BUSINESS FORECASTING AND PREDICTION MARKETS POTENTIAL ON BANKING INDUSTRY IN KENYA

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DECLARATION

This research project is my original work and has not been submitted for any award in any other University.

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This project has been submitted with my approval as the University Supervisors.

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DEDICATION

I would like to dedicate this project to my parents who have been my constant source of support and inspiration. They have given me the drive and discipline to tackle any task that entails the project with enthusiasm and determination. Thank you very much.

ABSTRACT

The environment surrounding organizations is turbulent, for this reason forecasting techniques have played a major role in sustaining them. The banking industry in Kenya is not also exceptional due to the fast change in technology and infrastructure. This has made managers and qualified professionals to be keen in matters concerning the external environment in order to have a competitive advantage over their competitors. There are a variety of forecasting techniques in use however there is a major forecasting technique according to research that outweighs the rest referred to as prediction Market.

Prediction market is a tool used to assemble and combine information using market ideologies for the purpose of future predictions. It is cost effective to the organization in the short and long run and produces accurate results irrespective of the number of participants. A small to big group can produce the desired outcome. This project seeks to reveal the various literatures on prediction Markets, highlighting theoretical contributions towards its effectiveness to aggregate information. It also reveals the benefits, applications and model. Furthermore, it analysis how knowledgeable and ready the banking industry in Kenya is towards the new concept.

The objective of this study was to find out the satisfaction of the present forecasting tools used by the banks, determine the level of awareness of prediction markets and develop a prediction market model that can be used to determine the readiness to adopt prediction market in the Kenyan banking industry. This study used a cross sectional survey design. The target population was senior managers in the marketing and research department from 50 licensed commercial banks. This study was carried in Nairobi since all the commercial banks have their headquarters in Nairobi. From the 50 licensed banks, the researcher selected one manager from each bank. Therefore, a sample of 35 respondents consisting of one respondent from each bank was used for this study. A semi-structured questionnaire was used for this study. Data was analyzed using descriptive statistics and multiple regression analysis. The descriptive analysis was used to test the level of satisfaction of current forecasting tools and prediction market awareness. As per the scale used, the level was average for both objectives. Multiple regression was used to test the readiness to adopt prediction markets in the Kenyan banking industry. Management support was

found to be the only independent variable with a significant impact on readiness to adopt prediction market (b=0.569, p<0.001) when all the variables were entered into the regression equation. Time spend (b=0.102, p=0.885), accuracy (b=0.182,p=0.798) and legal matters (b=-0.180, p=0.232) did not meet the necessary criteria to significantly impact the dependent variable (readiness to adopt prediction markets), so they played no role at this stage of the analysis because the p>0.05.

The study revealed that for prediction market model to be adopted management support was necessary and therefore other variables did not count. For this reason further research on other factors other than the ones used in this study need to be established. However, study will be of use to all businesses and academic fields and if well embraced, it will make them realize the opportunities they have severally missed out for lack of correct or enough information that is vital for decision making.

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ABBREVIATIONS AND ACRONYMS

CFTC-Commodity Futures Trading Commission

CRM- Customer Relationship Management

ERP- Enterprise Resource Planning

ESG-Environmental, Social and Corporate governance

ICT- Information Communication Technology

IT- Information Technology

IS- Information system

IEM-Iowa Electronic Markets

HP -Hewlett-Packard

HSX-Hollywood Stock Exchange

DRAM -Dynamic Random access Memory

CHAPTER ONE: INTRODUCTION

1.1 Business Forecasting

Prediction is common and important in strategic decision making because it helps in enlightening decision makers on information about future events. It is therefore a frequently used statistical technique (Hyndman, 2009). Hyndman (2009) further observed that "market opportunities, environmental factors and internal resources contribute towards long term forecasting that is important in strategic planning". He further emphasized that top management support is fundamental because information arises from different functional departments and management levels (Cowgill, Wolfers, & Zitzewitz, 2009). Organizations carry out 3 types of forecasting vital in realizing organizational objectives (Lapide, 2002).

These are namely: Operational forecasting which is done as a result of routine activities within the various departments, tactical forecasting done after several months or quarters that supports managers at the tactical level and strategic forecasting done over a long period of time usually several years that supports various executives at a strategic level.

While there are various types of business forecasting methods, Lapide (2002) affirms that any of the techniques used can be categorized in to following groups: Time series are techniques that use historical data to predict the future events. Although, they are the least used methods as compared to the other methods, Life cycle techniques use demand curves to predict the future, Causal method uses cause-effect relationship to forecast the future and lastly, judgmental technique that uses opinions from customers, market makers and experts to predict the future objectives.

Despite the fact that forecasts are always used, making an enterprise thrive within a dynamic environment is demanding to managers and business professionals. It becomes even more challenging to sustain operations when the resources available which may be inadequate for a given season. Without the right forecasting, managers and business professionals may find themselves unprepared for future uncertainties. In addition, an excellent projection of the future lets the managers and business professionals invest only in the facilities, equipment, materials and staffing required.

Forecasting is important because "it helps plan for the future and make more rational decisions" (Armstrong, 1988). In addition, it enables managers and business professionals reduced costs enabling them improve their products or services thus have a good relationship with customers, suppliers and partners. While organizations have used various ways of dealing with uncertainty, there is a better forecasting tool worthy of further exploration i.e. prediction markets.

1.1.1 Prediction Markets

Prediction markets[1] can be defined as tools used to assemble and combine information using market ideologies for the purpose of future predictions. According to Einbinder(2006), Ivanov(2009), Luckner(2008) and Oyon(2010), prediction markets can be very useful in sales forecasting of products or services, politics such as election results, financial management, knowledge collection, project management projection and overall strategic scenarios that seem complex to determine. Prediction markets can be categorized as Enterprise/internal prediction markets or Public/External prediction markets. They generally use incentives that can use real money or play money (Oyon, 2010).

Enterprise Prediction Markets are markets internal to an organization that are generally used to support business forecasts on sales, new product development, project management, market and economic indicators. Some of the companies that have put this into use are: Siemens, Google, Rite Solution, Microsoft, Nokia, and Best Buy. For example, "HP internal prediction markets are used to forecast prices on DRAM chips which constitute 7-10% of a computer's cost; this has greatly improved the DRAM price forecasts by 1-2% allowing it to better price its computers. This has enabled HP save billions of dollars (Upadhyay, 2010; McCullagh, 2006).

Public Prediction Markets are created in the interest of the public for the purpose of attracting enough traders or gamblers, and that are said to be the price takers. In addition, they tend to focus on interesting topics that are of concern to the public. For example: sports events, box office, elections or any other people related news. Some of the companies that put this into use

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[1] Other terms used for prediction markets are:-Predictive Markets, Information Markets, Decision Markets, Electronic Markets, Virtual Stock Markets, Artificial Markets, Idea futures, Forecasting Markets, Event Derivative(Luckner, 2008)

are: Iowa Electronic Markets, Hollywood Stock Exchange, TradeSport, Intrade, Foresight Exchange, Tech Buzz Game, Policy Analysis Market, simExchange and LongBets. For example, the University of Iowa College of business conducted the Iowa Electronic Market on the success of presidential elections. Since 1993 the markets have expanded to predict other political outcomes, financial and accounting outcomes for companies, national and international economic phenomena, and box office receipts for movies (Berg, Nelson, & Rietz, 2003). HSX is a virtual Market game where players buy and sell prediction shares of movies, actors, directors, and film-related options; correctly predicted Oscar nominees and HedgeStreet which is an organization that enables Internet traders to venture on economic events and was authorized in 1991 as a market and regulated by the Commodity Futures Trading Commission (CFTC); their results prove how powerful and accurate prediction Markets are.

1.1.2 Prediction markets in Organizations

Research and experiments show that the core benefits of prediction markets is the ability to aggregate information in real time and change to latest information that can help users gather useful insights (Schoder & Rieg, 2010). Other benefits are freedom, flexibility, motivation and efficiency encountered as result of using them, because they facilitate participants to be alert on causal issues and prompt them to quickly contribute to their idea with the rest of the participants (Oyon, 2010). Furthermore, predictions markets are not only dependent on historical data but can also use current information that can be put to use within the organization to determine the outcome of any product or service in the future within a given market.

Prediction markets are of great importance because enterprises are surrounded by a dynamic uncertain environment that is rapidly changing. Enterprises could be more focused and ready to adjust to changes that come from the competitive environment with prediction markets. In the long run creating awareness on prediction markets would enable managers and business professionals to be proactive in Strategic decisions they make about products or services they are just about to release to the market, begin to appreciate prediction markets as a powerful decision and analytical support tool and finally, get insights on new ideas as a result of diverse information collected from different people.

