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**MODERATING EFFECT OF FINANCIAL TECHNOLOGY ON INSTITUTION
INNOVATION AND PERFORMANCE OF LICENSED CAPITAL MARKET
INTERMEDIARIES IN KENYAN SECURITIES MARKET**

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ABSTRACT

The purpose of this study was to determine the moderating effect of financial technological capabilities on institutional innovations and performance of licensed capital market intermediaries in Kenyan securities market. In Kenya capital markets serve as a mechanism for price discovery, offering trading, investment, speculation, hedging, arbitrage opportunities and information dissemination while providing vehicles for raising finances for companies and funding vision 2030. However, there have been no rich literature linking the two and licensed capital market intermediaries have a weak understanding of institutional innovations, financial technological capabilities and its control measures. The need to institutional innovations with performance has become vital for licensed capital market intermediaries striving to achieve superior performance. To better understand this relationship, this paper was guided by exploratory and cross-sectional survey approach design. Using the hierarchical and moderated multiple regression (MMR) analyses, the theoretical models and hypotheses in this paper were tested based on empirical data gathered from 97 licensed and approved capital market intermediaries in Kenyan Securities markets. The results revealed that financial technological capabilities significantly moderated the relationship between institutional innovations and performance of licensed capital market intermediaries in Kenya. This study will enhance the knowledge set of licensed capital market intermediaries in Kenya, creating sustainable business linkages and collaborations with external and multiple entities as well as contributing to the open literature.

Keywords: Institution innovation, Financial Technology, DU Pont, Licensed Capital Market Intermediaries, Securities Market

1.0 Introduction

The financial industry has changed dramatically over the past 25 years, due in large part to technology (Berger, 2003). Advances in telecommunications, information technology, and financial theory and practice have jointly transformed many of the relationship-focused intermediaries of yesteryear into data-intensive risk management operations of today (Frame & White, 2009). Consistent with this, we now find many financial institutions embedded as part of global financial institutions that engage in a wide variety of financial activities. FinTech Capabilities relating to telecommunications and data processing have spurred financial innovations that have altered products, services and production processes (Bijker, 1992).

The modern economy cannot exist without the efficient financial system, it is defined as the collection of markets, institutions, instruments and regulations through which the financial securities are traded, interest rates are determined and financial services are produced and delivered around the world (Pietrzak, Polański & Woźniak, 2008, Rose & Marquis, 2009). The financial system is regarded as one of the most important creations of the modern society and it is described as an integrated part of the economic system and by this a significant part of

the social system (Pietrzak et al, 2008). As an integrated part of the global economic system, the financial system determines the cost and the quantity of funds available in the economy to pay for every day purchases. It creates the mechanism for the flow of funds between various economic entities such as households, business firms, governments and financial institutions (Rose & Marquis, 2009).

Capital markets have a significant role to play in the development of the financial market in general. For example, the capital market performs a wide range of economic and political functions while offering trading, investment, speculation, hedging, and arbitrage opportunities (Jensen & Murphy, 1990). In addition, capital markets serve as a mechanism for price discovery and information dissemination while providing vehicles for raising finances for companies (Stiglitz, 1985). Securities markets are used to implement privatization programs, and they often play an important role in the development of emerging economies (Lee, 1998). The rapid development of Stock markets in Africa does mean that even the most advanced African Stock Markets are mature. In most of these markets, trading only occurs in only a few stocks, which account for a considerable part of the total market capitalization (Odera, 2012). There also exist serious informational and disclosure deficiencies for other stocks. Supervision and monitoring by regulatory authorities is often far from adequate.

1.2 Research Problem

Despite the CMA and the Kenyan government introducing various institution innovation mechanism, modern financial technology and several strategic initiatives the performance of the securities market has not managed to make significant contribution in financing economic growth and vision 2030 projects (Ngugi et al, 2012). Frame and White (2004) highlight the paucity of empirical research in this area. Thus, the relationship remains blurred.

1.2 Research Objectives

The overall objective of the study was to determine the moderating effect of financial technological capabilities on institutional innovations and performance of licensed capital market intermediaries in Kenyan securities market.

2.0 Literature Review

This study analyzed the moderating effect of financial technological capabilities on institutional innovations and performance of licensed capital market intermediaries in Kenyan securities market.

