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Factors influencing adoption of open innovation strategy in cooperative societies in Nyeri, Kenya

[1]Susan Keeru Micheni, Department of Business, Kenya Methodist University
[2]Dr. Susan Wamitu, Department of Business, Kenya Methodist University
[3]Paul Shavulimo, Department of Business, Kenya Methodist University
Corresponding Author: *kiriinyanicholas@gmail.com*

Keywords

of management for strategic change, cooperative societies, innovation strategy.

Abstract

Introduction: Innovation is a tool of management for strategic change, as it provides a way of how to create the conditions that make proactive change a natural way of life. It aims at developing a change anticipates, creates and responds effectively to change in the external and internal environments to increase profit potential of an organization. The study was based on the descriptive research design. The target population was 86 respondents who comprised of the senior and middle level managers of deposit taking SACCOs from Nyeri County as of end of 2015. **Methodology:** The study employed stratified random sampling technique in coming up with a sample of 63 respondents comprising of senior and middle level managers in the deposit taking saccos in Nyeri County. The study employed stratified random sampling technique to produce an unbiased grouping of the heterogeneous population into homogenous subsets within the individual subset to ensure representativeness. The relevant data was collected using questionnaires from 55 respondents representing 87.3% response rate out of the probable 63. Collected data was analyzed using statistical package for social sciences (SPSS) to generate descriptive and inferential statistics. Factors influencing adoption of open innovation strategy in the cooperative societies were measured using multi regression analysis. **Results:** Hypothesis testing revealed that technology consideration, top management commitment and resource availability had positive and statistically significant effect on adoption of open innovation strategy in the cooperative societies. Competitor actions had positive but statistically insignificant effect on adoption of open innovation strategy in the cooperative societies. **Recommendations**: The researcher recommended that cooperative societies embark on embracing new technology as it leads to adoption of open innovation strategy. The study further recommends that cooperative societies should ensure that the strategies to be implemented in the organization has top management support and commitment as they to play major role to ensure smooth implementation. The study suggests that future research could focus on the challenges cooperative societies encounter when adopting of open innovation strategy.

Background of the Study

Innovation has widely been considered a crucial source of competitive advantage and survival in the dynamic environment and an important point of an organization's strategy (Savitskaya, 2011). Organizations innovate to adapt to their external environment and to respond to perceived external and organizational changes with many industries traditionally focusing on internal innovation (Grönlund et al., 2010) whereas others have been in continuous co-innovation processes over the decades (Mowery, 2009). The last decade has seen increased global competition which has resulted in the emergence of new approaches to cooperation for innovation. The rapid development of information and communication technologies has led to integration of customers and suppliers into the innovation process despite the physical distances between them (Gassmann, 2006).

The 1990s saw an intensified need to cooperate and open up the company borders, thus beginning the shift towards open innovation. This reached its peak at the time when Chesbrough (2003) raised the issue of whether open innovation was the new imperative for creating and profiting from technology. The notion of open innovation as coined by Chesbrough (2003) quickly gained the interest of both researchers and practitioners. The concept refers to a way of innovation management where a company provides internally produced knowledge for the market and lets external knowledge flow in, in order to maximize the value for the company. It has also been described as a set of practices for profiting from innovation and a cognitive model for creating, interpreting and researching those practices (West, Vanhaverbeke, & Chesbrough, 2006).

Open innovation has been necessitated by the need for profitable growth, improvement in product margins, perceived inability to meet corporate growth objectives absent recourse to external technologies, increased speed to market, cost reduction, to improve innovation, increase speed to market, reduce the costs of internal vertical integration and monitoring of potentially disruptive technologies (Chesbrough & Crowther, 2006). The transition from closed to open innovation is evident in many industries, from copiers, computers, disk drives to biotechnology and even military weapons and communications systems. This was a result of several very vital innovations emerging not from the central R&D labs of large companies but from unlikely external sources such as startups, universities, research centres and other outside firms. Other industries are also now leaning towards open innovation, such as automotive, health care, banking (Chesbrough, 2003a) and asset intensive industries like cement manufacturing (Chiaroni, Chiesa, & Frattini, 2011). However, adopting the open innovation model does not seem to be easy as several challenges come in the way of the open innovation process. West et al.,(2006) underline that innovation is a result of efforts of one or more individuals and such individuals certainly play a crucial role by being productive and using some combination of intrinsic and extrinsic motivations.