Although prediction markets are useful, legal issues are a key factor that has limited the further developments of prediction markets. This is evident to markets that use real money because it is considered as gambling (Abramowicz, 2006). In USA for example, companies have to comply with Commodity Future Trading Commission and gambling regulation. This makes it difficult for companies to run prediction markets and instead opt to identify countries that are not strict on this issue. For example companies such as Intrade and Tradesports were founded in Dublin, Ireland where gambling is legal and regulated (Servan-Schreiber, Wolfer, Galebach, & Pennock, 2004; Brigis, 2008).This restriction arises because the US Commodity Futures Trading Commission (CFTC) considers prediction markets under the same category as security markets. However, while prediction markets transfer wealth between informed and the less informed traders, security markets gather the wealth (Oyon, 2010).

To allow flexibility of prediction markets in research work, 19 scholars wrote an open letter to Commodity Futures Trading Commission (CFTC) and proposed three scenarios under which this should be implemented: first, in research institutions for research purposes and not meant for profit generation; second, platforms worked by government organizations; third, operating internal markets that are restricted to using employees as their only participants.

1.1.3   Prediction Market in Financial Services Sector

Business portfolios in the world need to actively participate in managing risks and take advantage of opportunities that arise as result of environmental and social trends. There are rising expectations from the public because they expect better accountability and corporate governance. This sets challenges with far reaching financial consequences for corporations (Beck & Kunt, 2009; Hagart & knoepfel, 2006).

The financial industry is faced with challenges related to environmental, social and corporate governance (ESG); thus several banking institutions have implemented systems to take advantage of opportunities and curb risks that arise from these issues. This improves accountability and governance or the integration of environmental and social aspects that arise from project financing. However, until now the banking industry has not developed a common understanding on ways to improve the integration of the environment, social and governance aspects such as asset management, securities, and brokerage services among others. This can be

explained by the complexity and diversity of these issues. According to Hagart & knoepfel (2006) conference proceeding, major issues concerning the enviroment, social and corporate governance was discussed. However, in 2007 the world experienced an economic recession that made the banking industry and other corporations get affected. This explains further the need for better forecasting tools that can capture relevent information and create awareness corcerning ESG; this can be done better by prediction markets (Bagri, Sharma, Wadhwa, jha, & palanivel, 2007;Beck & Kunt, 2009).

1.1.4   Prediction and Forecasting by Banks in Kenya

In Kenya small, medium and large companies that carry out research use polls or surveys to predict their outcome. Large companies like Synovate and Infotrak have been actively conducting polls on political opinion such as the preferred candidate or party and surveys to conduct their market research on new product (Richardson, 2012; Mulwa, 2012). Other companies are Consumer Insight, African Economic Research consortium, African Population and Health Research Centre that mostly use surveys.

Banks within the financial industry have had to manage through the extent of competition and confusion that banking has experienced in recent years. The changing of customer's habits, volatile markets and government intervention has created a truly complex environment that has kept them yearn for more to have a competitive advantage within the industry. As the environment changes, executives need to formulate and implement strategic or operational changes quickly to meet the market's demands while simultaneously updating forecasts. Without appropriate forecasting it can lead to misguided goals. Furthermore, successful banks are those that can monitor and adjust to forecast and simultaneously meet the customer's needs (Brooks, 2008).

While we appreciate the fact that most Kenyan firms use polls and surveys that have enabled them to reduce uncertainties in business planning, they could benefit from prediction markets as a useful tool for future predictions. To achieve this managers and business professionals may

need to be made aware of prediction markets and their possible advantages over other traditional forecasting methods.

1.2 Statement of the problem

Lack of proper planning and control of cash resources bring failure to organizations. While business forecasting is important there are some issues that arise that point to the research gap that need to be addressed: first, many forecasting tools have been used to make predictions correctly thereby reducing uncertainty. However, there are areas of business forecasting that these tools have failed. For example during the economic recession none of these tools predicted correctly (christensen, 2012). Second, experts are expected to understand a variety of forecasting tools depending with the situation present (Filders, 2010).

Third, based on studies evaluated concerning common forecasting methods such as judgmental, extrapolative and causal methods is that business cannot rely on one method only. This is because best results will be attained depending on how many variables are used and what variables are used (Filders, 2010).

Prediction tools used are usually customized to suit the needs of an organization this is because research shows that IT/IS are context sensitive and dependent. This can be explained by different policies and cultures organizations have in handling information. Moreover depending on the number of variables used and the complexity of the problem will lead to users applying more than one forecasting tool. Hence a better forecasting tool is required that cuts across all areas without been limited by the complexity of the problem or number of variables used.

Although various researches and experiments have been carried out using common forecasting tools this study seeks to answer the following question: How can Kenyan banks take advantage of prediction markets?

1.3 Objectives of the study

In relation to Kenyan banks the research objectives are:

1. To find out the satisfaction of the present forecasting systems in use.
2. To determine awareness of prediction markets.
3. Develop a prediction model for organization readiness to adopt prediction Market.

1.4 Value of the study

This study will be of use to executives, managers and business professionals dealing with any business or organization. The study will make them realize the opportunities they have severally missed out for lack of correct or enough information that is vital for decision making. In addition, it will enable them realize the communication constraints that arise between the employers verses the employees or organizations verses customers and begin to know how to resolve issues before they get out of control.

To the financial industry the research will create awareness and trigger a broader discussion, and support creativity and thoughtfulness in approach concerning cash forecasting, marketing, securities, shares among others, rather than being prescriptive. It also aims to enhance clarity concerning the respective roles of different market actors, including companies, regulators, stock exchanges, investors, asset managers, brokers, analysts, accountants, financial advisers and consultants.

Research firms such as synovate, infotrak and any other research firms will also benefit from the study because they will realize there are better ways of motivating participants to participate whenever a need arises without forcing them. This especially is in regard to the election issue where Synovate and Infotrak Company come up with varying results that bring a lot of controversies concerning results. Furthermore, it will enable such firms realize the resources they have wasted for a very long time trying to gather relevant information which prediction markets can gather within a short duration thereby cutting down cost.

In the academic field upcoming researchers will begin to have better understanding and do more study on prediction markets since there are a few publications that have been done concerning prediction markets (Tziralis & Tatsiopoulos, 2007).

CHAPTER TWO: LITERATURE REVIEW

Prediction markets are markets created within enterprises for the purpose of using information content to make predictions about specific future events. This is useful because it supports decisions by giving information about present circumstances or evaluates outcomes of decisions across time. For example, in 1996 Iowa Electronic Markets conducted a prediction market on United States (U.S) Presidential election where candidates actively participated in vying for the presidential sit and out of the outcome could have decided whether to drop out of the race or stay in the race; each candidate could have evaluated his campaign approach using the market values and made decisions about the given approaches accordingly (Berg & Rietz, 2003).

A prediction market is established within a company to produce forecasts on topics of concern in a way that openly deals with the initial communication constraints. Integrating this type of strategy in a geographically dispersed and virtually managed enterprise can give important benefits by supporting a smart debate with an objective to derive a final research of influence and intelligence in a particular topic of interest.

2.1 Business Forecasting and Techniques

The banking industry all over the world has transformed extensively. This can be explained by the developments, complexity and trends observed in information communication technologies, business intelligence, and risk management strategies (Dominici, 2012). Despite the fact that the banking industry has become easier and more convenient for the consumers, the advances and intricacies of emerging technologies have made banking operations all the more cumbersome (Ravi, 2007). Furthermore, the business environment is marked by the fierce competition and continuous changes in the relationship between organizations and customers involved in the industry (Bellini, 2007).

For this reason business forecasting has become vital to managers and business professionals because much of what happens in businesses today depends on what is going to happen in the future; thus business forecasting involves understanding the business cycle. The following are business forecasting models commonly used to predict future events: qualitative and quantitative forecasting (Sahu, 2012).