2.2 Theoretical Reviews

Utterback and Abernathy (1975), Abernathy and Utterback (1978), and Abernathy (1978) argues that organizational structure were all interacting and closely linked and the whole system will pass through three main phases, each of them impacting differently on single companies, on the market and on the capabilities and resources required to develop the innovation. The first phase is called fluid phase, where technology and market uncertainties

prevail, a great deal of changes take place contemporaneously and outcomes may vary significantly (Gavetti&Levinthal, 2004)

The modified Du Pont model or Du Pont identity is the most important, or “bottom line” accounting ratio is the ratio of net income to common equity (Brigham and Houston, 2001). The modified model is a powerful tool to illustrate the interconnectedness of a firm’s income statement and its balance sheet, and to develop straightforward strategies for improving the firm’s ROE. The Du Pont identity provides an excellent way to get a quick snapshot view of the overall performance of a firm in three critical areas of ratio analysis (Isberg, 1998). The higher the result the higher the return on equity Maximizing ROA is a common corporate goal and the realization that ROA has impacted by both profitability and efficiency led to the development of a system of planning and control for all operating decisions within a firm (Soliman, 2008).

2.4 Conceptual Framework

The conceptual framework is a hypothesized model that identify the concepts under study and their relationship (Orodho, 2008). It expresses the independent variables, which influences the dependent variable, and if one variable depend or is a consequence of another variable, it is termed as dependent variable and the variable which is antecedent to the dependent or that makes it to change is termed as independent variable (Cooper and Schindler, 2008). They further explain that a moderating variable is a second independent variable that is included because it is believed to alter the strength of the casual relationship and have a significant or contingent effect on the original dependent variable and independent variable relationship (Frazier, Tix& Barron, 2004.)

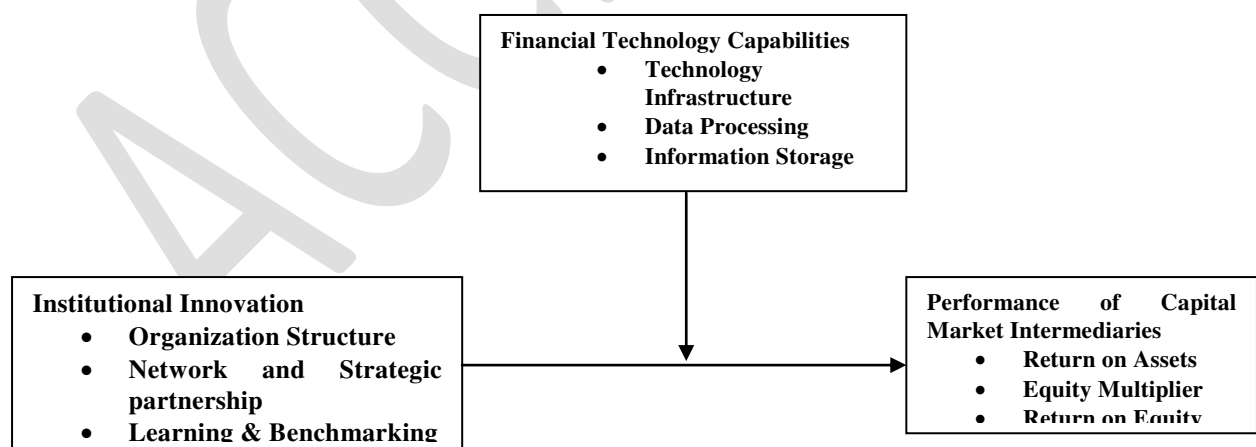


Figure 1: Conceptual Framework

3.0 Empirical Reviews

The objective of the study was to find out whether institution innovation affects performance of licensed capital market intermediaries in Kenyan securities market. Institutional Innovation issues include Organization Structure, Network and Strategic Partnership,

Learning and Benchmarking. Institutional innovation can be seen as the creation of new idea and new behavior to the organization (Damanpour&Gopalakrishnan, 2001). The dimensions of institution innovation can be reviewed from two aspects, the breadth of innovation, and the depth of innovation, which includes the importance, the degree of influence, effect on long term profitability, and others (Chuang, 2005). Administrative innovation is viewed as performance derived from the changes to organizational structure and administrative process, reward and information system, and it encompasses basic work activities within the organization which is directly related to management (Chew, 2000; Damanpour& Evan, 1984).