Statement of the Problem

The need of innovation is obvious and crucial for all organizations given that they operate in a competitive and uncertain environment. To succeed and survive, organizations need to be innovative by introducing regular streams of innovations so that they gain competitive advantage. Open innovation improves overall performance of organizations. Mokter and Ilkka, (2016), Gregory and Ian, (2013) suggested that firms operating in an emerging economy may find involvement in open innovation an effective strategy for enhancing organizational performance. However, adopting the open innovation strategy is not easy as several challenges come in the way of the open innovation process. Hurdles and enablers to the implementation of open innovation were investigated by Mortara et al., (2009) and Golightly et al., (2012). Mortara et al (2009) in their study of 144 European companies (all industries), concluded that common barriers to implementation were related to organizational culture (Lichtenhaler & Ernst 2006; Golightly et al., 2012), employee motivation, procedures and structures and finally to the blend of necessary open innovation skills.

Despite the growing body of knowledge, there is still poor evidence of the factors influencing adoption of open innovation strategy in cooperative societies in Kenya. The current research will therefore bridge the above knowledge gap by investigating the factors influencing adoption of open innovation strategy among deposit taking Sacco societies in Nyeri County. In order to achieve this, the study focused on top management commitment, technology, availability of resources and competition as factors influencing adoption of open innovation strategy among deposit taking Sacco societies in Nyeri County. The study thus sought to answer the question: What are the factors influencing adoption of open innovation strategy

among deposit taking Sacco societies in Nyeri County?

General Objective

The general objective of this study was to establish factors influencing adoption of open innovation strategy among deposit taking Sacco societies in Nyeri County.

Specific Objectives

The specific objectives of the study were;

1. To determine the influence of technology on the adoption of open innovation strategy among deposit taking Sacco societies in Nyeri County.
2. To establish how the competitors environment influences adoption of open innovation strategy among deposit taking Sacco societies in Nyeri County.

Research Hypothesis

1. Ho. There is no relationship between competitor's environment and adoption of open innovation strategy among deposit taking Sacco societies in Nyeri County.
2. Ho. There is no relationship between resource availability and adoption of open innovation strategy among deposit taking Sacco societies in Nyeri County.

Significance of the Study

The findings of this study would enable Sacco's and other financial institutions through their Chief Executive Officers and Board of Directors realize the factors influencing adoption of open innovation strategies. It would als bring out the influence of organization's resources, capabilities, costs, differentiated products and services and other factors on open innovation strategies. This study is important to the deposit taking Sacco's and more specifically those in Nyeri county as they will know what factors contributes to the organization open innovation in shaping their operations and how they affect performance.

Further, the study is important to the Sacco managers and to larger extent managers of other industries. It would help them understand how open innovation strategies works and what factors leads to effective adoption of the strategies. The government may use the results to improve their services. The study would be reference material for succeeding researchers on other equivalent topics. It will form a foundation on which further research will be based on. This will enable researchers in linking theoretical concepts to actual practice in the field.

Scope of the study

The study focused on the factors influencing adoption of open innovation strategy among deposit taking Sacco societies in Nyeri County. It covered the middle and senior management staff in the deposit taking Sacco Societies in Nyeri County.

Assumptions of the study

The study assumed that all variables remained constant during the period under the study and that the respondents would give reliable and valid responses. The study further assumed that all the questionnaires would be filled correctly and there was no political instability during the research period.

Open Innovation in Organizations

Organizational efforts at innovation are simultaneously driven by the need, and the opportunity, to improve products and processes. O'Sullivan and Dooley (2009, p. 1) define innovation as "the process of making changes to something established by introducing something new that adds value to customers." Since the possibilities of established "some things" that can be improved are effectively infinite, innovation plays a continuous role in every aspect of organizational experience.