Qualitative forecasting is used for short term projections where past data is not available and works best when scope is limited. It is mostly subjective and based on opinions and judgments of experts and customers. The two commonly used qualitative models are: Delphi method that involves asking various experts on their opinion about a matter that concerns the future without bringing them face to face. Mostly questionnaires are administered to them two or more rounds. For every round the researcher provides a summary of the expert's opinion and their judgment concerning the forecast. Experts are encouraged to go through their earlier answers and analyze them as a panel. At this stage it is believed that the range of answers will decrease and converge toward the right answer. The users of this method may decide to use various ways to come to a stop such as number of rounds, achievement of consensus and stability of results. Using mean or median scores of the final rounds determine the total outcome of the results (Hsu & Brian A. Sandford, 2007). Secondly, market research method involves conducting surveys and administering questionnaires about people's reaction towards change in a product or service introduced in the market thus it is subjective.

Quantitative forecasting involves historical data concerning time series that is of specific interest (Lapide, 2002; Walk, 2012). The quantitative forecasting model can further be categorized in to two: as per past trends of particular variables to base the future of the variables; this is dependent on time series technique. The second category of quantitative forecasting techniques also uses historical data but in forecasting future values of a variable, the researcher examines the cause-and-effect relationships of the variable with other relevant variables. The forecasting technique used under this category is causal method. The other term used for causal method is regression analysis, a statistical technique used to build up a mathematical model showing how a set of variables are related. This mathematical relationship is then used to generate forecasts. The variable being forecasted is called the dependent or response variable. The variable or variables that help in forecasting the values of the dependent variable are called the independent or predictor variables (Sahu, 2012).

Presently, the banking industry is dependent on enterprise resource planning (ERP) and customer relationship management (CRM) systems to predict cash flow and customer satisfaction respectively. However, these systems have shown dissatisfaction since "88% of corporations are not satisfied especially on cash flow forecasting" (Outa, 2008). Lohani (2008) further affirms

that business units are not able to predict effectively even when all information given is considered accurate.

2.2 How Prediction Markets work

Prediction markets are said to work the same way as the stock exchange or financial markets. Traders can be employees of the organization or individuals from the public. Traders participate based on their perceived understanding concerning the future events with protection of anonymity and well defined incentive structure that can use the following contract types: binary stock also known winner-takes-all contracts pays off if a definite outcome required of the event occurs otherwise if the required outcome does not occur no reward is gotten; index contract also referred to as linear contract pays off based on the amount tied to the index value that is directly associated to the outcome of an event; and spread contracts that pay out the amount if the outcome of value to be predicted falls within a mutually exclusive set of ranges or above a threshold value (Burgess, 2009;Wolfers & Zitzetwitz, 2004; Jerome, 2006).

The market price reveals the probability of an issue occurring. The bid that is usually placed with real or play money acts as a vital incentive to amplify precision in the forecasting event. Moreover, incentives give confidence to traders since they express their best assessment about an issue of interest (Henry, 2006). Traders do not require prior understanding of trading since information given is simplified. However, following the training sequence traders spend a few minutes or a week to trade on the platform availed to them. Thus the dynamic insights from traders can be identified by business unit, geographic region or through other demographics.

2.3 Benefits of Prediction Markets

Prediction markets work as continuous dynamic markets that run over a relatively extended period of time. They give traders instant feedback, giving them chances to reconsider their own information and act in response to that feedback because the market environment is constantly updated. Traders who are more certain in their ideas participate actively in the market thereby influencing the market prices. Furthermore, prediction markets are usually cheaper to use because information is gathered from different participants thereby reducing bias (Berg, Nelson,

& Rietz, 2003). Moreover, it is in this kind of participation that employees get an opportunity to speak up their mind. It is particularly vital in areas that involve consumer goods or technology where transformation is fast and companies must adapt quickly (King, 2006).

The ability of prediction market to aggregate distributed information has further encouraged: the truthful and timely revelation of information, secondly, it creates incentives for information discovery, thirdly, it does not require all traders to be informed and rational, and finally, markets do not require many traders to be efficient (Burgess, 2009).

2.4 Challenges on Prediction Markets

Prediction markets have several challenges. First, lack of access to all relevant information: that can be explained by lack of experts and business leaders knowledgeable in the area of interest. These can be resolved by allowing companies not only to rely on internal markets but also allow the public to participate since it yields a range of data that affects the business plan of a company (King, 2006; Brigis, 2008).Second, the CFTC is now actively trying to regulate online predictions and information markets thereby making enterprises shy away from open prediction markets because they fear being seen as promoting insider trading. For this reason, companies such as Google, HP, Yahoo and other successful companies are not willing to give information gathered from these markets. This is because they are surrounded by cutthroat competitors. Moreover, on a sensitive issue on finances a company like Google does not use prediction markets to forecast revenue (Brigis, 2008). A solution to this is to understand that as all markets become dynamic because of new technologies, behavior and legislation, markets will need to become known. Third, fast technology requires a great design with value proposition in mind because prediction markets are required to be easy to use, smarter, valuable and more popular. "A Prediction market software must get better at identifying/finding experts, simplifying the prediction process, providing relevant information and expanding the prediction pool through smarter social media models and better prediction pool techniques"(Brigis, 2008).

Fourth, a company must be well established in order to motivate employees and other participants using incentives and other fun events. A company like HP in late 1990s was in a tight spot because of budget restriction that saw them only capable of paying their participants an

average of $50 per person per event (chen & Plott, 2002). Firth, top managers are threatened by the hierarchical control of prediction markets and would turn out to be evident they are not able to predict the future. Six, enterprises proceed by asking for response from participants and use it to redesign their plans thus pretend that everyone is involved and has a stake in the final outcome, yet a majority may be losers; this decreases their morale to participate the next time they are required to do so. Finally, when enterprises find product in the markets they can be in charge off or an extended period of time, they may not be interested in forecasting variables related to future trends thus may become ignorant (Cowen, 2006).

Despite challenges executives should not seize to take advantage of prediction market systems. A good example that demonstrates how prediction markets work is the Zocalo is an open source toolkit created by Dr. David Porter and Chris Hibbert which can be downloaded from www.zocalo.sourceforge.net and is compatible with any operating system. It is used to build prediction markets that concern securities that payout depending on future events. As a result of its success, several research papers have been written concerning its success such as "prediction markets for education: An Experiment study" done by Cali Mortenson Ellis and Rattul Sami concerning collaborative learning at the university setting involving undergraduate students (Ellis & Sami, 2011). Another research paper entitled "Simulating prediction markets that include human and automated agents" by (Chang, 2009) explains an experiment done within the labs to test that when computer agents and human agents are used they can produce excellent results than when one of them is used.

2.5 Theories of Prediction Markets

When compared to the many traditional forecasting methods that have been in use such as polls and surveys, prediction markets have been proved to be very close to the final result (Berg & Rietz, 2007). The accuracy of prediction markets can be explained by models like decision theory, Hayek and efficient market hypothesis. Fredrick Hayek is an economist who theorized how resources were to be distributed reasonably in an economy. He further emphasized that the solution to free markets was to use price mechanisms. This is because prices revealed a lot of information to individuals that enabled them to make informed decisions. Eugene Fama, also an economist came up with the efficient market hypothesis which is an investment theory that states

that all relevant information is fully and immediately reflected in a security's market price thus enabling investors get equal information that helps them make informed decisions. Besides, concepts like crowd sourcing generally make use of knowledge and expertise collected and aggregated from many different individuals. In addition, collective intelligence converts knowledge and expertise in to the required results. Furthermore, the presence of unidentified participants giving information and the existence of incentives equally increase the quality of input enabling participants give true answers without biasness (Sprenger, Paul, & Anand, 2007).

IS/IT theories equally contribute towards adoption and diffusion of new technology used. According to Davis (1989) technology acceptance model(TAM) describes when and how people perceive technology when newly presented to them. He further affirms that there are a number of factors that influence decision makers on new technology: one, perceived usefulness: "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989). Two, Perceived ease-of-use (PEOU): that describes "the degree to which a person believes that using a particular system would be free from effort" (Davis, 1989).

Rogers (1995) also presented theories related to adoption/diffusion of technology. These are namely: innovation decision process theory that describes the behaviour of potential adopters to technology. He describes five stages involved in the diffusion process: one, knowledge: users must learn about the innovation; Two, persuasion: users must see the value of innovation; three, decision: users must decide to adopt it; four, implementation: users must then put in to use the innovation; finally, confirmation: the adopters must reaffirm or reject.

Individual Innovativeness theory describes Individuals who are risk taker or early adopters no matter the present circumstances. Moreover, Rogers (1995) describes five attributes upon which an innovation is judged: it can be tried; the results can be observed; it has an advantage over other existing technology; not complex and compatible with the circumstances into which it will be adopted.

