The local Insurance Company is a big player in the insurance sector; its therefore in a better position to give reliable information on the challenges that insurance consumers experience, and how a mobile based system would help curb customers exploitation in the insurance industry. The study targeted insurance customers, marketing staff as well as ICT staff, who interact with customers who are seeking products/services from the company, or lodging a complaint.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review. It presents the empirical literature review which discusses past studies by other authors on the research objectives, which helps identify the research gaps.

2.2 Overview of Challenges Experienced by Customers in Insurance Industry

As argued by Galatro (2017) the insurance industry is one of the least trusted and it is also one with the fewest touch points with its customers. If you combine this with the low value Millenials attribute to insurance, it becomes clear that the industry need to be more attractive and look at new ways to engage with clients and distribute products. Anderson (2017) asserts that many of the customer experience challenges faced in the industry are due to the unique situation whereby physical goods are not being sold. In the insurance industry, "Consumers are buying a promise that they'll [the insuranceq agency] make me whole if I suffer a financial loss, be it a car accident, or fire in my house, or I get sick and go to the doctor." But, while the challenges might be unique, Anderson thinks that the challenges faced by the insurance industry in providing a good customer experience are not so different from the challenges other industries face. He says that it's important insurance focuses on, "changing consumer expectations."

The proliferation through which customers want to interact with providers is another significant challenge for the sector. Findings from the Eptica Multichannel Customer Experience study, published in June 2014, revealed that insurers are failing to engage consumers on digital channels, with just 20% responding to questions asked on Twitter and via email, and only 30% answering questions satisfactorily. Insurers need to serve their changing client base via the modes of communication the clients expect and are comfortable with. There is strong evidence that the insurance industry is lagging behind other sectors in terms of adopting technology to improve the customer experience.

A study by Kiptum (2017) established that lack of clear disclosure of insurance product information by insurance agents or insurance brokers led to exploitation of customers. The study further revealed that that lack of knowledge on particular product or range of options available and the provisions to safeguard consumer rights that are standard contract provision like mediation or arbitration hampered the achievement of equity in resolving consumer complaints and hence the unintended discrimination in resolution of customer complaints. The study recommended that insurance companies' agents or brokers should properly increase on consumer awareness on insurance products by equipping insurance policy holders with clear knowledge on insurance products. The insurance companies should also ensure that their insurance brokers or agents explain to their customers on the scope of benefits of their insurance covers.

In another study, Oketch (2014) examined the challenges of customer retention by Madison Insurance Company limited in Kenya.This study was conducted on senior management staff of Madison Insurance Company.The study found out that the main challenges facing the customers in insurance firms were internal and external.The internal challenges still remained claims processes and notices management. Most of the challenges were externally influenced through competition, pricing, customer expectations, nature of customers, trust among others.These findings indicate the customer retention is still a problem in the insurance industry which calls on the stakeholders to review some of the challenges to assist the industry grow.

2.3 ICT System Being Used by Insurance Firms in Kenya

Kenya's insurance industry has undergone an overhaul over the years. The government has introduced a series of much-needed changes designed to clamp down on unethical and irresponsible business practices and to protect those who buy insurance (Popat, 2017). In seeking to protect consumers, the Authority has over time continued to receive and address complaints from consumers of insurance services. In January 2013, Kenya's Insurance Regulatory Authority (IRA) unveiled its 2013 – 2018 strategic Plan. This set out three clear goals: Promoting consumer education and protection; promoting an inclusive,

competitive and stable insurance industry, and offering quality customer service. The consumer protection policy introduced by IRA demands that insurance providers demonstrate that they treat customers fairly at every stage of their relationship. As part of this, from the beginning of 2017, insurance companies have had to complete a self-assessment tool to help the IRA gauge how fairly they treat customers. This includes assessing the level of information and advice given to customers, as well as suitability of products and ease of making a claim.

On the whole, these complaints call for a broad based framework for ensuring consumers of insurance services are protected and a number of measures have been put in place by the Authority and these include: i). Enforcement of the Insurance Act which has various provisions for protecting the consumer of insurance services; ii). issuance of guidelines to the industry and enforcing compliance; iii). Establishment of Consumer Protection Department to broadly handle consumer issues arising from an insurance contract. The department receives and handles complaints lodged by members of the public against all members of the insurance industry including insurance companies, Agents, Brokers and Medical Insurance Providers and all other service providers. A policyholder if dissatisfied with a decision of an insurance company, can report to IRA for redress; iv). Public Education- Recognizing that there is generally a serious lack of understanding of insurance services, the Authority embarked on a rigorous program of educating consumers of insurance services on the need and benefits of insurance. The campaign coordinated mainly through the consumer education Department targets all cadres of insurance consumers from individuals, businesses and corporate. Lastly, there is establishment of an Insurance Fraud Investigations Unit in collaboration with the Kenya Police Service. The Unit investigates all forms of fraud in the Insurance industry and as a policyholder, you are encouraged to report any suspected cases of insurance fraud to the Unit.

Kiptum (2017) assessed the effect of insurance features on consumer protection in Kenya's insurance sector. Then aim of the study objectives was to; examine the extent of consumer awareness on consumer protection in Kenya insurance sector; determine the effect of

insurance regulatory framework on consumer protection in Kenya insurance sector; assess the extent of the effect of disclosure of insurance product information on consumer protection in Kenya insurance sector and establish the effect of equitable and fair treatment of consumers on consumer protection in Kenya insurance sector. The study adopted a descriptive survey research design and the target population was a total of 700 consumer's documented insurance complaints in the year 2014. The study collected documented consumer complaints reported from 42 insurance companies that had complaints made against them. The study findings indicated that knowledge on consumer education is low, that the insurance framework as currently is affords consumers little protection, product coverage and disclosure is still at the nascent stage and that consumers are not accorded fair treatment by the insurers. The study concluded that the consumer awareness and hence protection in Kenya's insurance sector was low due to low level of knowledge on insurance matters. This affects consumers' ability to enforce their contractual rights. The customers were not aware of the provisions in the Insurance Act and the Consumer Protection Act. Lack of awareness by insurance consumers on such information affected consumers' protection in Kenya's insurance firms.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methods and procedures used to execute the study. It entails the research design target population data collection instrument and procedure. It also outlines how data was analyzed and presented to answer the objectives.