Chesbrough (2003a), Chesbrough (2003b) characterizes the change from closed to open models of innovation as no less than a paradigm shift. In the old paradigm, closed innovation, successful innovation requires the organization to exert substantial internal control on all aspects of the process. The new paradigm, open innovation, holds in contrast that successful innovation requires significant integration of both internal and external components. While critics (Trott & Hartmann, 2009) argue that the differences in closed and open are really more evolutionary than transformational, the adoption of the open innovation concept over the past decade cannot

be denied (Giannopoulou et al., 2010; Huizingh, 2011; Lichtenthaler, 2011).

The inevitability of the advance of open innovation is based in the substantial changes that have occurred in the operating environment. Organizations want to access, develop, absorb, or commercialize new technologies; the pace of technological change has increased dramatically. The roles of organizational knowledge and of knowledge workers have acquired increasing importance (Savino, 2009); knowledge has become the key resource in the postindustrial society. The speed and intensity of change insures both that more information is needed, and that it must be acquired at a progressively faster pace. Workers are more mobile in terms of employment and thus organizational affiliation; as they move, they take their knowledge and ideas with them. Accordingly, the maintenance of closed cycles of innovation through rigid internal control has become increasingly difficult (Vanhaverbeke, 2006). The open view is in greater harmony with the new "landscape of abundant knowledge" (Chesbrough, 2003b, p. 37); it therefore becomes a superior strategic approach under new evolving conditions.

Open innovation allows access to the aggregation of the knowledge of the other players in the process; the innovating organization "discovers locations in the landscape that it may never have reached had it been in charge of all choices" (Almirall & Casadesus Masanell, 2010, p. 44). The linkages that access external experts and comprise the open innovation systems can take a number of forms. Van haverbeke (2006, p. 205) defines the relationships simply in terms of the "ties of innovating firms with other organizations." The participants in open innovation can also be described variously as a network of experts (Rohrbeck, 2010) or a community of practice (Ystrom, et al., 2010).

The open innovation relationship could be with an organization, or with individual actors, who may or may not formally represent their employing institution (West & O'Mahony, 2008). The open innovation relationship could also include involvement with external experts, linked to the organization through an "online external innovation broker" (Mahr, et al., 2010, p. 4). Participants could be included from universities, from the public sector, from competitors, from suppliers, from customers, and from other industries (Bogers, 2011; Jarvenpaa &Wernick, 2011; Maehler, et al., 2011). The external experts possess specific knowledge and understandings that the focal organization needs to access.

Technology Considerations and Adoption of Open Innovation

Technology considerations are a total amount of the currently existing and exploitable external resources firms are faced with (Becker & Dietz, 2002) and have an external influence on the innovation intensity and productivity. One of the reasons why firms engage in innovation cooperation is the lack of own resources, so the higher the availability of external knowledge, the higher firms' intra-company capabilities to develop innovations are. There are market-related (consumers, suppliers) and non-market-related (universities) sources of technological opportunities (Harabi, 2002). In this view, types of innovation play a critical role. There are different classification models of innovation types based on innovation's impact or scope, innovation source, impact to current business and also the Oslo Manual classification (OECD & Eurostat, 2005). Castellacci (2007) relates technological opportunities with the share of expenses that firms spend on R&D activities, considering differences in the levels and sources of technological opportunities may explain variations in R&D expenditures. Therefore, the level of internal R&D expenditure is concerned with the choice of beginning of a collaborative R&D activity (Franco & Gussoni, 2010). Open innovation research suggests that the type of technology employed by a firm is also likely to impact the adoption of an Open innovation strategy.

Modular technologies are better suited for open innovation methods; whereas, technologies with complex interfaces make open innovation adoption more difficult (Enkel & Gassmann, 2004). Firms will always attempt to protect their core technologies by making them inaccessible to external partners, limiting open innovation exchanges (Dodgson et al., 2006). Research has yet to explore the factors influencing adoption of open innovation. Before adopting an open innovation strategy, firms must understand the environment in which they will transact, such that they can effectively minimize the risks of replication or emulation from potential imitators and capture value through open innovation (Hurmelinna et al., 2007).