2.6 Adoption of Prediction Markets

Prediction markets are faced by various challenges despite their accuracy. However, a number of factors related to the adoption of prediction markets are considered. One, time: research shows that prediction markets run over a short time or long time are more accurate than other

forecasting methods. Berg et al. (2003), observed the short-term while Berg et al. (2007) examined the long-term outcome conducted on IOWA elections. Second, play money versus real money (incentives): there is no significant difference between using real money and play money. An online research experiment conducted between NewsFutures that used play money and TradeSports that used real money show that there is no significant difference. However real-money markets may better motivate discovery of information while play-money markets may yield more efficient information aggregation (Servan-Schreiber, Wolfers, Pennock, & Galebach, 2004).

Third, Trader Knowledge (Participants): having a variety of participant in prediction markets is very important. According to Berg (2007), suggested that forecasting accuracy varies in proportion to the participants. According to O'Leary (1999) and Rodriguez & Watkins (2009) show that a critical point is where participants have a probability greater than .5 of being correct in order for the group to get to the right decision. Furthermore, this translates into a level of knowledge or expertise of the trader or participant with respect to the specific market. Fourth, legal matters: there has been a lot of controversies concerning whether prediction markets should run publically or privately within an organization; this is because some countries consider gambling illegal (Oyon, 2010). Firth, Management policy: the nature of markets is dynamic; this yields uncertainty and challenges in development of new products. To overcome product failure, risk reduction and management involvement is important (Bassler, 2011).

2.7 Summary and Knowledge Gap

The chapter has explored the various theories, benefits, challenges and factors that influence adoption of prediction markets. Based on the various studies done, different scholars show that there is need for more research concerning prediction market since it gives an organization a competitive advantage and strategic value.

Currently, in Africa there are hardly materials that discuss how receptive people would be on prediction market as forecasting tool thus the area needs to be fully exploited especially by Kenyan firms; since an opportunity is available for them to cut cost. This therefore, represents a research gap which this study seeks to address and also provides a basis for future studies of further exploration on prediction markets. Managers and business professionals will be in a

position to know the right decisions they need to undertake concerning products /services they offer to attain a competitive advantage. This will be the basis of change to large Kenyan firms that have been dependant on surveys and polls that have proved to be very costly to implement.

2.8 Conceptual Framework

There are various ways that can be used to model prediction markets namely: decision analysis, artificial intelligence, simulation and statistical analysis. The diagram below demonstrates a conceptual framework that illustrates the relationship between independent variables and the dependent variable.

The researcher conceptualizes that time spend, legal issues, perception of accuracy and management policy are independent variables that determine the readiness to adopt prediction market (dependant variable).

Figure 2.8: Conceptual Model

Independent variables

| Time spend |

| Management Policy |

Dependent Variable

| Readiness to Adopt Prediction Markets |

| Legal Issues |

| Perception of Accuracy |
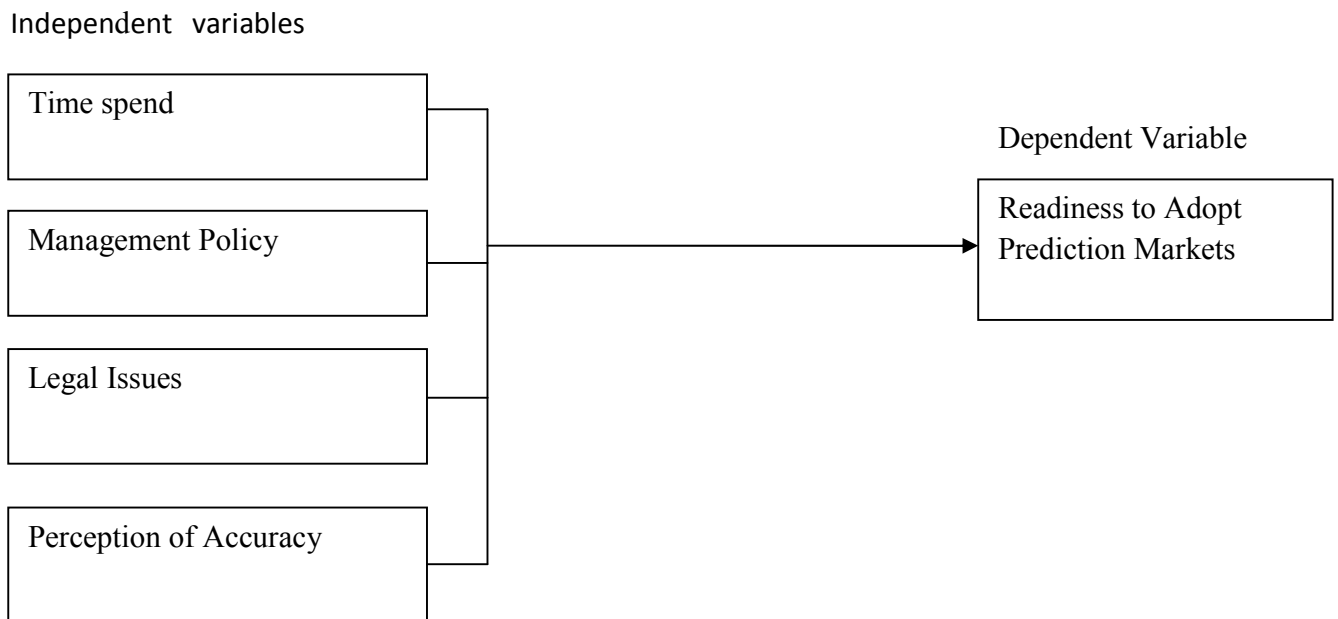
1. Time spend: research shows that prediction markets run over a short time or long time are more accurate than other forecasting methods (Berg, Nelson, & Rietz, 2003 ; Berg & Rietz, 2007).

2. Legal matters: there has been a lot of controversies concerning whether prediction markets whether it should run publically or privately within an organization; this is because some countries consider gambling illegal (Oyon, 2010).

3. Management policy: the nature of markets is dynamic; this yields uncertainty and challenges in development of new products. To overcome product and service failure, risk reduction and management involvement is important. Moreover, having a variety of participants and incentives are important in the success of prediction markets (Bassler, 2011; O'Leary, 1999; Wolfers, Pennock & Galebach, 2004).

4. Perception of Accuracy: prediction markets run over a short time or long time are more accurate than other forecasting methods. Berg et al. (2003), observed the short-term while Berg et al. (2007) examined the long-term outcome conducted on IOWA elections.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methods and procedures used to carry out the research study. It is divided into: research design, population and sampling, data collection and data analysis.

3.2 Research Design

A research design refers to a plan, scheme, or outline that is used to produce answers to the research issues. In this case the study adopted a cross sectional survey design because it provided data, knowledge and beliefs on the entire population under study (Kombo & Tromp, 2006).

3.3 Population

The study was aimed at collecting information from the bank industry, particularly the managers involved in decision making. According to Central Bank of Kenya act 2012 the total number of banks is 50. The information collected was used to test the readiness of adoption to new technology i.e. prediction markets as a better forecasting tool. A census was done concerning all the banks.

3.4 Data Collection Method

3.4.1 Questionnaires

This design involved collecting information through semi-structured questionnaires that was availed to the respondents in person. A questionnaire is a written set of questions to which respondents record their answers. They are efficient data collection mechanism when the researcher knows what exactly is required and how to measure the variables of interest. The advantages of using questionnaires are that a researcher can collect responses within a very short period of time and is less expensive. The researcher equally gets the opportunity to introduce the research topic so as to motivate the respondents to give sincere answers.

The questionnaire in Appendix II was administered to respondents in 50 banks as shown in Appendix III and only 35 respondents from the strategic level and tactical level were able to give a positive response.

3.5 Data Analysis

This is the process of inspecting, cleaning, transforming and modeling data with the goal of highlighting useful information, suggesting conclusions and supporting decision making. The objective of the study was to establish the readiness of adoption to prediction markets, get the level of awareness concerning prediction markets and create a model on prediction markets.

The data was analyzed using descriptive and multiple regression statistical tools were the following objectives were tested: satisfaction of present forecasting tools used in banks, determining awareness of prediction markets and evaluating the readiness to adopt prediction Markets in the banking industry. Furthermore, it was also used to establish the potential value of prediction markets in the Kenyan context by judgmentally picking strategic managers to answer the questionnaire. Thus the research was in a position to get in-depth information from the respondents.