3.2 Research Design

The study adopted mixed methods research approach. It involved collecting, analyzing, and interpreting quantitative and qualitative data which informed the development of a mobile based system. The research methodology adopted to achieve the objectives of the study, is outlined in Figure 1.
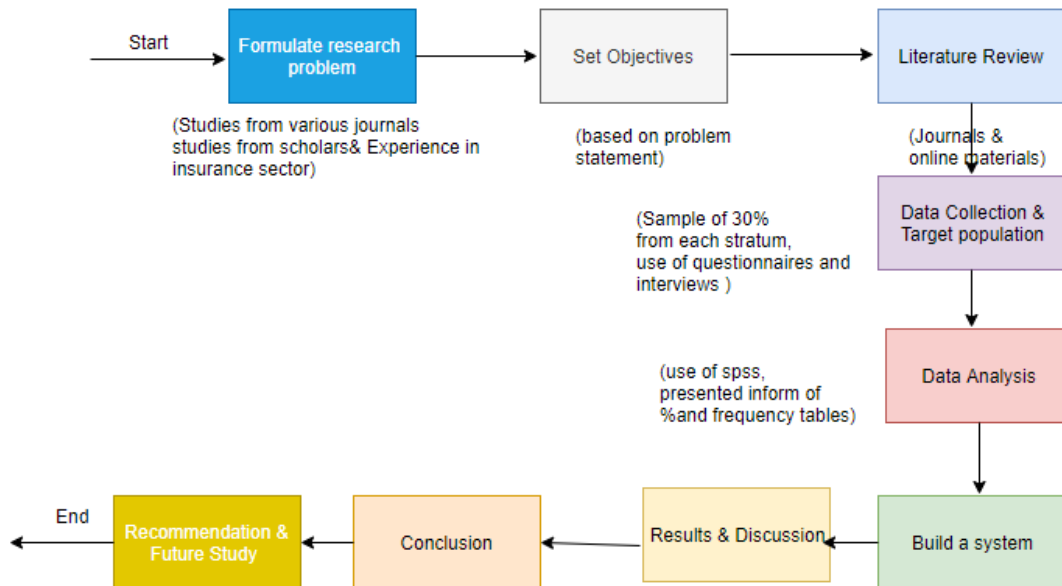

Figure 1: Research Design

3.3 Target Population

The target population consisted of staff in marketing and ICT department and customers in a local Insurance Company, in Nairobi. The population included both the management staff and support staff. The distribution of the population is as shown in Table 3.1.

Table 3.1: Study Population

Population Categorization	Number
Customers	46
Marketing Staff	84
ICT Staff	24
Total	**154**

3.4 Sampling Technique and Sample Size

Stratified random sampling technique was used to select the sample. Stratified proportionate random sampling technique produce estimates of overall population parameters with greater precision and ensures a more representative sample is derived from a relatively homogeneous population. Stratification aims to reduce standard error by providing some control over variance (Latham, 2007). The study grouped the population into two stratas, that is, insurance Customers, Marketing Staff and ICT Staff. Kothari (2011) suggests that a sample size of at least 30% is considered acceptable. Using this method, the study therefore picked a sample of 30% from each stratum, to give a sample size of 46 respondents as shown in Table 3.2.

Table 3.2: Sample Size

Staff Category	Population Size	Sampling	Sample Size
Customers	46	30%	14
Marketing Staff	84	30%	25
ICT Staff	24	30%	7
Total	**154**		**46**

3.5 Data Collection

The study collected primary and secondary data. The secondary data was obtained from analysis and review of books, journals, published papers and other available literature on the problem under study. The primary data was collected through a questionnaire.

3.5.1 Questionnaire

The questionnaire helped collect primary data. It had both closed and open ended questions whereby the closed ended questions enabled the researcher to collect quantitative data while open ended questions helped collect qualitative data.(Refer to Appendix i). The reason for using the questionnaire for study was the collection of the primary data that is assembled and prepared specifically for the study (Zikmund, 2010). The information was collected from the respondents through personal administration by the researcher with the help of research assistants who were trained on the questionnaire and on how to administer the questionnaire.

The data was collected from the staff in a local Insurance Company in Nairobi. The researcher first sought permission and consent to collect data from the management of company. Consent was sought through use of a letter for data collection which was obtained from University. After permission was granted, appointments were made with the respective respondents. The researcher administered the questionnaire through personal administration of the questionnaire which gave the researcher a chance to interpret and clarify questions in the

questionnaire to the respondents. Drop and pick later method was also used in few cases where the respondents could not answer the questionnaires immediately they were presented to them. This ensured that the response rate was high.

3.5.2 Interviews

Interview is a conversation between two people (the interviewer and the interviewee) where questions are asked by the interviewer to obtain information from the interviewee. (Refer to Appendix ii). The interviews were conducted on the Marketing staff and ICT satff. The researcher conducted interviews to enquire whether there existed a system, to protect customers from exploitation and help customers' access vital information from the company.

3.5.3 Pilot Study

A pilot study of the questionnaire was conducted prior to the actual data collection to detect weakness in design and instrumentation. Winter and Dodou (2012) noted that a pilot study is often used to pre-test or try out a research instrument to determine the reliability of the research instrument. Mugenda (2008) indicate that a pilot study sample size of 1% to 10% is a reasonable number to consider enrolling in a pilot study' Based on this argument, the pilot study sample size was 10 respondents who filled the questionnaire to test for the reliability. The purpose of pre-testing was to correct inconsistencies arising from the instruments to ensure that the instrument measure what was intended.

3.5.3.1 Validity of the Questionnaire

Validity indicates the degree to which an instrument measures the construct under investigation (Saunders *et al.,* 2012). For a data collection instrument to be considered valid the content selected and included must be relevant to the need or gap established. Internal validity of the questionnaire was established by the research and supervisor reviewing the items. Before the actual study, questionnaire was discussed with supervisors. The feedback from the supervisors and the experts helped in modifying the instruments. This ensured that the questionnaire collected reliable information and also improves the response rate.

3.5.3.2 Reliability of the Questionnaire

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials' Reliability test measures the internal consistency of the questionnaire (Wong, Ong & Kuek, 2012). An instrument is reliable when it can measure a variable accurately and obtain the same results over a period of time. Reliability of the questionnaire was tested by Cronbach's alpha test with the help of Statistical Package for Social Sciences (SPSS). A co-efficient of above 0.7 implied that the instrument is sufficiently reliable for the measurement (Tavakol & Dennick, 2011). The reliability test results helped the researcher to correct inconsistencies arising from the instruments which ensured that they measure what it was intended and reliable.