The fragmentation of ownership and membership rights implies a radical structure change that makes securities exchanges become for-profit enterprises with outside ownership (Pirrong, 2000). Griffiths (2004) defines demutualization as the process of changing a mutual or cooperative association into a public company by converting the interests of members into shareholdings, which can then be traded through securities exchanges. The traditional members of the mutually owned exchanges could no longer apply their self-interest policies into the exchange (Brunsson, 2000). This structural change gained popularity in the 1990s, due to competition among exchanges, which needed increased capital, need for good corporate governance in exchanges and the urge to open up ownership of exchanges to public investors (Aggarwal, 2002). Demutualization is expected to solve mutual structure problems by opening up trading rights, admitting new trading partners, and broadening ownership such that the public can invest in exchanges (Yartey& Abbey, 2007). Therefore the study hypothesized that;

H₀₁: There is no significant relationship between institutional innovations and performance of licensed capital market intermediaries in Kenyan securities market

The study also hypothesized that;

H_A₁: There is a significant relationship between institutional innovations and performance of licensed capital market intermediaries in Kenyan securities market

3.0 Firm Performance

Performance is the combination of overall organizational achievements as a result of renewal and improvement efforts done considering various aspects of firm innovativeness, i.e. processes, products, organizational structure, etc. Therefore innovative performance is a composite construct based on various performance indicators pertaining, for instance, to the new patents, new product announcements, new projects, new processes, and new organizational arrangements (Hagedoorn and Cloudt, 2003). Organizations utilize numerous models to describe how well the business is performing. DuPont model was created in the early 1900s but is still a model valid to use for assessment of the profitability (Horriagan, 1965).

DU Pont is mostly used to determine a company's strengths and weaknesses (Burson, 1998). It examines a company's Return on Equity (ROE) by breaking it into three main components:

profit margin, asset turnover and leverage factor. By breaking the ROE into distinct parts, investors can examine how effectively a company is using equity, since poorly performing components will drag down the overall figure (Palepu & Healy, 2008).

3.0 Methodology

This study was quantitative and guided by both exploratory and cross-sectional survey approach. This design helps with hypothesis formulation and testing the analysis of the relationship between variables (Kothari, 2004). The target population of this study was licensed and approved capital market intermediaries. The accessible population was securities and investment managers of the licensed and approved capital market intermediaries in Kenya and the sampling frame was sourced from Capital Market Authority (CMA). The study used the population from this source since Capital Markets Authority is the sole regulator and licensing institution of Capital market intermediaries in Kenya (CMA, 2013).

Israel (2012) posits that although cost considerations make census technique impossible for large populations, a census is attractive for small populations of 200 or less. Since the accessible population consisted of 100 respondents, this study used the entire population as the sample. The study used a self-administered, semi-structured questionnaire to obtain primary data. Consequently 91 licensed and approved capital market intermediaries out of 97 responded.

For pilot testing, data from 5 respondents were collected, representing 5% of the population in the study. Cronbach's Alpha statistic ranged from 0.69 to 0.9, indicating high reliability of data. Mertens (2010) avers that the closer the coefficient is to 1.0, the more reliable the measurements. This study adopted construct validity. Mertens (2010) advises that factor analysis can be used to validate hypothetical constructs as it attempts to cluster items or characteristics that seem to correlate highly with each other in defining a particular construct. Eigen values criterion was used to determine the selection of factor loadings for each component. The larger the eigen value loading, the more important the associated principal component (Graham & Midgley, 2000). In this case, the varimax with Kaiser Normalization sampling adequacy with eigen value greater than 1 were used as the rotation method because the items were uncorrelated. Montgomery, Peck and Vining (2001) recommend that a minimum factor loading of 0.40 should be used when factor analysis is used to refine construct validity. All items had factor loadings ranging from 0.479 to 0.877.

IBM Statistical Package for the Social Sciences (SPSS) version 21.0 for Windows 7 and Windows 8 was used for data entry, data cleaning and running the Exploratory Factor Analysis (EFA). Other software applications used were Ms-Excel for Windows 8 for case cleaning, variable screening and as a transit package in that the data from SPSS was saved in Ms-Excel for it to be exported to SmartPLS; Analysis of Moment Structures (AMOS) version 18, which is essentially analysis of mean and co-variance structures, for Initial EFA, Confirmatory Factor Analysis (CFA), Path Analysis and Structural Equation Modeling (SEM); SmartPLS version 2.0 for Path Analysis, SEM with moderation and model diagnostics; STATA version 12.0 for normality testing; R-GUI version 2.10.0 for building

plots, for instance box-plots using the Ggplot2 package, and for univariate and multivariate testing of outliers in the dependent variable.