Study Objective	Relevant Questions in the Questionnaire	Data Analysis Technique
Preliminary data	1,2,3,4,5,6,7,8,9,11	Descriptive Analysis
Satisfaction of the present forecasting systems in use.	12	Descriptive Analysis
Determine awareness of prediction markets.	13	Descriptive Analysis
Develop a prediction model for organization readiness to adopt prediction Market	10,14,15,16,17	Multiple Regression Analysis

CHAPTER FOUR: DATA ANALYSIS & DISCUSSIONS

The semi-structured questionnaire was answered by 35 respondents. The data obtained from section one and two of the questionnaire was analyzed by examining the distribution of responses based on frequencies using Statistical Package for Social Sciences (SPSS) 16.0 for Windows. The response rate was 35/50 banks which is equivalent to 70%. Based upon the three objectives of the research, the findings of research are discussed below.

4.1 Preliminary Analysis

4.1.1 Gender of the Respondents

The results in table 4.1.1 indicates that majority 22 (62.9 %) of the respondents were male. This suggests that a majority of the respondents interviewed who were positive in participation were male. While 13 (37.1%) of the respondents were female. Thus the gender participation was not balanced since more responses were from the male participants than female participants.

Table 4.1.1: Gender of the Respondents

Gender	Frequency	Percent
Male	22	62.9
Female	13	37.1
Total	35	100.0

4.1.2 Age of the Respondents

The results in table 4.1.2 indicates that majority 17 (48.6 %) of the respondents were between 30 – 39 years. This suggests that majority of the respondents who were interviewed were middle-aged. The results also show that those aged between 20 - 29 years were 13 (37.1 %). While 5 (14.30%) were between 40-49 years.

Table 4.1.2: Age of the Respondents

Age	Frequency	Percent
20-29	13	37.1
30-39	17	48.6
40-49	5	14.3
Total	35	100.0

4.1.3 Position of the Respondents

The results in Table 4.1.3 indicate that a majority 25 (71.4 %) of the respondents hold other positions which include credit officers, finance officer and operation manager. The results also show that those in the marketing directors' were 5 (14.3%) followed by business development managers at 3 (8.6%) and research analysts 2 (5.7%).

Table 4.1.3: Position of the Respondents

Position	Frequency	Percent
Marketing Director	5	14.3
Business Development Manager	3	8.6
Research analyst	2	5.7
Others	25	71.4
Total	35	100.0

4.1.4 Department of Respondents

The results in Table 4.1.4 indicate that a majority 20 (57.1 %) of the respondents were from other departments of the bank such as Finance, Credit and Operations. The results further show that 13 (37.1%) were from marketing department followed by research department 2 (5.7%).

Table 4.1.4: Department of Respondents

Department	Frequency	Percent
Marketing Department	13	37.1
Research Department	2	5.7
Others	20	57.1
Total	35	100.0

4.1.5 Working Years of Respondents

The results in Table 4.1.5 indicate that a majority 20 (57.1 %) of the respondents have worked for 5 years and above. The results also show that those who have worked for 4 years are 9 (25.7%) followed by 5 (14.3%) respondents with a working experience of 3 years and 1 (2.9%) respondent with 2 years' experience.

Table 4.1.5: Working Years of Respondents

Working Years	Frequency	Percent
2year	1	2.9
3year	5	14.3
4year	9	25.7
5year and above	20	57.1
Total	35	100.0

4.1.6 Forecasting Course of the Respondents

The result in table 4.1.6 indicates that majority 22 (62.9 %) of the respondents have not done any forecasting courses. While 13 (37.1%) of the respondents have done a forecasting course. This in the long run can have a serious implication to the banks such as decreased productivity and

creativity of new ideas. Moreover the environment is turbulent and requires individuals who are sensitive and proactive to the surrounding to have a competitive advantage over their competitors.

Table 4.1.6: Forecasting Course Distribution of the Respondents

Forecasting Course		
	Frequency	Percent
Yes	13	37.1
No	22	62.9
Total	35	100.0

4.1.7   Branch Distribution of Respondents

The results in Table 4.1.7 show that a majority 20 (57.1 %) of the banks have between 1-29 branches. They further show that 9 (25.7%) banks have above 59 branches followed by 3 (8.6%) banks with 50-59 branches, 2 (5.7%) banks with 30 to 39 branches and finally 1bank with 40 to 49 braches.

Table 4.1.7

Branches	Frequency	Percent
1-29	20	57.1
30-39	2	5.7
40-49	1	2.9
50-59	3	8.6
Above59	9	25.7
Total	35	100.0

4.1.8   No of Employees Distribution of Respondents

Table 4.1.8 indicates that 15 (42.9%) banks have the highest number of employees ranging from 100-499. This is followed by 6 (17.1%) banks with both 1-99 and 1000-1999. In addition, there

are 4 (11.4%) banks with 3000-3999. Lastly 2 (5.7%) banks have 500-999 and 4000 and above respectively.

Table 4.1.8: No of Employees distribution of respondents

No of employees	Frequency	Percent
1-99	6	17.1
100 -499	15	42.9
500 -999	2	5.7
1000 -1999	6	17.1
3000-3999	4	11.4
4000 and Above	2	5.7
Total	35	100.0

4.1.9 Target Market Distribution of Respondents

Markets that banks target include corporate, small medium enterprise, retail, individuals and middleclass. The findings reveal that a majority 27 (77.1%) of the banks deal with corporate level, followed by small medium enterprise 21 (60%), individuals and middleclass level both at 18 (51.4%) and only 13 (37.1%) of the banks deal with retail level.

Table 4.1.9

Target Markets	Yes	No
Corporate	27	8
Small Medium Enterprise	21	14
Retail	13	22
Individual	18	17
Middleclass	18	17

Figure 4.1.9
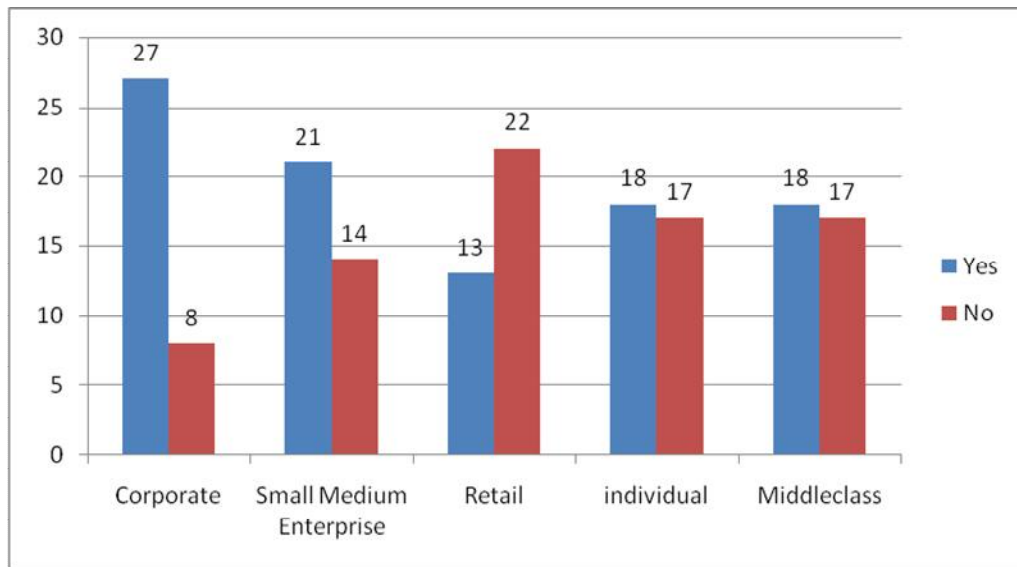
4.1.10 Forecasting Technique

Forecasting techniques used by banks are time series, simulation, business intelligence and market survey. It was evident that a majority 24(68.6%) of banks use market survey to carry out their forecasting. Business intelligence is at 19(54.3%), time series at 7 (20%) and simulation at 3 (8.6%). From the outcome it can be concluded that a majority of banks are comfortable and familiar with market survey technique. This is because it gives them insights about their customers, competitors and helps them understand the market trends.

The following table demonstrates the table frequencies of the forecasting techniques.