Competitors Environment and Adoption of Open Innovation

The broad consideration regarding open innovation adoption relates to external environmental conditions. Consistent with Chesbrough's (2003) concept of 'erosion factors', research has examined how environmental changes have undermined the functionality of the closed model. Innovation is a key element in corporate strategy and firm level competitiveness (Kay, 1993). An innovation can introduce scarce, high value added products and the individual firm can reap supernormal profits from its introduction. It allows the firm to develop new products and exploit new markets; in addition, it can allow the firm to improve its cost base and increase profit margins without increasing its price. Innovation and new product development are crucial sources of competitive advantage (Commission on Public Policy and British Business, 1997; Tushman et al., 1997).

Much of this literature concentrates on large, internationally competitive firms. Quinn et al. (1997, p. 506) argues that innovation is a complex, interactive process, however, dependent on demand side factors (customers, buyers) and supply side factors (technological inventiveness, research outcomes) (Mowery & Rosenberg, 1979). Moreover, "winners" from one innovation often become "losers" over time in all industries and in all countries (Henderson & Clark, 1990). Spatial economies show this reversal of fortune from success to failure also, the "Icarus paradox" (Bovaird, 1994).

Firms need to create innovation streams patterns of innovation to sustain competitive advantage (Tushman et al., 1997) and regions need innovation streams via either as new firms or existing firms. Good internal communications, particularly across functions, foster innovation (Freeman, 1994; Burns & Stalker, 1961). Tushman et al. (1997) argue that companies need simultaneously to create both incremental and discontinuous innovations: developing streams of innovation, building ambidextrous organizations, the role of the senior management team in building and integrating this diversity, and senior management's role in managing large system change associated with strategic innovation, these are all crucial competencies for sustained competitive advantage; for building from today's to tomorrow's competitive strength.

Research Methodology

Introduction

This chapter presents the methodology that was used to conduct this study. It gives an account of the procedures, research design, data collection procedures and sources, measurement of variables, and how the data was collected, analyzed and presented.

Research design

The study adopted a descriptive survey design since the researcher covered the deposit taking SACCOS in entire Nyeri County. According to Mugenda and Mugenda (2008) descriptive research is a process of collecting data in order to test hypothesis or to answer questions concerning the current status of the subject in the study. Kothari (2004) stated that descriptive survey designs are used in preliminary and exploratory studies to allow researchers to gather information, summarize, present and interpret for the purpose of clarification. The survey research is useful because of the economy of taking a sample of the population to generalize results for the whole population.

Target Population

Target population is the specific population about which information is desired. According to Ngechu (2004), a population is a well defined or set of people, services, elements, events, group of things or households that are being investigated. In this study, the Sacco's in the table below are registered in Nyeri offices. The target population was 86 respondents who comprised of the senior and middle level managers of deposit taking SACCOs from Nyeri County as of end of 2015. Table 3.1 outlines the distribution of the senior and middle level managers of the deposit taking Saccos in Nyeri County.

Table 3.1: Target Population

Name of the Sacco	Senior Managers	Middle Level Managers	Total Population
2NK Sacco Society Ltd	2	6	8
Afya Sacco	2	4	6
Baraka Sacco Society Ltd	2	4	6
Biashara Sacco	2	8	10
Enea Sacco Society Ltd	2	4	6
Mwalimu National Sacco	2	6	8
Nyala Vision Sacco Society Ltd	2	4	6
Nyeri Teachers Sacco	2	4	6
Small Scale Traders' Sacco Society Ltd	2	6	8
Taifa Sacco	2	6	8
Wakulima Commercial Sacco Society Ltd	2	4	6
Wanainchi Sacco	2	6	8
Total	**24**	**62**	**86**

Sampling and Sample Size

The sampling plan describes the sampling unit, sampling frame, sampling procedures and the sample size for the study. The sampling frame describes the list of all population units from which the sample was selected (Cooper & Schindker, 2008). According to Mugenda & Mugenda (2008), a sample size of 30% is a good representation. In order to determine the sample size, a formula by Nassiuma (2008) is adopted as shown below.