3.6 Data Analysis and Presentation

The data collected through the questionnaire was edited, coded, entered into SPSS Version 22 which also aided in the data analysis. The data was analyzed using descriptive statistics. The descriptive statistics used included frequency distribution tables and measures of central tendency (the mean), measures of variability (standard deviation) and measures of relative frequencies. The analyzed data was presented using percentages and frequency tables.

3.7 The System Development Methodology

A system development methodology refers to the framework that is used to structure, plan, and control the process of developing an information system. A methodology can also include aspects of the development environment, model-based development, computer aided software development, and the utilization of particular frameworks. The model used is the prototyping development model. The development process was done through Prototyping model. The Prototyping Model is a system development method (SDM) in which a prototype (an early approximation of a final system or product) is built, tested, and then reworked as necessary until an acceptable prototype is

finally achieved from which the complete system or product can now be developed.The components of the prototyping model has been described in detail. Prototyping Model is shown in Figure 2.
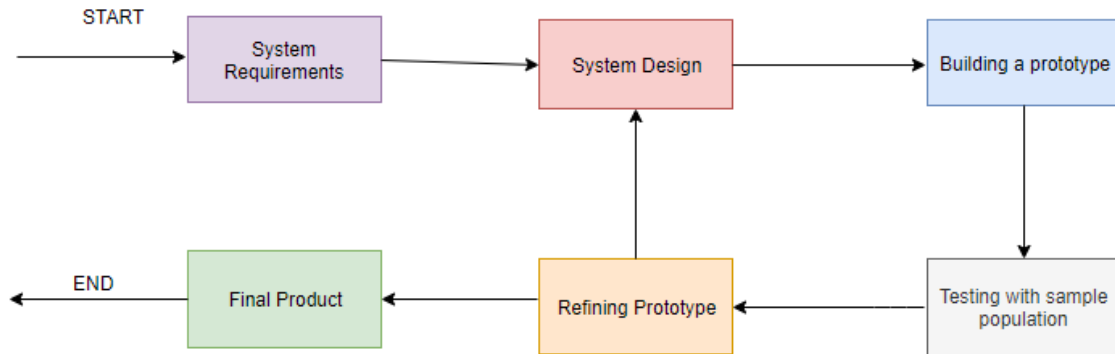
Figure 2: Prototyping model

3.7.1 System Requirements

The requirements for conducting this study involved selecting one of the insurance product to be used in the study, the insurance products are many and for purpose this study The researcher chose one of the product, based on the studies done it is one of the most major product which sales persons take advantage to exploit the customers.

3.7.2 System Design

It involves describing desired features and operations of the system including screen layouts, user interfaces, flow charts etc. It majorly entails the researchers creativity.

3.7.3 Building a Prototype

The prototype of this study was build based on the system requirements and design. The Android was run on android studio which is the IDE. The researcher used Java and xml programming languages, whereby java handles the logic part of the program while xml controls the screen format and appearance of the forms, buttons etc. The researcher used the spring tool suite which is the IDE for rest API based on java programing. It used the following HTTP methods GET, PUT, DELETE and POST. The researcher hosted the system using tomcat in a shared cloud server.

3.7.4 Testing with Sample Users

The prototype was tested with a sample of 13 users, which entails insurance customers, ICT staff and Marketing Staff. Kothari (2011) suggests that a sample size of at least 30% is considered acceptable. Using this method, the study therefore picked a sample of 30% from each stratum, to give a sample size of 13 users. 4 users from customers, 7 users from marketing staff and 2 users from ICT staff.

3.7.5 Refining Prototype

In this stage, changes were made to the prototype based on the feedback from the supervisor and the users of the prototype. My supervisor argued that the system should be able to generate the reports. The users I tested with the prototype appreciated the sms received by the customer and that I should add more information since they were very vital information and most customers are not aware about.

3.7.6 Final Product

The final product was a mobile based system, used by agents whereby customers can sign up for an insurance policy. The customer gets the information of the policy details via sms. In the backend system insurance company is able to view the customer details and the insurance product he or she has purchased as well as the agent who sold the insurance product.

Lastly the agents gets reports of customer details who have signed up for the insurance policy.The final product is shown in figure 3
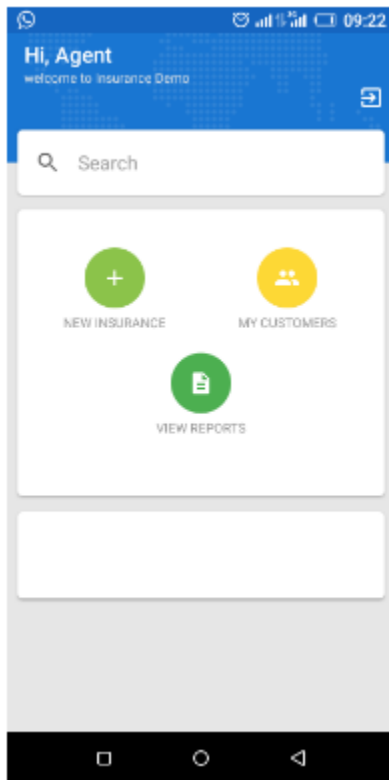

Figure 3: The Final Product

3.8 System Architecture
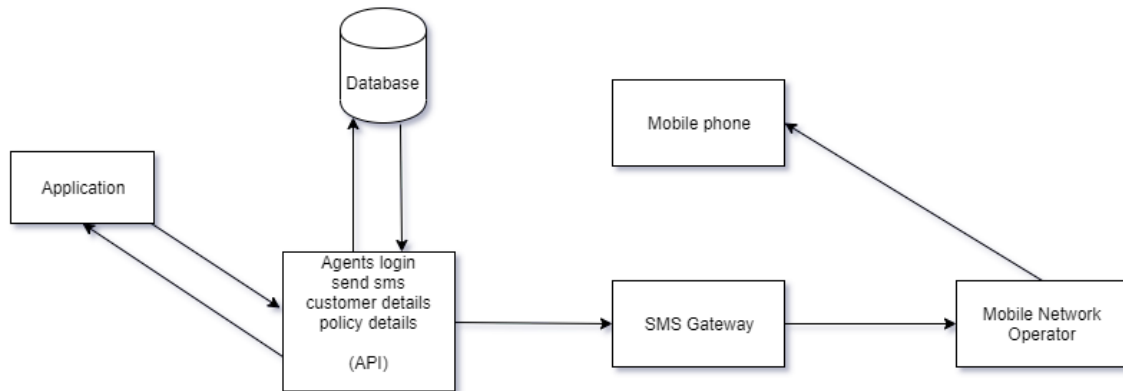
Figure 4: System Architecture

The system Architecture of this study entails the following components in detail.