Table 4.1.10

Forecasting Techniques	Yes	No
Market Survey	24	11
Business Intelligence	20	15
Time Series	7	28
Simulation	3	32

Figure 4.1.10
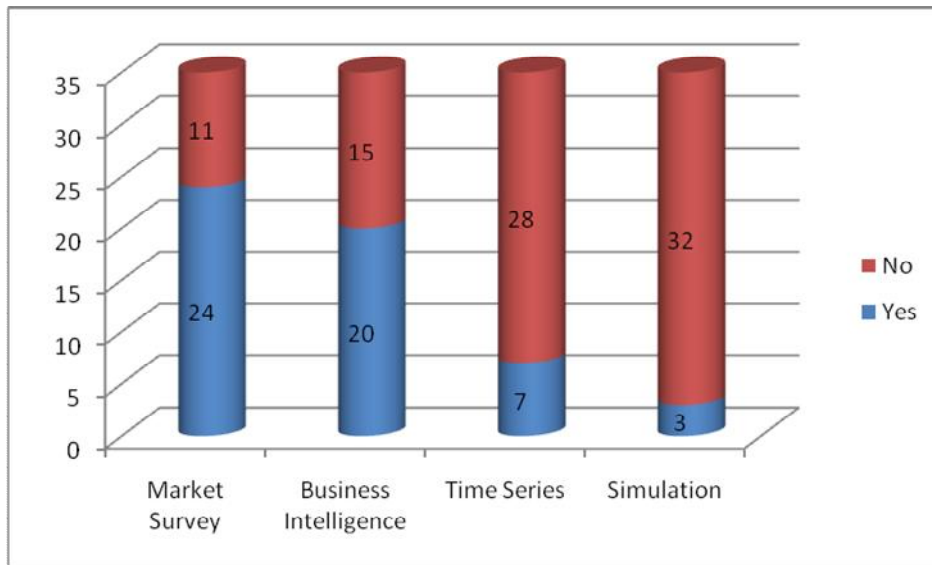
4.1.11   Level of Participation

The results in table 4.1.11 indicate that majority 24 (68.6%) of the respondents were positive about implementing prediction markets in the whole organization. 5 (14.3%) of the respondents suggested that it should be implemented at the branch level, 4 (11.4%) of respondent suggested the public level and only 2 (5.7%) of the respondents suggested the departmental level.

Below is a graphical representation of respondents by level of participation.

Table 4.1.11

Level of Participation	Frequency	Percent
Departmental	2	5.7
Branch	5	14.3
Whole Organization	24	68.6
Public	4	11.4
Total	35	100.0

Figure 4.1.11
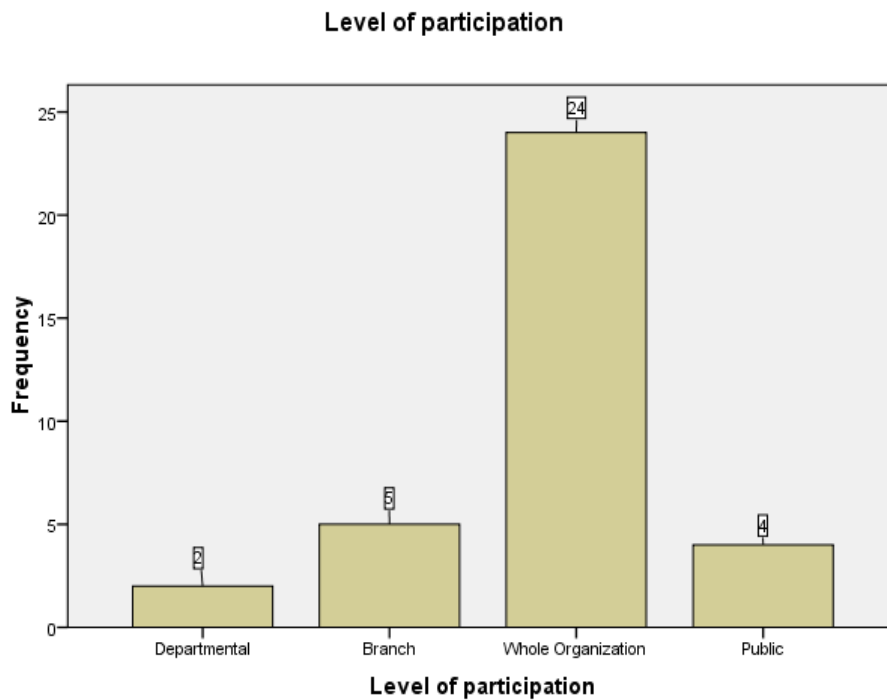
4.2 Prediction Market Awareness

Prediction Market Awareness had the following dimensions: prediction Markets is the same as financial markets, I know what prediction market is and I have heard of prediction markets. Table 4.2 reveals that the respondents' average level of awareness on prediction markets was average (3). Thus there is still need to create more awareness concerning prediction markets which if banks positively embrace can overtake traditional forecasting tools.

Table 4.2:Statistics on Prediction Market Awareness				
	Prediction markets are the same as financial markets	I Know what a prediction market is	I have heard of prediction markets	Prediction Market Awareness (Average)
Valid	35	35	35	
Missing	0	0	0	
Mean	2.4286	3.2000	3.3714	3

4.3 Satisfaction of Current Forecasting Tool

Satisfaction of current forecasting tool aspects included accuracy, cost, time spend and availability of expertise.

Table 4.3 reveals that there is average satisfaction of the current forecasting tools. This shows that there is need for more better forecasting tools that can be excellent to banks concerning the four aspects analyzed.

Table 4.3 Statistics on satisfaction of current forecasting Tools

	Accuracy	Cost	Time Spend	Available Expertise	Average Mean
Valid	35	35	35	35	
Missing	0	0	0	0	
Mean	3.5429	3.0286	3.1429	3.5714	3.32145

4.4 Readiness to Adopt Prediction Markets

Prediction market model is derived from the formulae given below:

$Y = a + bx_1 + bx_2 + bx_3 + bx_4 + E$

Where:

Y=Readiness to prediction Market

a=Constant

x_1=Management Support

x_2=Time spend

x_3=Accuracy

x_4=Legal Matters

E= Error

Table 4.4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.608[a]	.370	.286	.63248

a. Predictors: (Constant), Legal matter, Time spend, Management Support, Accuracy

Table 4.4 provides the R, R^2, adjusted R^2, and the standard error of the estimate, which can be used to determine how well a regression model fits the data:

The **R** column represents the value of R, the multiple correlation coefficients. R can be considered to be one measure of the quality of the prediction of the dependent variable; in this case, readiness to adopt prediction market. The value of 0.608 indicates a good level of prediction. The **R Square** column represents the R^2 value (also called the coefficient of determination), which is the proportion of variance in the dependent variable that can be explained by the independent variables. From the table a value of 0.370 shows that our independent variables explain 37% of the variability of our dependent variable.

The adjusted R square further reveals that the model is weak since 28.6% of the variance is evident. This is because as per the current findings and the variables used to create the model, only management support emerged relevant and significant. This can be explained by the fact

that if the management strongly supports an idea it is likely to be implemented in the whole organization. Thus, accuracy time spend, legal matters were less significant in the model.

Table 4.4.1: ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.042	4	1.761	4.401	.006[a]
	Residual	12.001	30	.400		
	Total	19.043	34			

a. Predictors: (Constant), Legal matter, Timespend, Management Support, Accuracy

b. Dependent Variable: Readiness to prediction Markets

A further review demonstrated by the ANOVA (Table 4.4.1) shows that there is a significant . difference between the dependent variable and the predictors. The findings show that the overall equation was found to be statistically significant (F=4.401, p<.006).

Table 4.4.2: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	2.091	.635		3.293	.003	.794	3.388
Management Support	.359	.097	.569	3.690	.001	.161	.558
Time spend	-.094	.647	-.102	-.146	.885	-1.416	1.227
Accuracy	.168	.651	.182	.258	.798	-1.161	1.497
Legal matter	-.152	.125	-.180	-1.220	.232	-.407	.103

a. Dependent Variable: Readiness to Adopt prediction Markets

From the formulae given above, management support was found to be the only independent variable with a significant impact on readiness on prediction market (b=0.569, p<0.001) when all of the variables were entered into the regression equation. Thus, the higher the level of

management support, the greater the readiness to adopt prediction market. The coefficient table (table 4.4.2) moreover, shows that time spend (b=-0.102, p=0.885), accuracy (b=0.182,p=0.798) and legal matters (b=-0.180, p=0.232) did not meet the necessary criteria to significantly impact the dependent variable (readiness to adopt prediction markets), so they played no role at this stage of the analysis because the p>0.05.

4.5 Discussion of the Findings

In this chapter we will analyze the collected data based on the purpose of the project whose main objective was: to find out the satisfaction level of banks concerning the present forecasting tools they use, to determine the awareness of prediction markets and develop a prediction model for organization readiness to adopt prediction Market. We will conduct the analysis based upon the empirical findings and its comparison to previous relevant literature which has already been discussed in chapter two. In order to make the analysis more effective we will link our analysis with our research questions and at last we will present the conclusion of research.