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

n = Sample size

N = population size

C = Coefficient of variation (21% ≤ C ≤ 30%)

e = Error rate (2% ≤ e ≤ 5%)

Substituting the values in the equation:

$$n = \frac{86\ (0.30)^2}{0.30^2 + (86-1)\ 0.02^2}$$

n = 62.42

n = 63 respondents

The study employed stratified random sampling technique in coming upto select a sample of 63 respondents comprising of senior and middle level managers in the deposit taking Sacco in Nyeri County. Stratified random sampling is unbiased sampling method of grouping heterogeneous population into homogenous subsets then making a selection within the individual subset to ensure representativeness. The goal of stratified random sampling is to achieve the desired representation from various subgroups in the population. In stratified random sampling subjects are selected in such a way that the existing subgroups in the population are more or less represented in the sample, Mugenda and Mugenda (2008).

Table 3.2 Sample Size

Name of the Sacco	Population Percentage	Senior Managers	Middle Level Managers	Total
2NK Sacco Society Ltd	9.30	1	5	6
Afya Sacco	6.98	1	3	4
Baraka Sacco Society Ltd	6.98	1	3	4
Biashara Sacco	11.63	1	6	7
Enea Sacco Society Ltd	6.98	1	3	4
Mwalimu National Sacco	9.30	1	5	6
Nyala Vision Sacco Society Ltd	6.98	1	3	4
Nyeri Teachers Sacco	6.98	1	3	4
Small Scale Traders' Sacco Society Ltd	9.30	1	5	6
Taifa Sacco	9.30	1	5	6
Wakulima Commercial Sacco Society Ltd	6.98	1	3	4
Wanainchi Sacco	9.30	1	5	6
Total	**100.00**	**12**	**51**	**63**

Data Collection Procedures

Instruments

The researcher used questionnaire as primary data collection instrument. According to Salkind (2005), a self-administered questionnaire is the only way to elicit self-report on people's opinion, attitudes, beliefs and values. The questionnaire was designed to give a brief introduction of respondents. The questionnaires were divided into sections representing the various variables adopted for study. Each section of the chosen study included closed and open ended questions which were to seek the views, opinion, and attitude from the respondent which might not have been captured by the researcher. The questions were designed to collect qualitative and quantitative data. The open ended questionnaires gave unrestricted freedom of answer to respondents. The researcher used assistants to distribute by hand the questionnaires to be completed by the selected respondents.

Data Collection Procedure

Data collection procedure represented the actual information that was obtained for the purpose of the research study. The questionnaire was administered through drop and pick method to the officers of the selected Sacco's. Secondary data involves data that was collected from other past data that had been collected and tabulated through graphs, charts and reports. This type of data was collected from reference materials, which have key information and was helpful to this research study. Collection of secondary data was obtained through desk research, which was from internal or external sources. The external sources included publication press, newspapers, libraries, and various research related organizations.

Data Analysis and Presentation

This included analysis of data to summarize the essential features and relationships of data in order to generalize from the analysis to determine patterns of behaviour and particular outcomes. The data collected from the field was assessed and comparison was made so as to select the most accurate and quality information from the feedback given by various respondents. This involved assessing and evaluating the questionnaires and other sources of both primary and secondary data. Descriptive statistics analysis was employed. The quantitative data was coded to enable the responses to be grouped into various categories. The organized data was interpreted on account of concurrence and standard deviation to objectives using assistance of computer packages especially SPSS to communicate research findings. Data was grouped into frequency distribution to indicate variable values and number of occurrences in terms of frequency. Frequency distribution table was informative to summarize the data from respondents. Pearson's moment correlation was used to establish variable relationships. Tables and other graphical presentations such as bar charts, histogram, grouped frequency distributions and pie charts as appropriate have been used to present the data collected for ease of understanding and analysis.

Data analysis, presentation of findings and interpretation

Introduction

Chapter four contains data analysis, interpretation and presentation of findings. The broad objective of the study was to establish factors influencing adoption of open innovation strategy in the cooperative societies in Kenya. Questionnaires were used to collect data from the respondents in deposit taking Sacco Societies in Nyeri County. Data was coded, analyzed and the results obtained using descriptive and inferential statistics guided by the research objectives and hypothesis. The findings were presented in form of frequency tables and their implications explained. Multiple regression analysis was used to determine the extent of the relationship between the dependent and independent variables.