4.0 Measurement of Administrative Process Factor Amongst licensed capital market intermediaries in Kenya

Table 1 show that majority (91%) of respondents with average rating of .91 and standard deviation of .291 stated that the organization has documented all its administrative process and systems. A few (9%) of the respondents believed that the organization has not documented all its administrative process and systems. When asked if the organization has innovative systems majority (91%) of respondents with average rating of .91 and standard deviation of .291 stated that the organization has innovative systems. Whereas a few (9%) of the respondents believe that the organization does not have innovative systems.

In regards to the organization innovation policy the results shows that majority (87%) of respondents with average rating of .87 and standard deviation of .334 stated that the organization has innovative policy. A few (13%) of the respondents believes that the organization does not have any innovative policy. Respondents were also required to address the question of whether the organization has innovative organization culture. Majority (81%) of respondents with average rating of .80 and standard deviation of .399 stated that the organization has innovative organization culture. A few (19%) of the respondents stated that the organization does not have innovative organization culture.

Innovative systems in liquid market help companies raise capital. In these markets, shareholders can easily divest their equities as desired. A well designed processes and system often serves as a useful starting point for financial/investment analyst, stock broker and investor. Financial analysts gather and process information to make investment decisions, including those related to buying and selling assets. Generally, the decisions involve trading securities, currencies, contracts, commodities, and real assets such as real estate. Therefore, clear documentation of administrative process and systems reduces the likelihood of costly misunderstandings by providing a glossary of commonly used terms, naming conventions, and even commonly used strategy patterns.

Organizational culture affects various outcomes related to product innovation, employees, technological advancements and performance of licensed capital market intermediaries in Kenyan securities market as a whole. Innovative organization culture affects employee behavior, learning and development (Bollinger ad Smith, 2001; Saeed and Hassan, 2000), creativity and innovation (Ahmed, 1998; Martins and Terblache, 2003; Martins and Martins, 2002; Mclean, 2005), knowledge management (McDermott and O'Dell, 2001; Tseng, 2010), performance (Oparanna, 2010; Saeed and Hassan, 2000; Tseng, 2010). Martins and Martins (2002) argued that many researchers agree that organizational culture is a contributing factor to the degree to which creative and innovative behavior is found among employees in an organization.

4.1 Measurement of Network and Strategic Partnership Factor Amongst licensed capital market intermediaries in Kenya

The results in table 2 show that majority (83%) of respondents with average rating of .83 and standard deviation of .380 stated that the organization has strategic alliance with different organizations. Whereas a few (17 %) of the respondents said that the organization does not have a strategic alliance with different organizations. When asked if the organization always identify with valuable external knowledge majority (87%) of respondents with average rating of .87 and standard deviation of .334 stated that the organization always identify with valuable external knowledge. Whereas a few (13%) of the respondents stated that the organization does not always identify of valuable external knowledge.

In regards to the organization ability to understand the trends of external knowledge the results shows that majority (85%) of respondents with average rating of .85 and standard deviation of .359 believe that the organization understands the trends of external knowledge. Whereas a few (15%) of the respondents believes that the organization doesn't understands the trends of external knowledge. Respondents were also required to address the question of whether the organization frequently collects external information from their stakeholders. Majority (83%) of respondents with average rating of .83 and standard deviation of .380 stated that the organization frequently collects external information stakeholder. Whereas a few (17%) of the respondents believes that the organization does not frequently collects external information stakeholder.

Networking and strategic partnership has enabled licensed capital market intermediaries to respond very quickly to potential or actual financial innovation process in the market (Verona and Ravasi, 2003; Griffith and Harvey, 2001). Strategic alliance is significant as it is deeply embedded in the history and tradition of the financial market intermediaries firm. This presents unique and inimitable financial innovation capabilities, which lead to sustainable competitive advantages. Chuang, (2004) argues that FinTech Capabilities creates strategic alliances that improves efficiencies and flexibilities that lead to improved performance of licensed capital market intermediaries in Kenyan securities market. The Government of Kenya has reiterated its commitment to the full implementation of the provisions of the East African Community (EAC) Common Market Protocol (Rok 2010). All capital market restrictions in place (in Burundi, Rwanda and Tanzania) have been removed and regional payments system under the EAC Settlement (RTGS) payments system is in place. This is a good foundation for EAC post trade, IPO solutions and cross border registration operations.