4.6 Satisfaction on Current Forecasting Tools

According to Brooks (2008) successful banks are those that can monitor, adjust to forecasts and simultaneously meet the customer's needs. The financial sector all over the world has changed extensively. This can be explained by the growth, complexity and trends observed in ICT (Information Communication Technologies), business intelligence, and risk management strategies (Dominici, 2012). In spite of the fact that the banking industry has turned out to be easier and more convenient for the consumers, the advances and intricacies of emerging technologies have made banking operations all the more cumbersome (Ravi, 2007). Furthermore, the business environment is marked by the fierce competition and continuous changes in the relationship between organizations and customers involved in the industry (Bellini, 2007).

As per table 4.3 the current findings on the level of satisfaction concerning the present forecasting tools based on accuracy, cost,time spend and availability of expertise in the banking Industry is average. This can be explained by the fact that a majority of banks are very much dependent on ERPs and CRMs that use time series,simulation,business intelligence, data mining

and market surveys that are not fully satisfactory to forecasting and change in consumer behaviour. This further explains the need to have a better forecasting tool that is easily able to adjust to the turbulent enviroment inorder to stay relevant at all times within the industry.

4.7 Prediction Market Awareness

Prediction market awareness is quickly gaining momentum in the banking sector in Kenya since the level of awareness is Average. As per the literature review the level of awareness on prediction market is high because it has been found to produce excellent results for example , in America 1996 Iowa Electronic Markets conducted a prediction market on United States (U.S) Presidential election where candidates actively participated in vying for the presidential sit and out of the outcome could have decided whether to drop out of the race or stay in the race; each candidate could have evaluated his campaign approach using the market values and made decisions about the given approaches accordingly (Berg & Rietz, 2003). According to this example it is evident that most of the participants within developed countries are not aware of prediction markets thus education on this is necessary.

4.8 Readiness to Adopt Prediction Markets

Prediction markets are faced by various challenges despite their accuracy. However, a number of factors related to the adoption of prediction markets are considered. One, time spend: research shows that prediction markets run over a short time or long time are more accurate than other forecasting methods. Berg et al. (2003), observed the short-term while Berg et al. (2007) examined the long-term outcome conducted on IOWA elections. Table 4.4 reveals that time spend does not have a significant impact toward the adoption of prediction markets. Since a majority of banks are presently satisfied with the systems they have. Moreover, a majority of individuals within the banking sector are not aware of the powerful nature of prediction markets.

Two, management support has to be present in order to give incentives to the participants. As per the current findings it was evident that management support had the greatest significant impact towards the adoption of prediction markets. Moreover, for any forecasting technique to be successful management support by the banks is necessary in terms of providing incentives and

infrastructure. According to Servan-Schreiber, Wolfers, Pennock, & Galebach(2004),the mode of incentives that is play money or real money given to participants did not matter. Furthermore, the nature of markets is dynamic; this yields uncertainty and challenges in development of new products. To overcome product failure and risk reduction then management involvement is important (Bassler, 2011).

Three, perception of accuracy: having a variety of participants in prediction markets is very important. According to Berg (2007), suggested that forecasting accuracy varies in proportion to the participants. According to O'Leary (1999) and Rodriguez & Watkins (2009) show that a critical point is where participants have a probability greater than 0.5 of being correct in order for the group to get to the right decision. Moreover, this translates into a level of knowledge or expertise of the participants with respect to the specific market. The current finding reveals that there was a low significant impact on perception of accuracy towards readiness to adopt prediction markets this can be explained by fact that the banking industry still feel that they have present forecasting tools that are reliable and produce valid results.

Four, legal matters: there has been a lot of controversies concerning whether prediction markets should run publically or privately within an organization; this is because some countries consider gambling illegal (Oyon, 2010). Table 4.4 reveals that there was a low significant impact of legal matters towards readiness to adopt prediction markets this is because many respondents did not support the idea of introducing gambling in the banking sector. It was considered as an illegal act.

Chapter Five: Summary, Conclusions and Recommendations

This chapter, presents the conclusion, recommendation, limitations and suggestions for future study based on the theories and empirical data already presented in the second and fourth chapters.

5.1 Summary

This research was intended to find out business forecasting and prediction markets potential on banking industry in Kenya. The objective of this study was to find out the satisfaction of the present forecasting tools used by the banks, determine the level of awareness of prediction markets and develop a prediction market model that can be used to determine the readiness to adopt prediction market in the Kenyan banking industry. This study used a cross sectional survey design. The target population was senior managers in the marketing and research department from 50 licensed commercial banks. This study was carried in Nairobi since all the commercial banks have their headquarters in Nairobi. From the 50 licensed banks, the researcher selected one manager from each bank. Therefore, a sample of 35 respondents consisting of one respondent from each bank was used for this study. A semi-structured questionnaire was used for this study. Data was analyzed using descriptive statistics and multiple regression analysis.

According to the findings, the satisfaction of current tools used the following dimensions to establish the level of satisfaction of the present forecasting tools used in the Kenyan banking industry: accuracy, cost, time spend and availability of expertise. The findings revealed that there was an average satisfaction of the current forecasting tools. This shows that there is need for better forecasting tools that can be excellent to banks concerning the four analyzed aspects. The findings further revealed that prediction market awareness which used prediction Markets is the same as financial markets, I know what prediction market is and I have heard of prediction markets as its dimensions was average. This revealed that there is need to create more awareness concerning prediction markets which if banks positively embrace can overtake traditional forecasting tools.

During the development of prediction model in relation to readiness to adopt prediction market, the following dimensions were used: management support, time spend, accuracy and legal

matters. According to the formulae used in chapter five the findings revealed that management support was the only independent variable with a significant impact on readiness on prediction market (b=0.569, p<0.001) when all of the variables were entered into the regression equation. Thus, the higher the level of management support, the greater the readiness to adopt prediction market. The coefficient table (table 4.4.2) moreover, showed that time spend (b=-0.102, p=0.885), accuracy (b=0.182,p=0.798) and legal matters (b=-0.180, p=0.232) did not meet the necessary criteria to significantly impact the dependent variable (readiness to adopt prediction markets), so they played no role at this stage of the analysis because the p>0.05.

5.2 Conclusion

Commercial banks in Kenya review that the level of satisfaction of current tools and prediction market awareness is average. Based on the fact that the environment is turbulent and customer behavior keeps on changing, there is need to create awareness in the banking industry. It is evident that if a new system based on prediction markets is to be adopted, the management support is necessary and need to be enlightened on the uses and benefits of prediction markets if they have to stay competitive in the industry.

Organizations whether large, medium or small need to be aware of the environment they are operating in. Likewise, the banking sector is not exceptional since business forecasting using the right forecasting tools is necessary. This will enable them remain competitive in the long run if they choose the right tools that are cost effective and produce accurate and reliable results. This can only be done by creating awareness concerning prediction markets. A majority of commercial banks think that they have to take long in carrying out their predictions over a large sample in order to be accurate but prediction markets have proved otherwise. Therefore the banking industry needs to explore more on prediction markets.

5.3 Recommendations

This study recommends that commercial banks in Kenya should adopt prediction markets to traditional forecosting techniques. This is because it could help them cut down on cost and increase their level of accuracy because it makes use of crowd sourcing where knowledge and expertise collected is aggregated from many different individuals converting it into the required results. Furthermore, the presence of unidentified participants giving information and the existence of incentives equally increase the quality of input enabling participants give true answers without biasness.

Whereas prediction market is applicable to all industries, resistance to change can be a major hindrance towards the adoption to prediction markets in the banking and other relevant industries in Kenya. This requires to be approached in a strategic and tactful way by creating awareness to the top management level by educating them by having seminars that demonstrate the importance and application of prediction markets.

If this concept of prediction market is well embraced, banks will become more innovative to new ideas since it promotes dynamism of participation. Cost will also drastically come down because a lot of field work is not required to make predictions as compared to traditional forecasting techniques previously discussed. This will enable the banking industry to easily integrate with any changes that drastically occur as a result of technology and consumer needs.

It is hoped that this results and recommendations will be valuable to the banking sector and other industries in Kenya in carrying out their future predictions. This will enable the banking industry cut down on cost concerning their research and will embrace accurate results which is what is required to make the right decisions.

5.4 Limitations

The limitations I encountered during my present research study entailed 35 out of 50 banks in Nairobi. A majority of banks were very cautious about giving any kind of information concerning them thus it was very hard to gather secondary data about the study.