3.8.1 Mobile based System

Application architecture is a set of technologies and models for development of fully-structured mobile programs based on industry and vendor-specific standards. As the researcher develop the architecture of the app, one considers programs that work on wireless devices such as smartphones and tablets. The application is running on the android studio which is the IDE on android operating system based on java programming language for mobile devices. Application components are the essential building blocks of an Android application. These components are loosely coupled by the application manifest file *AndroidManifest.xml* that describes each component of the application and how they interact. It also acts as a map of the application.

3.8.2 API

API is a set of subroutine definitions, protocols and tools for building application software. It makes it easier for developers to use certain technologies in building the application by using certain predefined operations. The researcher used an IDE called spring tool suite which is an eclipse based development environment customized for developing applications.

3.8.3 Database

Database design is the organization of data according to a database model. The researcher determines what data must be stored and how the data elements interrelate. With this information, the researcher can begin to fit the data to the database model. Database design involves classifying data and identifying inter-relationships. Database type used in this study is mysql DB.

3.8.4 SMS Gateway – Africastalking

Africa's Talking is a mobile technology company that offers developers integrated mobile APIS to simplify the processes involved in interacting with SMS/ USSD / Voice and Airtime. In order to use the API, one will need to obtain a username and a token that you can then plug in to your application.

The Application sends a request to the API, to add customer details in the database. Once the customer details has been added successfully. The app sends a request to API to get the name and mobile number from the database, the Sms gateway authenticates and sends the message.

3.9 Overal System Flow Chart
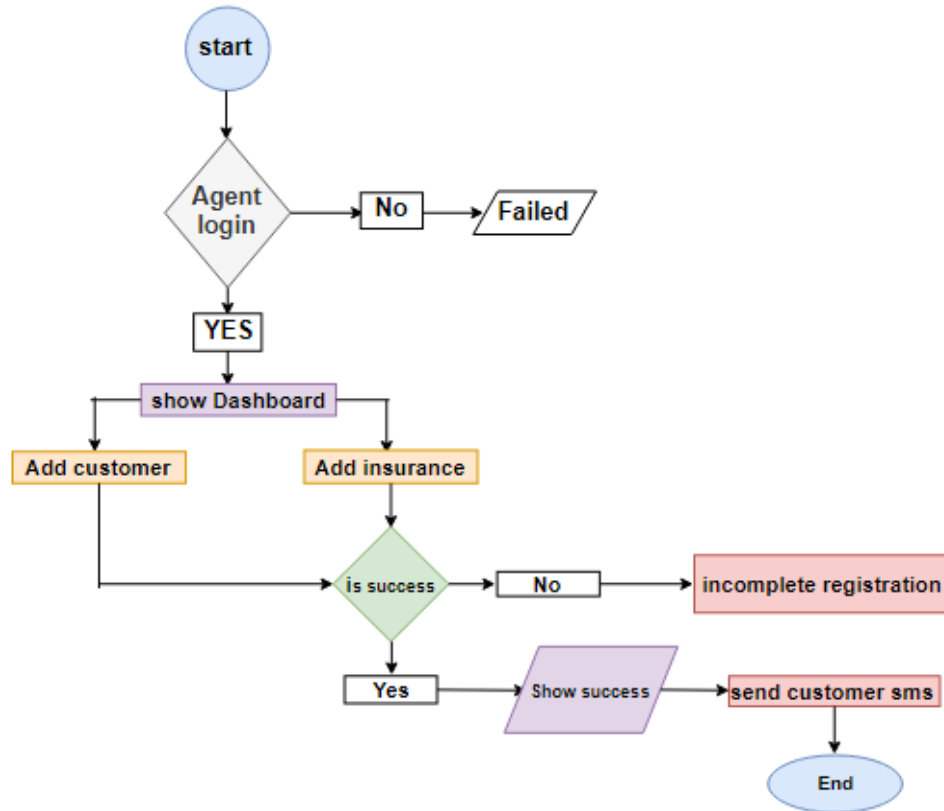
Figure 5: Overall System Flow Chart

A system flowchart documents how a system works, it provides a logical diagram of how the system operates. It represents the flow of documents and the operations performed in a data processing system. A system flowchart also reflects the relationships between inputs, processing and outputs. It represents in detail, the logical operations to be performed within the system for transforming the input into output. Program flowcharts are quite helpful and constitute an important component of documentation for an application.

In this study the mobile application system flow design is to be used by the insurance agents whereby the customers sign up insurance policy using the application.

The agent first login by entering the username and password, this is to verify that the agent is a legit registered sales person from the insurance company.

The agent then proceeds to register the customer in the database if he or she exists then it gives a message that the customer exists proceed and select the customer from the database.

Once the customer has been selected the agent input the policy details for motor insurance motor vehicle registration number, make, model and apply the approved standard rate from the system for motor insurance policy, then submit.

Lastly, the customer gets the sms for the insurance policy signed up for which entails information about the policy i.e. 10% discount on renewal, excess waiver of 1% of the sum assured in case of a risk the company takes up the whole risk, pay bill number 123456, in case of a claim call phone number 0703099000.

3.9.1 Database Design

Database design is the organization of data according to a database model. The researcher determines what data must be stored and how the data elements interrelate. With this information, the researcher can begin to fit the data to the database model. Database design involves classifying data and identifying interrelationships. There were two major table relationship,one to many relationship, agents to customers, meaning one agent can have many customers.There is also one to one relationship,product to car details meaning one car can only have one product.Database type used in this study is mysql DB, below is the table list.