General and Demographic Information

The general and demographic information of respondents was deemed necessary because the ability of the respondents to give satisfactory information on the study variables greatly depended on their position in the organization, educational background, age, Number of years worked in the institution and work experience in the same position. Thus the background information of respondents solicited data on the samples has been presented below.

Position in the Organization

The study sought to establish the position by the respondent in the organization

Table 4.1: Position in the organization

	Frequency	Percent
Senior manager	10	18.2
Middle level manager	45	81.8
Total	55	100.0

Work Experience

The study sought to establish the period under which the respondents have worked with Sacco societies. This was meant to establish whether the respondent can articulate the issues in this study relating to factors influencing adoption of open innovation strategy in the cooperative societies in Kenya. The results are as shown in Table 4.2

Table 4.2: Years of experience

	Frequency	Percent
1-5 years	12	21.8
6-10 years	25	45.5
Above 10 years	18	32.7
Total	**55**	**100.0**

From Table 4.2, the results indicate 21.8% have worked with Sacco Societies for a period of 1- 5 years, 45.5% for a period of 6-10 years while 32.7% have worked for more than 10 years. This is an indication that majority of the respondents have worked with the Sacco societies for more than 6 years which accounted for 78.2% which is an adequate period for the respondent to familiarize with Sacco societies operations.

Age Category

The age category of the respondents was also sought by this study.

Table 4.3: Age category

	Frequency	**Percent**
15 20 years	3	5.5
21 25 years	8	14.5
26 30 years	12	21.8
31 35 years	12	21.8
Above 35 years	20	36.4
Total	55	100.0

The study revealed that 5.5% of the respondents were between 15-20 years, 14.5% were aged between 21-25 years, 21.8% were aged between 26-30 and 31-35 years while 36.4% were above 35 years. This is an indication that majority of the respondents were aged above 31 years. This may be attributed to minimum education required and the years of experience.

Level of Education

The study sought to establish the level of education of the respondents.

Table 4.4: Level of education

	Frequency	**Percent**
Secondary	13	23.6
University degree	36	65.5
Master	6	10.9
Total	55	100.0

As shown in Table 4.6, 23.6% of the respondents had secondary school level, 65.5% were Degree holders while 10.9% were master degree holders. This is an indication that most of the respondents have managed to progress with education upto degree level.

Descriptive Statistics for the Independent Variable

The study sought to establish factors influencing adoption of open innovation strategy in the cooperative societies in Kenya. The respondents were required to rate each aspect of open innovation strategy in a scale of one to five. The mean score, standard error and standard deviation for parameter used were obtained using SPSS and the results are as shown below.

Technology Consideration

According to Gassmann & Enkel (2004), the type of technology employed by a firm is likely to impact the adoption of an open innovation strategy. They noted that technology innovation provides a firm with the knowledge related to new products or new production process. This study therefore sought to determine the influence of technology on the adoption of open innovation strategy in the cooperative societies in Kenya.

Table 4.5: Technology consideration

	N	Mean	Std. Error	Std. Deviation
Improved operation process	55	4.1273	.13498	1.00101
Competence of operation process	55	4.3455	.15617	1.15819
Training	55	3.9818	.16513	1.22461
External and internal factors	55	4.5091	.16386	1.21522
Knowledge and technology	55	4.2727	.15009	1.11313
Valid N (listwise)	55			

As shown in Table 4.5, external and internal factors were rated highest with a mean score of 4.5091 and std dev = 1.21522 followed by Competence of operation process with a mean score 4.3455 and std dev = 1.15819. Knowledge and technology had a mean score of 4.2727 while Training had a mean score of 3.9818. The finding of this study reveals that all aspect of technology were rated above average which is an indication that all the technological factors considered in this study affects the on adoption of open innovation strategy in cooperative societies significantly. Therefore cooperative societies should invest heavily on technology as it is one of the major factors the influence adoption of open innovation strategy. The rating of external and internal factors high by this study concurs with earlier study by Chesbrough (2003) who noted that the new paradigm of open innovation requires significant integration of both internal and external components. He further noted that, opportunities for sourcing the external knowledge have increased significantly. According to Schroll and Mild (2011), the trends such as outsourcing, agility, and flexibility had already forced companies to reconsider their strategies and processes in other areas, and to become network organizations. Rosenberg (1976), found out that innovating firms learn continuously from social interactions with many participants including customers, competitors and consultants as well as formal training and learning by doing.