4.2 Measurement of Bench Marking Factor Amongst licensed capital market intermediaries in Kenya

The results on table 3 show that majority (81%) of respondents with average rating of .80 and standard deviation of .399 stated that the organization management team is committed to implement and utilize benchmarking strategies. Whereas a few (19%) of the respondents that the organization does not have management team committed to implement and utilize benchmarking strategies. When asked if the organization creates and maintain strong benchmarking network of business contacts majority (78%) of respondents with average

rating of .78 and standard deviation of .416 stated that the organization reward creativity of employee. Whereas few (22%) of the respondents stated that the organization does not creates and maintain strong benchmarking network of business contacts. In regards to what to benchmark majority (82%) of respondents with average rating of .91 and standard deviation of .291 stated that, the organization has a clear policies or procedures on what to benchmark. Whereas a few (18%) of the respondents the organization does not have a clear policies or procedures on what to benchmark.

Strong benchmarking network encourages employees to become motivated, thereby increasing their participation in contributing to innovative ideas, hence improved performance of licensed capital market intermediaries in Kenyan securities market. Gupta&Singhal, (1993) opines that to build sustainable and mutually beneficial relationships, increase competitive edge, open up wider markets and drive-down costs/price by develop successful financial innovation and generate newer ideas. Clear policies or procedures on what to benchmark enables licensed capital market intermediaries to check, copy, correct and measure current performance against pre-determined standards contained in their plans, with a view to ensure adequate progress and satisfactory performance.

The management team commitment to implement and utilize benchmarking strategies supports creativity and financial innovations in licensed capital market intermediaries in Kenya. Several benchmarking strategies can serve to enhance or inhibit the tendency to innovate in organizations thereby promoting technology capabilities (Ahmed 1998; McLean, 2005). Chen & Huang (2007) argues that for licensed capital market intermediaries to develop and introduce new product, new process, new administrative practices and/or diffusion of innovation they require clear policies or procedures on what to benchmark, that are flexible, risk taking, tolerant of uncertainty and ambiguity. Benchmarking in accordance with global best practice are in line with Kenya securities market long term objective of being the most valuable brand in the EAC securities industry and to position Nairobi as the financial services hub in Africa. The CMA has applied to the World Federation of Exchanges (WFE) to upgrade its status from correspondent to affiliate status and full members of the WFE by 2017. Currently the Egyptian Exchange, the JSE Ltd., and the Stock Exchange of Mauritius are the only African exchanges that have earned the privilege of being full members of the WFE.

5.0 Data Analysis and Results

Case screening was undertaken through the examination of the missing data by running the cases counts in excel, using the standard deviations to access the level of engagement of the respondents. Records with missing cases (up to 20%) were dropped out of which 87 cases were retained. This may have been due to the perceived confidentiality of data, lack of understanding or reluctant attitude of the respondents to answer a question that they thought was irrelevant to their business operations and practices. A maximum likelihood function was used to replace those missing values (Enders & Bandaios, 2001). Babbie (1990) suggested that a response rate of 70% is very good, 60% is good, and 50% adequate for analysis. Chen

(1996) argued that the larger the response rate, the smaller the non-response error. Table 4 shows high response rate of (89.69%) which was attributed to the use of self-administered approach and respondents were assured of confidentiality of the information provided.

To ensure that there was no violation of the assumptions, this study tested for outliers, normality, linearity, homoscedasticity, multicollinearity, non-response bias and common method variance. The results of the tests conformed to the respective thresholds for each test.

In this study, analyses were conducted using a two-phase process consisting of confirmatory measurement model and confirmatory structural model. This is in line with the two-phase process suggested by Anderson and Gerbing (1988). The first phase involved confirmatory factor analysis (CFA) that evaluates the measurement model on multiple criteria such as internal reliability, convergent, and discriminant validity. Prior to this was the exploratory factor analysis (EFA) whose key steps included the computation of pattern matrix, communalities and principal components analysis (PCA). EFA is used when you have a large set of variables that you want to describe in simpler terms and you have no *a priori* ideas about which variables will cluster together (Tabachnick&Fidell, 2013).

But prior to EFA, two statistical tests, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity, were performed. The results of the two tests are shown in table 5, with indications that EFA was suitable with the data in this study.

The second phase involved latent variables structural equation modeling (SEM) to test the hypothesized relationships and to fit the structural model. Normality test on the factors produced Skewness values between -1 and +1. The outliers were tested for each of the observations, with observations farthest from the centroid, Mahalanobis distance, being taken into consideration. There were no outliers detected. The values obtained in testing the model fit indices were within the thresholds as shown in table 7.

The quotient of a model parameter and its standard deviation is asymptotically Student t distributed. The significance of model parameters and, in particular, the coefficient of the interaction term, can be determined by means of respective tables. T-statistics provided information on the significance to the relationship and T-statistics value (C.R) was used to test whether the moderating effect of FinTech Capabilities on the relationship between institutional innovations and performance of licensed capital market intermediaries in Kenyan Securities market.