Table List
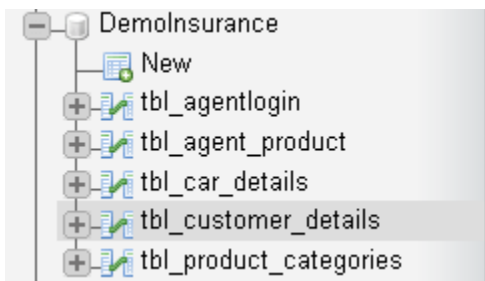
tbl_agentlogin > Holds all Agent Login Details

tbl_agent_product > Holds Supported Product e.g Motor Insurance

tbl_car_details > holds data for all new Motor Insurance requested by Customers

tbl_customer_details> Holds Data for all customers

tbl_product_categories > Holds Data for product_categories and Rate e.g Commercial, Private

CHAPTER FOUR
RESULTS AND DISCUSSION

4.1 Introduction

This section presents results of the existing system which outlined the existing gaps not addressed by ICT systems. It also discusses in detail forms of customer exploitation mechanisms as shown in Table 4.2.2 which informed the development of a mobile based system.The study proceeds to outline the outcome of the new developed system, as well as describing how the existing ICT gap was addressed by a mobile based system.

4.2 Customer Exploitation Mechanisms in Insurance Firm

In this section, the study sought to establish ways in which customer were exploited, either by brokers, agents or sales persons, when seeking insurance products and services. To achieve this objective, the respondents were asked to indicate how frequent they experience cases of customers' exploitation, and the forms of exploitation customers' experience.

4.2.1 Frequency of Customers Exploitation
The respondents were asked to indicate how frequent they experienced cases of exploitation of customers when seeking insurance products and services from brokers and agents, sales people. The results are presented in Table 4.0

Table 4.0 Frequency of Customers Exploitation

Frequency	Frequency	Percentage
Very Frequently	3	7.9
Frequently	6	15.8
Occasionally	21	55.3
Rarely	8	21.0
Never	-	-
Total	**38**	**100.0**

The study results show that majority of the respondents (55.3%) indicated that they experienced cases of customers' exploitation occasionally while 21% revealed that they rarely experienced such cases. However, 15.8% of the respondents reported that they experienced cases of customers' exploitation frequently while 7.9% indicated very frequently.

4.2.2 Forms of Customers Exploitation mechanisms

The respondents were asked to indicate the extent to which customers experienced various forms of exploitation when seeking insurance products and services. Means and standard deviation were used to interpret the results using scale of 1-5, Likert scale where 1 is not at all, 2 is small extent, 3 is moderate extent, 4 is great extent and 5 is very great extent. The results are presented in Table 4.1

Table 4.1 Customers Exploitation Mechanism

Customer Exploitation	N	Mean	Std. Deviation
Non-Disclosure of insurance product information	38	4.42	0.683
Over pricing of insurance products and services by brokers and agents	38	3.37	0.786
Mis-Selling of insurance products/ policy	38	4.18	0.801
Fraud - duping of customers by unscrupulous agents or sales people.	38	4.08	0.749

The study findings in Table 3.5 show that the respondents indicated that customers were exploited to a great extent through non-disclosure of insurance product information (mean score = 4.42), and through mis-selling of insurance products (mean score =4.18). The respondents further indicated that customers seeking insurance products were also duped to a great extent by unscrupulous agents or sales people (mean score =4.08). However, the respondents indicated that customers exploited through over pricing of insurance products and services to a moderate extent. This means that overpricing was not a common form of exploitation as compared to non-disclosure of information, mis-selling and fraud.

On the part of the customers, they reported that fraud in motor insurance is very perverse. One of the customer indicated that he had an accident and when he went to claim, he was told that the insurance company did not have his details in their system, despite having paid for the premiums. Another customer with a broken windscreen could not get compensated despite paying for a comprehensive cover for a whole year. This shows that the customers were exposed to fraud when seeking insurance products such as motor insurance and especially when it is through intermediaries – brokers, agents.

4.3 Existing Gaps Not Addressed by Current ICT System

In this segment, the researcher intended to establish whether the company had employed any strategies, techniques or systems to protect customers from exploitation by brokers, agents, and sales persons.

On whether there existed customer protection methods, show that all the respondents 38 (100%) revealed that their company had put measures to protect customers from exploitation by brokers, agents, or sales persons. The respondents stated that customers are given a platform (through the website) to report any cases of fraud or exploitation. The only existing system was the company website where the customer could report or raise concern in relation to exploitation or duping by an agent or sales person.

4.3.1 Existence of system to Protect Customers

The researcher was interesred in finding out whether the insurance companies had put measures to protect customers from exploitation by brokers, agents, or sales persons. The findings are presented in Table 4.2

Table 4.2 Measures to Protect Customers

Responses	Frequency	Percentage
Yes	38	100.0
No	-	-
Total	**38**	**100.0**

The study results in Table 3.6 show that all the respondents 38 (100%) revealed that their company had put measures to protect customers from exploitation by brokers, agents, or sales persons.

The respondents stated that customers are given a platform (through the website) to report any cases of fraud or exploitation. The company has a customer service department which handles queries from the customers. The respondents further indicated that customers would also report to IRA if they felt that their complaints are not handled properly.

4.3.2 Existence of a System

Then respondents were asked to indicate whether there existed a system, to protect customers from exploitation and help customers' access vital information from the company. The findings are presented in Table 4.3

Table 4.3 Existence of a System

A System, Where:	Yes		No	
	F	**%**	**F**	**%**
Customers can get policy premium to be paid	-	-	38	100
Customers can access mpesa pay bill as well as policy attachment document	-	-	38	100
Customers can access to information on insurance products and services signed up for before obtaining the cover	-	-	38	100
Customer can get customer service support especially on claim process	-	-	38	100