Competitor Actions

According to Janney and Dess (2006), competitor is a company in the same industry or a similar industry which offers a similar or substitute product or service. They noted that the presence of one or more competitors can reduce the prices of goods and services as the companies attempt to gain a larger market share. This study therefore sought to establish how the competitors' environment influences adoption of open innovation strategy in the cooperative societies in Kenya.

Table 4.6: Competitor Actions

	N	Mean	Std. Error	Std. Deviation
Identification of new technology	55	3.8909	.13148	.97511
Changes in sales volume	55	3.4182	.17348	1.28655
Market segmentation	55	3.6364	.17284	1.28183
New product development	55	4.0545	.21307	1.58018
Competitive advantage	55	3.7818	.16141	1.19708
Valid N (listwise)	55			

As shown in Table 4.6, new product development was rated highest with a mean score of 4.0545 and std dev = 1.58018 followed by identification of new technology with a mean score 3.8909 and std dev = 0.97511. Competitive advantage had a mean score of 3.7818 while Market segmentation and Changes in sales volume had a mean score of 3.6364 and 3.4182 respectively. The findings of this study asserts earlier findings by Tushman et al., (1997) who noted that innovation and new product development are crucial sources of competitive advantage. They concluded that it allows the firm to develop new products and exploit new markets. In addition, it can allow the firm to improve its cost base and increase profit margins without increasing its.

Hypothesis testing

The study sought to test four null hypotheses. The first hypothesis stated that technology does not influence adoption of open innovation strategy in cooperative societies. The regression of the technology against open innovation strategies indicated positive and significant relationship with p value is less than 0.05, this means that increase in technology increases adoption of open innovation strategy in cooperative societies positively. Hence the null hypothesis is rejected. The findings concurred with earlier study by Ye and Qiu (2004), who stated that technology innovation is of vital importance for firms to survive and develop in a market under intense competition. The second hypothesis stated that there is no relationship between competitor's actions and adoption of open innovation strategy in cooperative societies. The regression of the competitor's actions against open innovation strategies indicated positive but insignificant relationship with p value greater than 0.05. Hence the null hypothesis is accepted. This means that competitor's actions such as identification of new technology, new product development and taking competitive advantage has no major impact on the specific institution adoption of open innovation strategy.

Summary of findings, conclusion and recommendations

Summary of Major findings

This study aimed at carrying out an analysis to establish factors influencing adoption of open innovation strategy in the cooperative societies in Kenya.The specific objectives of the study were to determine the influence of technology, competitors' environment, top management commitment andresource availability on the adoption open innovation strategy in the cooperative societies in Kenya.Overall, the findings of the study revealed that technology consideration, top management commitment and resource availability had positive and significant effect on adoption of open innovation strategy in cooperative societies

Conclusion

The general objective of the study was to establish factors influencing adoption of open innovation strategy in the cooperative societies in Kenya. The study findings revealed that there was a positive and significant relationship between technology consideration and adoption of open innovation strategy in cooperative societies. This is an indication that technology consideration is regarded as one of the most influential factor on adoption of open innovation strategy.

Recommendations

Following these findings, this study recommends that cooperative societies should have a budgetary allocation for innovation as finances are key elements in implementation of any strategy. Cooperative societies should also come up with policies to recognize and reward employees who come up with innovation idea and allocate funds to enhance effective implementation of open innovation strategy. Cooperative societies should also come up with policies to recognize and reward employees who come up with innovation idea and allocate funds to enhance effective implementation of open innovation strategy.

Suggestions for Further Research

This study makes an important contribution in our understanding of the factors influencing adoption of open innovation strategy in the cooperative societies in Kenya.It further brings out the specific parameters that have significant effect on adoption of open innovation strategy in the cooperative societies. Arising from this study, the researcher makes a number of recommendations for further research. A study focusing on the challenges cooperative societies encounter when adopting of open innovation strategy. Future researchers may adopt a case study research design for commercial banks so as to establish whether the factors influencing adoption of open innovation strategy in the cooperative societies would still apply to commercial banks.

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