Moderated effect results of FinTech Capabilities on institutional innovation and performance of licensed capital market intermediaries shows CR of 1.2767 and p-value of .050. This implies that there was no a significant relationship between institutional innovations * FinTech Capabilities and performance of licensed capital market intermediaries in Kenyan Securities market since the CR of 1.277 is lower than the conventional critical value of 1.96 at .05 significance level ($p < .05$).

The finding of the study reveals that institutional innovations * FinTech Capabilities and performance of licensed capital market intermediaries in Kenyan securities market is positive ($\beta = .276$) and not significant ($t = 1.2767$, p -value $.000$). Thus we fail to reject the null hypothesis at 95% significance level and therefore conclude that FinTech Capabilities does not moderate the relationship between institutional innovations and performance of licensed capital market intermediaries in Kenyan securities market. The finding contrast with Sappasert and Clausen (2012) explored the impact of organizational innovation for a sample of Norwegian firms, using information from two waves of the CIS and published data on performance. They found out that firms could better reap the rewards of reorganization by jointly reorganizing with technological innovation, indicating that there is strong complementarity between institutional innovation and FinTech Capabilities. Fleck (1994) also recognized the necessity to adapt the management procedures to the new technology implemented in the organization.

Moderated multiple regression (MMR) analysis is defined as an inferential procedure which consists of comparing two different least-squares regression equations (Aguinis, 2004). Using MMR analysis in this study, the moderating effect of the variable (product term) was analyzed by interpreting the R^2 change in the models obtained from the model summaries, and by interpreting the regression coefficients for the product term obtained from the coefficients' tables. The results in table 6 show the moderating effect of FinTech Capabilities on the relationship between institutional innovations influence the performance of licensed capital market intermediaries in Kenyan securities market. Model 1 shows that $R = .089$, $R^2 = .008$ and $[F(1, 68) = .542, p = .464]$. The value of R^2 indicates that 0.8% of the variance of the performance of licensed capital market intermediaries in Kenyan securities market can be accounted by institutional innovations scores. R^2 was used to show the proportion of variation in dependent variable explained by the SEM model.

Model 2 shows that $R = .699$, $R^2 = .488$ and $[F(1, 67) = 62.893, p = .000]$. The value of R^2 indicates that 48.8% of the variance of the performance of licensed capital market intermediaries in Kenyan securities market can be accounted by institutional innovations scores and FinTech Capabilities. R^2 was used to show the proportion of variation in dependent variable explained by the SEM model.

Model 3 shows the results after the interaction term (institutional innovations * FinTech Capabilities) was added into the model. The results also indicates that the inclusion of the interaction term resulted into an R^2 change of $.765$, $[F(1, 66) = 77.910, p < 0.000]$, showing presence of significant moderating effect. In order to determine the function of the moderator, difference in R^2 as recommended by Carte and Russell (2003) was used.

The structural equation modeling (SEM) for the first objective for model 2 is as shown in figure 4.7. Model 2 shows the results after interaction term (institutional innovations * FinTech Capabilities) was introduced in the equation. Inclusion of interaction term resulted in an R^2 change of 27.7%. An R^2 change of 27.7% indicates that moderating effect explains 27.7% variances in performance of licensed capital market intermediaries in Kenyan Securities market above and beyond the variance explained by institutional innovations.

This shows a statistically significant presence of moderating effect of FinTech Capabilities on the relationship between institutional innovations and performance of licensed capital market intermediaries in Kenyan securities market. Morsy (2007) analyzed the Impact of Demutualization on the Performance of Stock Exchanges. He found that decisions by stock exchanges to change its ownership structure through demutualization are undertaken when the existing structure of the stock exchange seeks to provide better flexibility and financing needed to respond to the current changes in the business environment. He found that there was a remarkable change in the competitive environment facing exchanges. The traditional role of the broker as an intermediary between the investor and the stock exchange was getting minimized as a result of the emergence of a number of electronic order routing and trading networks in recent years.