The study results show that all the respondents 100% (38) revealed that the company did not have a system where customers could get customer service support especially on how to go about claim process. They also responded that the customer could access information on insurance products and services signed up for after obtaining the cover which was inform of a policy document. One could get the policy document towards expiry of the policy due to delay the customer fail to know the information about the policy.
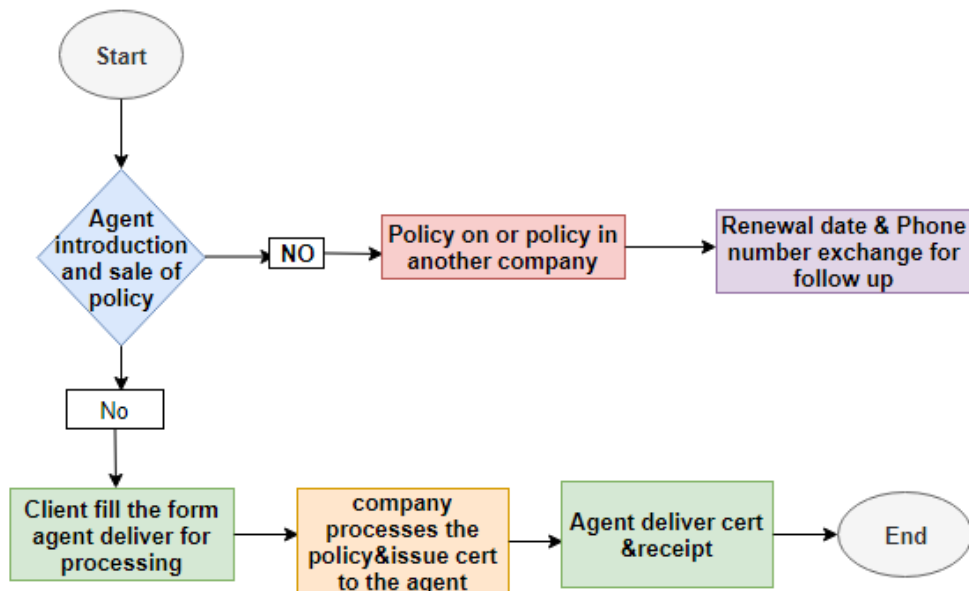
4.4 Existing ICT System

Figure 6: Existing overall System Flow chart

In the current system, here is the description of the flow. The agent introduces him or herself in terms of the company they work for and the insurance product and services they market. The customer will respond either yes or no, no in that there is another policy running in the same insurance or another company. The agent will insist to have the customer mobile and the renewal date of the policy. In the event the customer gets convinced to take the policy. The agent will quickly remove the policy document and ask the client to sign first then key in the motor insurance policy details. The agent will ask the client for money to go and process the cover in the insurance, and that he or she will deliver the cover.

4.5 Outcome from the System

4.5.1 SMS Gateway

The developed system was able to solve customer exploitation mechanism. On the part of mis-selling, the system has list of products that the customer is seeking, and the agent or the sales person have to just select the product the customer is buying enter in the details of the customer, and the premium is calculated automatically by the system. The customer also gets the details of the product/service he has purchased for immediately after the transaction is completed, via am SMS. It is therefore difficult for the agent to mis-sell a product since the product details including the pricing are generated automatically by the system.

4.5.2 Reports from the System

The system also generates reports, on customer details and the policy signed up, policy elapse period hence it is difficult for the agent or the sales person to dupe the customer or commit a fraud since the system can show the agent who served the customer; whereby the agent has to login first using his 'Agent ID', before serving the customer. It is therefore easy to know who conducted the transaction on the behalf of the customer. In addition, the systems enhance efficiency. The process is quicker as compared to manual processes which have been used over time by the insurance firms/agents.

4.6 Results from the System Sample Population Test

The study used a sample of 10 to test how useful the system was to the customers and the extent to which the automated security system was effective in curbing customer exploitation in insurance firms in Kenya. So of the aspects tested were accessibility, ease of use, efficiency and accuracy.

4.6.1 Accessibility of the System

The study was interested in knowing the extent to which the system was accessible. The findings are presented in Table 4.4.

Table 4.4 Accessibility of the system

Responses	Frequency	Percentage
Easily Accessible	13	100.0
Not Easily Accessible	0	0
Total	**10**	**100.0**

The results show that all the respondents (100%) indicated that the system was easily accessible. The respondents indicated that the system/ the App was easy to access since it could be accessed through a mobile phone device; which means therefore the system was accessible to the user, wherever and all the time (24/7).

4.6.2 Ease of Use of the System

The respondents were asked to indicate how easy the system/ App was easy to use. The findings are presented in Figure 7
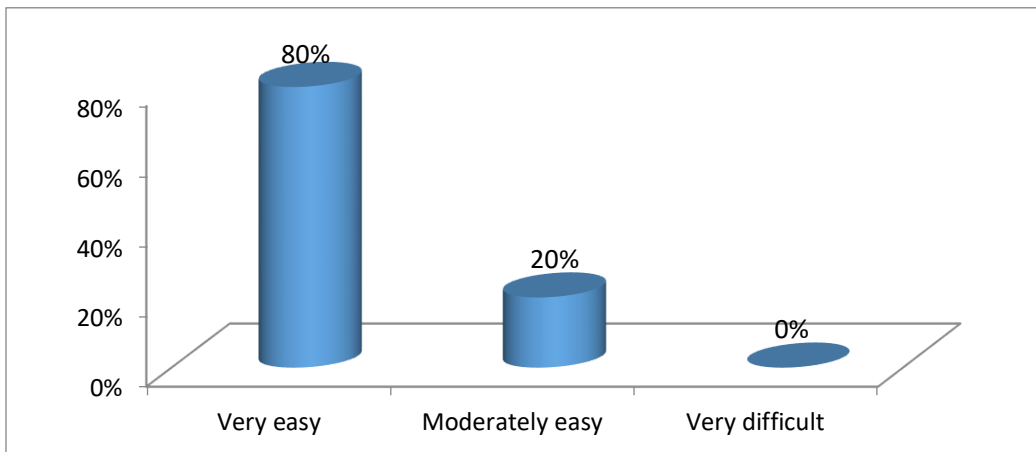
As pointed out in Figure 4.1, 80% of the research research participants revealed that the developed system was very easy to use while 20% of the respondents indicated that the system was moderately easy.

The respondents explained that explained that the system was easy to use since it only required the insurance agents to login using their Agent ID, and then key in customers' details and the product the customer have signed up for and the amount paid, as shown in the App Interfaces Screenshots are presented in figure 8 and 9.
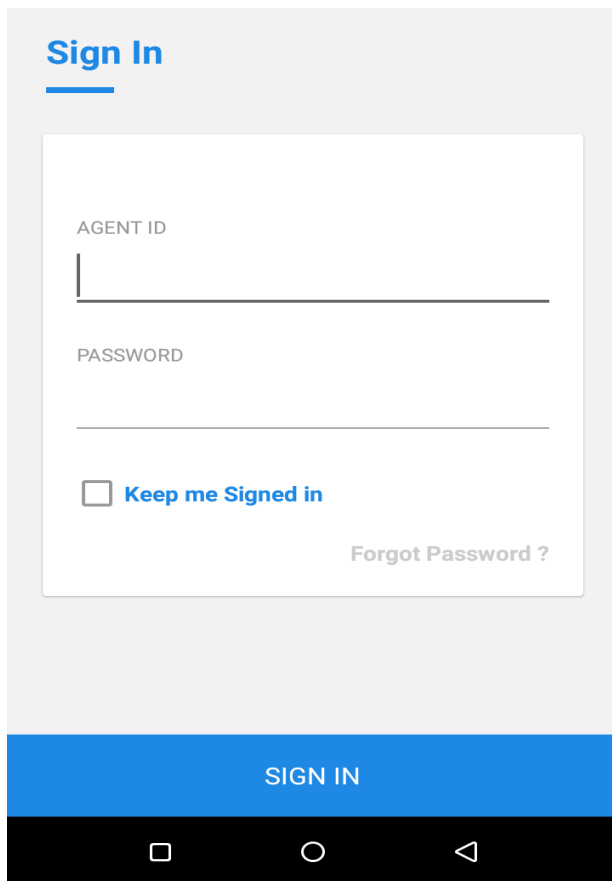
System login page