Some of the banks hardily availed any kind of information for fear their competitors would know their mode of strategies and operations. Moreover, other banks that I managed to get information from, was by because I knew somebody who directed me to people who assisted me with the required information.

I also wanted to have more questionnaires answered by managers at the strategic level but due to their busy schedules I could not access them. For those I was able to access they took long to finish up my questionnaire.

The study was also challenging because it has not been practically applied. However even though my study was limited, I did it to the best of my ability to provide quality research from valid and reliable data sources in order to answer the research questions. Finally, I had limited time for my study thus further studies on prediction markets require to be done.

5.5 Suggestions for Further Research

Since my research was Quantitative in nature, the following are areas that need to be researched on: one, qualitative research based on factor analysis where a researcher can look at other factors that can contribute toward the improvement of the suggested model. Two, study on industries that require prediction markets especially consumer goods and elections and three, doing an experimental prototype.

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P.O. Box 30197
Nairobi, Kenya

DATE... 8/10/2012

TO WHOM IT MAY CONCERN

The bearer of this letter .... FLORENCE .... WANJIRU .... KINIANI ....

Registration No.... D61/75346/2009 ....
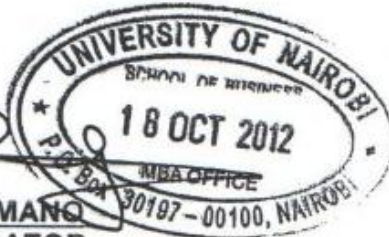
is a bona fide continuing student in the Master of Business Administration (MBA) degree program in this University.

He/she is required to submit as part of his/her coursework assessment a research project report on a management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate your assistance to enable him/her collect data in your organization.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organizations on request.

Thank you.

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS
18 OCT 2012
MBA OFFICE
P.O. Box 30197 - 00100, NAIROBI

IMMACULATE OMANO
MBA ADMINISTRATOR
MBA OFFICE, AMBANK HOUSE

Appendix II: Questionnaire

Instructions

Dear sir /Madam,

You are kindly requested to answer all questions in this research study questionnaire. The information that you will provide shall be treated with high level of confidentiality and will be used strictly for research study. The research aims at evaluating the readiness and ability to adopt prediction Market in the financial industry.

NB: Your name is not required in the questionnaire.

Respondent's Details

Section One: Personal data

Please tick (√) appropriately where applicable in the spaces provided.

1. Gender   male( )   female( )

2. Age   20-29( )   30-39()   40-49()   50-59()   Above59()

3. What is your position?

    a.   Marketing Director ( )

    b.   Business Development Manager ( )

    c.   Research Analyst ( )

    d.   Senior Research Executive( )

    e.   Others ( )

4. Which department do you serve in the bank

    a. Marketing Department ( )

    b. Research Department ( )

    c. Others ( )

5. How long have you worked in the banking sector

    a) 1 year ( ) b) 2 years ( )   c) 3 years ( )   d) 4 years ( ) e) 5years & above ( )

6. Have you undertaken any special course in forecasting Yes( )   No( )

7. How many branches does the bank have

    1-29 ( )   30-39 ( )   40-49 ( ) 50-59 ( )   Above 59 ( )

8. How many employees does the bank have---

9. What is your target market--

Banking details

10. How important is the following in your bank

1. Very Low   2. Low   3. Average   4. High   5.Very High

Time Spent in Forecasting	1		3	4	5
We like spending minimal time in forecasting					
Our company likes working under pressure					
Our current forecasting tool takes too long					
We are happy that it takes a short time					

11. Please tick (√) the forecasting techniques you use

a. Time Series ( )

b. Simulation   ( )

c. Market Survey( )

d. Data Mining ( )

e. Business Intelligence( )

f. Others.. (Specify)

12. To what extent are you satisfied with the present forecasting tools used in banks.

1. **Very Low   2. Low   3. Average   4. High   5. Very High**

Satisfaction of current forecasting tools	1	2	3	4	5
Accuracy					
Cost					

Time Spend					
Availability of Expertise					

Section Two: Readiness to Adopt Prediction Markets

In order for an organization to remain competitive in the market in the long run, good forecasting tools are required. Prediction markets are markets created within enterprises for the purpose of using information content to make predictions about specific future events. They work on the same principle as financial markets i.e. the aggregate information from a diverse population to arrive at better forecasts. This is useful because it supports decisions by giving information about present circumstances or evaluates outcomes of decisions across time. Research shows that it is more accurate and less costly than polls, surveys and other traditional forecasting tools.

13. To what extent do you agree with the following statements

1. Very Low   2. Low   3. Average   4. High   5. Very High

Prediction Market Awareness	**1**	**2**	**3**	**4**	**5**
Prediction Markets are the same as financial Markets					
I know what a prediction Market is					
I have heard of prediction Markets					

14. To what extent is the management willing to support prediction market for successful results in the following ways:

1. Very Low   2. Low   3.Average   4.High   5. Very High

Management Support on Prediction markets	1	2	3	4	5
We are willing to offer incentives e.g**. real money**(cash) or **Play money** (non-					

monetary e.g. holiday trip, car, house e.t.c)					
We are willing to give employees time to participate.					
We are willing to provide IT resources					

15. To what extent do you agree with the following statements

   1. Very Low   2. Low   3. Average   4. High   5. Very High

Accuracy of forecasting tools	1	2	3	4	5
We value accuracy greatly in forecasting					
We desire very reliable forecasting tools					
Our forecasts must be valid					

16. To what extent do you agree with the following statements on a scale of 1(strongly disagree) to 5(strongly agree)

Attitude Towards Gambling	1	2	3	4	5
Gambling is ok					
Gambling in organizations is ok					
If no cash is being won, it is not gambling					
Stock trading in financial markets is like gambling					

17. To what extent do you agree with the following statements on a scale of 1(strongly disagree) to 5(strongly agree)

Readiness to Adopt prediction market	1	2	3	4	5
We are an innovative organization					
We are willing to try prediction markets					
Prediction Markets are better than existing forecasting techniques					
Prediction markets are compatible with our existing circumstances					
Prediction markets are not too complex for us					
If prediction markets are introduced in the bank I would be ready to adopt it					

18. To what extent would you allow participation of prediction markets to be open

    a. Departmental ( )

    b. Branch   ( )

    c. Whole Organization ( )

    d. Public   ( )

19. Additional Comments...

Thank you

Appendix III
Licensed Commercial Banks

1. African Banking Corporation
2. Akiba Bank Ltd.
3. Bank of Africa Kenya Ltd
4. Bank of Baroda (Kenya) Ltd
5. Bank of India
6. Barclays Bank of Kenya Ltd
7. Barclays Bank of Kenya Ltd.
8. Central Bank of Kenya
9. Cfc Bank Ltd
10. Charterhouse Bank Ltd
11. Chase Bank Ltd
12. Citibank N.A. Kenya
13. City Finance Bank Ltd
14. Co-operative Bank of Kenya
15. Commercial Bank of Africa
16. Consolidate Bank of Kenya
17. Credit Bank
18. Crown Agents Kenya Ltd
19. Development Bank of Kenya
20. Diamond Trust Bank Ltd
21. Dubai Bank Kenya Ltd
22. EABS Bank Ltd
23. Equatorial Commercial Bank Ltd
24. Equity Bank
25. Family Bank Ltd
26. Fidelity Commercial Bank Ltd
27. Fina Bank Ltd
28. Giro Commercial Bank Ltd
29. Guardian Bank Ltd
30. Habib Bank AG Zurich
31. Habib Bank Ltd
32. Housing Finance Ltd
33. Imperial Bank Ltd
34. Investment & Mortgages Bank Ltd
35. K-Rep Bank Ltd
36. Kenya Commercial Bank Group
37. Kestrel Capital (East Africa) Ltd.
38. Middle East Bank (Kenya) Ltd
39. National Bank of Kenya
40. NIC Bank
41. Oriental Commercial Bank Ltd
42. Paramount Universal Bank Ltd

43. Prime Bank Ltd
44. Prime Capital and Credit Finance Ltd
45. Southern Credit Banking Corporation Ltd
46. Stanbic Bank Kenya Limited
47. Standard Chartered Bank (Kenya) Ltd
48. Transnational Bank Ltd
49. UBA Kenya Bank Limited
50. Victoria Commercial Bank Ltd

Source: Kenya Finance Directory (http:// www.financein**kenya**.com)