In regards to significance model 1 in table 6 shows that institutional innovations was found to be statistically significant ($p = .822 > .050$, Beta value= .089). On substitution of the coefficients in equation (5), we obtain:

$$\text{Performance of Licensed Capital Market Intermediaries} = - \mathbf{0.30} + \mathbf{0.093} \text{ Institutional Innovation} \dots\dots\dots \mathbf{Equation 1}$$

This implies that if licensed capital market intermediaries of Kenya does not embrace or adopt institution innovation the firms will experience negative performance by .3 units. However, a 1-unit increase in institutional innovation, the performance of licensed capital market intermediaries in Kenyan securities market is predicted to have a difference by .093,

Model 2 shows that institutional innovations was found to be statistically significant ($p = .023 < .050$, Beta value = .223). Technological capability was found to be statistically significant ($p = .000 < .050$, Beta value = .760). On substitution of the coefficients in equation (1), we obtain:

$$\text{Performance of Licensed Capital Market Intermediaries} = - \mathbf{0.415} - \mathbf{0.234} \text{ Institutional Innovation} + \mathbf{1.172} \text{ FinTech Capabilities} \dots\dots\dots \mathbf{Equation 2}$$

This implies that a 1-unit increase in institutional innovation, the performance of licensed capital market intermediaries in Kenyan securities market is predicted to have a difference by .234, given that the FinTech Capabilities is held constant. The regression coefficient associated with FinTech Capabilities means that the difference in performance between licensed capital market intermediaries with high FinTech Capabilities and licensed capital market intermediaries with low FinTech Capabilities is 1.172, given that institutional innovations is held constant.

Model 3 reveals the details of the inclusion of the interactive term in the model. Institutional innovations was found to be statistically significant ($p = .000 < .050$, Beta value = -.272). Technological capability was found to be statistically significant ($p = .000 < .050$, Beta value = .991), and institutional innovations * FinTech Capabilities was also found to be significant ($p = .000 < .050$, Beta value = .569). On substitution of the coefficients in equation (2), we obtain:

$$\text{Performance of Licensed Capital Market Intermediaries} = - 0.559 - 0.286 \text{ Institutional Innovation} + 1.528 \text{ FinTech Capabilities} + 0.660 \text{ Institutional Innovations} * \text{FinTech Capabilities}$$

.....*Equation 3*

This implies that for a 1-point increase in the institutional innovation, the performance of licensed capital market intermediaries in Kenyan securities market is predicted to have a difference by .286, given that technological capability is held constant. The interpretation of the regression coefficients for the interaction term in Equation (3) is that there was a .660 difference between the slope of performance on institutional innovation between licensed capital market intermediaries with low FinTech Capabilities and those with high FinTech Capabilities. The slope regressing performance on institutional innovation is steeper for licensed capital market intermediaries with high FinTech Capabilities as compared to licensed capital market intermediaries with low FinTech Capabilities. Results based on equation (3) led to the conclusion that there was a statistically significant moderating effect of FinTech Capabilities.

A study by Mensah (2005) about challenges and opportunities of demutualizing African stock exchanges, showed that African stock exchanges should move cautiously on demutualization. The factors that fueled demutualization in developed and the larger emerging markets were largely absent from Africa. In addition, the key preconditions such as a sufficiently liberalized market and critical mass of stock exchange trading and related services did not exist in most markets. Lee (2003) analyzed the Changing Market Structures, Demutualization and the Future of Securities Trading. He found that the pressures of competition, globalization, and technological change, were threatening the development, and in some instances the very survival, of many developing capital markets.

Gera and Gu (2014) examined whether investment in information and communication technology (ICT) affects firms performance, combined with organizational changes and worker skills contribute to better performance in Canadian firms. They found out that Canadian firms have actively engaged in organizational changes in the areas of production and efficiency practices, human resource management (HRM) practices, and product/service quality-related practices. These practices along with ICT use are found to be related to better firm performance. While ICT is productive on its own, it is more productive in firms that combine high levels of ICT with high levels of organizational change.

6.0 Discussions and Conclusions

Institutional innovation had a positive relationship with performance of licensed capital market intermediaries in Kenyan Securities market. Consequently, the null hypothesis was rejected. Institutional innovation also had a statistically significant influence on the performance of licensed capital market intermediaries in Kenyan Securities market. As well, institutional innovation explained above average variation in performance of licensed capital market intermediaries. Out of the three factors of institutional innovation, organizational structure, network and strategic partnership and learning and bench marking

all factors were found to contribute significantly to institutional innovation influencing performance of licensed capital market intermediaries in Kenyan Securities markets.

Significant moderating effect was reported in the relationship between Institutional innovation and performance of licensed capital market intermediaries in Kenyan securities market when the interaction term (Institutional innovation * FinTech Capabilities) was included. These results are consistent with the findings from other studies that have emphasized the significant role of institutional innovation on performance of licensed capital market intermediaries in Kenyan Securities markets.