Figure 8 : system login page

The design of the system made it easy for agents to navigate through and easily key in the customers' details. The agent can also use the system or transact using the system even when one is out of office premises, because it is a mobile-phone based system/app.

Customer Registration

Figure 9: Customer Registration

4.6.3 Efficiency of the System

The study also tested the system for its efficiency in delivery of services to the insurance customers. The findings are presented in Table 4.5

Table 4.5: Efficiency of the System

Responses	Frequency	Percentage
Efficient	13	100.0
Not Efficient	0	0
Total	**10**	**100.0**

The study findings in Table 4.5 show that all the respondents (100%) rated the system as efficient in delivery of services.

The respondents stated that once details of the customer and the product/service he has purchased were entered in the system and transaction completed, the customer received the details of the product policy, via am SMS. It therefore enhanced efficiency and also transparency. This would greatly reduce the issue of mis-selling since all details of the transaction are captured, and the customer can confirm the details from the SMS received.

4.6.4 Accuracy of the System

The study also enquired from the respondents on the accuracy of the system, in the transactions. The findings are presented in Table 4.6.

Table 4.6 : Accuracy of the System

Responses	Frequency	Percentage
Accurate	13	100.0
Not Accurate	0	0
Total	**10**	**100.0**

The results in Table 4.6 show that all the respondents (100%) indicated that the system was accurate. They revealed that, since the calculations were done automatically by the system, the figure generated was accurate, unlike when the calculations were done manually. This is demonstrated in the Application Interface Screenshot shown in figure 10.

Policy Registration and Calculation of premium

Figure 10 Policy Registration and Calculation of premium

As shown in App Interface in figure 10, the premium amount is calculated automatically by the system, once the policy details are entered, hence high accuracy.

4.7 Discussion

In this study the researcher administered the questionnaires with an aim of finding out the existing exploitation mechanism that customers seeking insurance products and services experience. The interviews focus mainly on existing gaps not addressed by the ICT systems. The results revealed that there was exploitation with nondisclosure of information and mis-selling of insurance product being the most common form of exploitation. Customers accessing the policy information details the interviews revealed that there was no system and that they get the information manually through a policy document which in most cases it delays and majority of customers failed to pick them from the company. The researcher found out that the new system was highly embraced from the results with ease of use, accessibility, accuracy and efficiency being the most common features.

CHAPTER FIVE
CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter entails the achievements,conclusion,challenges,recommendation and future work, which is the final chapter of this study.

5.2 Achievements

According to the results and the analysis the study established that the company however did not have a system where customers could get customer service support. Majority of the respondents revealed that system adoption will be effective in curbing customers' exploitation in insurance firms to a great extent. The study found out that the designed system was efficient in delivery of services, and also accurate in calculations of policy product amount. The calculations were done automatically by the system, the figure generated was accurate, unlike when the calculations were done manually.

5.3 Conclusion

In conclusion the researcher was able to meet each objective of this study.

The first objective of this study was to find out the existing exploitation mechanism that customers seeking insurance products and services experience. In the course of the study the researcher managed to carry out questionnaires to marketing staff, ICT staff and customers who were the main focus of the study. From the analysis of the data collected the researcher found out that majority of the respondents indicated that they experienced cases of customers' exploitation occasionally while some experienced cases of customers' exploitation frequently. The most common forms of customers' exploitation were non-disclosure of insurance product information, mis-selling of insurance products and fraud where customers are duped by unscrupulous agents or sales people.

The second objective was to identify existing gaps not addressed by current ICT systems used by insurance firms in Kenya. The researcher managed to carry out interviews to ICT staff and Marketing staff of whether they existed a system that curb customer exploitation in insurance firms. The researcher found out that there existed a system which excluded curbing of customer exploitation since most of the process was done manually and hence the need for a technological solution.

The third Objective was to design a system to address existing technological gaps in insurance firms in Kenya. The researcher managed to design, develop and implement the prototype. The prototype was run on android studio which is the IDE. The researcher used Java and xml programming languages, whereby java handles the logic part of the program while xml controls the screen format and appearance of the forms, buttons etc. The researcher also used the spring tool suite which is the IDE for rest API based on java programing.

The Fourth Objective was to implement and test the system to see how useful it is from selected users. The prototype was tested with a sample of 13 users, which entails customers, ICT staff and Marketing staff. The study found out that the designed system can curb mis-selling, since it has list of products that the customer is seeking, and the agent or the sales person have to just select the product the customer is buying enter in the details of the customer, and the premium is calculated automatically by the system. The customer also gets the details of the product/service he has purchased for immediately after the transaction is completed, via am SMS. It is therefore difficult for the agent to mis-sell a product since the product details including the pricing are generated automatically by the system. In addition, the systems enhance efficiency. The process is quicker as compared to manual processes which have been used over time by the insurance firms/agents. When tested, it was established that the system was easily accessible. The system/ the App was easy to access since it could be accessed through a mobile phone device. It was also found that the developed system was very easy to use. The design system made it easy for agents to navigate through and easily key in the customers' details. In addition, the system was efficient in delivery of services, and also accurate in calculations of policy amount. The calculations were done automatically by the system, the figure generated was accurate,

unlike when the calculations were done manually. The system will therefore greatly help in curbing customers' exploitation.

5.4 Challenges

The researcher encountered the following challenges while carrying out the study. One, the target population who were staff in a local Insurance, were first unwilling to participate in the study fearing that the information, which they deemed strategic to their company may be used for the wrong reasons or by the competitors. However, to overcome this challenge, the researcher explained the purpose of the study to the respondents and also sought permission from the management of the company, to be allowed to conduct the study, which would be beneficial to the company.