Silber (1981) developed a microeconomic model of a institutional innovation based on the hypothesis that institutional innovations are created in order to reduce the constraints imposed to companies. These constraints could be either within the company (self-appeared liquidity, etc.) or external (national regulatory infrastructure, demand and supply factors of financial products that are defined by the market, etc.). He came to the conclusion that institutional innovations ameliorate economic welfare. This is in line with the Abernathy and Utterback model where competitive environment and organizational structure were all interacting and closely linked and they found out that the institution innovation will pass through phases, each of them impacting differently on performance of licensed capital market intermediaries in Kenyan Securities marketas

DeYoung (2002; 2005) examined the case of Internet only-banks and demonstrated that their success depends on the transaction rate, the technological development and its effect on the economies of scale and on the powerful administrative organization and practice. Tadesse (2006) examined if the financial architecture of an economy is oriented towards a financial purchase or towards the banking sector and if this is an important factor for the long-term economic growth, especially for innovations and technology. The writer used data that cover a large number of countries and industries and focus on the advantages of the banking sector against purchases during the getting informed process. The results showed that financial architecture has an important impact on industrial activities on innovation and that the oriented investment design in the market has a positive impact on technological development, a fact that agrees with the theoretical approaches that want markets to have a comparative advantage in the identification and funding of new technologies.

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APPENDIX

Table 1 Response on Administrative Process and Systems Factors

ITEM	YES	NO	MEAN	STD.DEV
The organization has documented its process	79(91%)	8(9%)	.91	.291
The organization has innovative systems	79(91%)	8(9%)	.91	.291
The organization has Innovative policy	76(87%)	11(13%)	.87	.334
The organization has Innovative culture	70(81%)	17(19%)	.80	.399

Table 2 Response on Network and Strategic Partnership Factors

ITEM	YES	NO	MEAN	STD.DEV
The organization has strategic alliance	72(83%)	15(17%)	.83	.380
The organization identifies with valuable knowledge	76(87%)	11(13%)	.87	.334
The organization understands the knowledge trends	74(85%)	13(15%)	.85	.359
The organization collects external information	72(83%)	15(17%)	.83	.380

Table 3 Response on Bench Marking Factors

ITEM	YES	NO	MEAN	STD.DEV
The organization has benchmarking strategies	70(81%)	17(19%)	.80	.399
The organization has strong benchmarking network	68(78%)	19(22%)	.78	.416
The organization has clear procedures on what to benchmark	71(82%)	16(18%)	.82	.390

Table 4 Response Rate

Details	Frequency	Percent
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Distributed Questionnaires	97.00	100.00%
Returned Questionnaires	91.00	94.85%
Effective Response	87.00	89.69%

Table 5 Factor Analysis Results

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.713
Approx. Chi-Square	601.350
Bartlett's Test of Sphericity	

Table 6 Moderated Multiple Regressions Summary for Institutional Innovation

Model	R	R ²	Adjusted R ²	S.E.E	R ² Change	F Change	df1	df2	Sig. F Change
1	.089 ^a	.008	-.007	1.10304	.008	.542	1	68	.464
2	.699 ^b	.488	.473	.79809	.480	62.893	1	67	.000
3	.875 ^c	.765	.755	.54456	.277	77.910	1	66	.000

a. Predictors: (Constant), Technology, Institution b. Predictors: (Constant), Technology, Institution, institution Technology

Table 7 Moderated Multiple Regressions Coefficients for Institutional Innovation

Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	-.030	.132		-.226	.822
	Institution	.093	.127	.089	.736	.464
2	(Constant)	-.415	.107		-3.877	.000
	Institution	-.234	.101	-.223	-2.323	.023
	Technology	1.172	.148	.760	7.930	.000
3	(Constant)	-.559	.075		-7.472	.000
	Institution	-.286	.069	-.272	-4.151	.000
	Technology	1.528	.109	.991	14.072	.000
	Institution*Technology	.660	.075	.569	8.827	.000

Table 8 ANOVA Summary for Institutional Innovation

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.660	1	.660	.542	.464 ^b
	Residual	82.735	68	1.217		
	Total	83.395	69			

2	Regression	40.719	2	20.360	31.964	.000 ^c
	Residual	42.676	67	.637		
	Total	83.395	69			
3	Regression	63.823	3	21.274	71.741	.000 ^d
	Residual	19.572	66	.297		
	Total	83.395	69			

- a. Dependent Variable: performance b. Predictors: (Constant), Technology, Institution c. Predictors: (Constant), Technology, Institution, Institution*Technology

ACCEPTED