Another challenge was that most of the respondents were busy serving the customers and did not agree to answer to the interviews while at work. They did not want to be subjected in other time consuming exercise which they did not consider important. To overcome this, the researcher made arrangement with specific respondents to answer to the questions/interview at their own time without interfering with their work schedule.

The system was integrated with sms gateway, had to incur each and every cost of sms going out via safaricom.

5.5 Recommendations and future work

A system to curb customer exploitation, still has areas of enhancement. As it is currently it is being used by agents and sales person to market insurance products and services as opposed to manual. The organization is able to keep track of sales person and agents businesses.

For future work the system can be integrated with GPRS to be able to monitor sales persons, agents and brokers while marketing insurance product.

REFERENCES

Anderson, S. (2017). *Customer Experience Challenges in the Insurance Industry.* Retrieved from: https://blog.salemove.com/

Bernard, R. (2013). *Research methods in anthropology: Qualitative and quantitative approaches (4th ed.)*. Altamira Press, Toronto Canada.

Coviello, A., & Trapani, G. (2012). The Customer Satisfaction in the Insurance Industry. *SSRN Electronic Journal*. DOI: 10.2139/ssrn.2144684

Creswell, J. W. (2014). Research Design: Qualitative, Quantitative and Mixed Methods Approaches (4th ed.). London: Sage Publications Ltd.

Curak, M., Loncar, S., & Poposki, K. (2009). Insurance Sector Development and Economic Growth in Transition Countries. *International Research Journal of Finance and Economics,* 34, 29-41.

Ćurak, M., Pepur, S., & Poposki, K. (2011). Firm and economic factors and performance of Croatian composite insurers. *The Business Review Cambridge,* 19 (1), 136-142.

Hussein, A. (2014). *Web Services in the Insurance Industry*. Retrieved from: http://www2.sys-con.com/itsg/virtualcd/webservices/archives/0311/hussein/index.html

IRA (2017). *Safeguarding the Rights of Consumers of Insurance Services.* https://www.ira.go.ke/images/docs/

Kiptum, G. K. (2017). *An Assessment of consumer protection in the Kenyan insurance sector.* Thesis. Strathmore University, Kenya.

Kombo, D. K., & Tromp, D. L. A. (2009). *Proposal and Thesis Writing: An Introduction.* Paulines Publications Africa, Don Bosco Printing Press, Nairobi Kenya.

Kothari, C. (2011). *Research Methodology; Methods and Techniques*. New Delhi: New Age International Publishers.

Kwach, J. (2018). *Challenges facing insurance industry in Kenya in 2018*. Retrieved from: https://www.tuko.co.ke/

Latham, B. (2007). Sampling: What is it. Retrieved from http://webpages.acs.ttu.edu/rlatham/Coursework/5377(Quant))/Sampling_ Methodology_Paper.pdf.

Muchira, N. (September, 2018). *Kenya's insurance sector looks to a brighter future after facing tough environment.* The East African. https://www.theeastafrican.co.ke/ business/

Mugenda, A.G. (2008). *Social Science Research: Theory and Principles*. Acts Press, Nairobi.

OECD (2017), *Technology and innovation in the insurance sector.* OECD.

Oketch, S. (2014). *Challenges of Customer Retention by Madison Insurance Company Limited in Kenya*. Unpublished Thesis. University of Nairobi, Kenya.

Popat, A. (2017). *Key changes in Kenyan insurance regulations and how they affect business owners*. Retrieved from: http://bcckenya.org/assets/documents

Saunders, M., Lewis, P. and Thornhill, A. (2012). *Research Methods for Business Students*. Pearson Education Ltd., Harlow.

Tavakol, M. & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2,* 53-55

Tennyson, S. (2011). *Challenges and approaches to consumer protection in the insurance industry.* Retrieved from: https://www.researchgate.net/publication /272488858

Wong, K. L., Ong, S. F. & Kuek, T. Y. (2012). Constructing a survey questionnaire to collect data on service quality of business academics. *European Journal of Social Sciences*, 29, 209-21.

APPENDICES

Appendix I: Questionnaire

I am a postgraduate student at University of Nairobi, pursuing a Master degree in Distributed Computing Technology, School of Computing & Informatics. I am carrying out a research to establish whether a mobile based system can help to curb customer exploitation in insurance firms in Kenya. The respondents are highly persuaded to respond to the questions in this questionnaire in the most truthful and objective way possible. The data will be used for academic purposes only and will be treated with confidentiality it deserves. Your participation in facilitating this study is highly appreciated.

Fill the questions appropriately. Tick (☐) where appropriate.

Section A: Customer Exploitation Mechanisms in Insurance Firms

1. How frequent do you experience cases of customers exploitation when seeking insurance products and services (from brokers and agents, sales people)?

      Very Frequently []   Frequently   []   Occasionally []

      Rarely   []   Never []

2. To what extent do customers experience these forms of exploitation when seeking insurance products and services? Use a scale of 1-5, where 1 Not at all, 2 is Small extent, 3 is Moderate extent, 4 is Great extent and 5 is Very great extent

Customer Exploitation	1	2	3	4	5
Non-Disclosure of insurance product information					
Over pricing of insurance products and services by brokers and agents					
Mis-Selling of insurance Products					
Fraud - duping of customers by unscrupulous agents or sales people.					

3. Which other forms of exploitation do customers experience when seeking insurance products and services? …………………………………………………………………..

………………………………………………………………………………………………………

………………………………………………………………………………………………

Appendix II: Interviews

Existing System

1. a). Is there system but in place to curb customers from exploitation by brokers, agents, or sales people?

                Yes   [ ]   No   [ ]

b). If yes above, outline the system insurance company has put in place to protect customers from exploitation? …………………………………………………………….

……………………………………………………………………………………………

2. Does your company have a system, where customers can get information about the policy.

A System, Where:	Yes	No
Customers can get policy premium to be paid on signing up the policy		
Customers can access mpesa pay bill as well as documents required to be attached with the policy.		
Customers can access to information about insurance products and services signed up for before obtaining a cover		
Customer can get customer service support especially on claim process		

b). If yes above, outline the ways being used?

……………………………………………………………………………………………

……………………………………………………………………………………………

……………………………………………………………………………………………

THANK YOU FOR YOUR PARTICIPATION