

**INNOVATIVE STRATEGIES AND PERFORMANCE OF CEMENT  
MANUFACTURING FIRMS IN ATHI RIVER ZONE**

**BY**

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**DECLARATION**

This research proposal is my original work and has not been presented for research for degree award in any other university.

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## **DEDICATION**

This research is dedicated my beloved family

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## ABSTRACT

The aim of this study was to assess the influence of innovative strategies on performance of large manufacturing firms in Kenya. The objective scope include influence of process innovation strategy, product innovation strategy, technology innovation strategy and service innovation strategy on organizational performance of cement manufacturing firms in Kenya. The objectives was used as they are involved with various forms of innovation. The study concentrated on the influence of innovation strategies on organization performance of manufacturing firms in Kenya. The theories that informed the study are organizational control theory, disruptive innovation theory, technology acceptance model, diffusion innovation theory and resource based view theory. The study adopted a descriptive survey research design where the unit of analysis was 5 cement manufacturing firms in Athi River Zone. Consequently, the unit of observation was the staff at the managerial position and these included senior managers, middle level managers and supervisors from each firm. The target population was all the 269 senior management, middle level management supervisors and staff in the 5 cement manufacturing firms in Athi River Zone. Yamane (1967) sample determination formula was used to obtain 135 respondents. Test of hypothesis was done at 95% confidence interval. This study conducted correlation and regression to weigh the relationship between the independent and dependent variables. The regression of coefficients results show that technological innovation strategy and performance is positively and significantly related ( $\beta=0.197$ ,  $p=0.001$ ). The results further indicated that process innovation strategy and performance are positively and significantly related ( $\beta= 0.205$ ,  $p=0.000$ ). The results further indicated that product innovation strategy and performance are positively and significantly related ( $\beta= 0.183$ ,  $p=0.002$ ). Lastly, results showed that service innovation strategy and performance were positively and but insignificantly ( $\beta =0.031$ ,  $p=0.585$ ). The study sought to examine the influence of strategic innovations and performance of cement manufacturing firms in Athi River Zone. The study concluded that strategic innovations played a significant role on cement manufacturing firms. This is because there existed a positive and significant relationship between technological innovation strategy, process innovation strategy, product innovation strategy and service innovation strategy on cement manufacturing firms. The study recommends that the manufacturing firms should invest in innovative technology so as to survive intense competition currently experienced in the manufacturing sector. Finally, it is recommended that manufacturing firms should invest in automating routine tasks so as to improve efficiency in the production process. The study further recommends that the firms should adopt business process reengineering and embark on minimizing waste in the manufacturing process.

# CHAPTER ONE

## INTRODUCTION

### **I.1 Background of the Study**

Innovation is the transformation of creative ideas in a business with the purpose and focused effort of achieving change in an organizational economic or social potential. Acknowledgment goes to Schumpeter (1934) who coined the term innovation in the start of the 20<sup>th</sup> century and defined innovations as organizational, process and product organization changes that do not emanate from scientific discovery but also come from a mix of already existing technologies and their application in a new way (Zizlavsky, 2011). In the most recent times, innovation has been acknowledged to be one of the imperative concepts that influence the competitive advantage of a firm with regard to its economic and financial outcomes. Innovation happens at all levels in an organization that is from the management team to departments and eventually to the individual level.

In the global perspective, Germany remains the largest national economy within the European nations, occupying the fourth largest nominal Gross Domestic Product (GDP) in the world, as at 2013 (Nasiri, Alleyne & Yihui, 2016). Following its period of industrialization, the country has been the leading innovator and one of the key drivers of global growth. The foreign trade success that the German technology sector enjoys is primarily based on the automobile sector. Dominated by the vehicle manufacturing industry, the trade sector is characterized by strong innovation dynamics. Despite its prominent position, suppliers in the industry play a critical role in its success. Innovation has played an important role in German enterprises. German investment into research and development (R&D) of 2.9% of GDP stands above all other European countries (World Bank, 2014).

Innovation strategies of Turkish assembling firms has driven them to enhance their budgetary execution (Karabulut, 2015). The innovation technique drives these organizations to enhance their client execution, internal business processes execution and learning and development performance. An innovation system ought to in this manner be reliable to mission, vision, objectives and methodologies of a firm. Firms ought to be committed to put resources into innovative work, construct inventive items and accomplish substantial execution to be competitive.

In the regional perspective, manufacturing in Nigeria's drive towards economic self-sufficiency, as the interest on innovation is understandable given the fact that competitiveness in modern economy depends on technological capability of a firm (Olughor, 2015). The major policy lesson that proceeds is that besides making efforts to improve the quality of physical infrastructure especially power supplies, promoting firm collaboration with other innovation actors within the network system should be taken seriously.

### **1.1.1 Innovative Strategies**

Strategic innovations are means that promotes the implementation and development of new services and products (Abdi & Ali, 2013). Innovation strategy can help firms to overcome the problems they encounter and strive for a sustainable competitiveness. Innovation strategy has had a very substantial influence the performance of corporate by proving a position that is improved in the market position thus conveying greater performance and competitiveness. While the concept of organizational performance is based upon the idea that an organization support and success is largely attributed to human, capital and physical resources innovative strategies stands the test of time to bring about sustainability and competitiveness (Soi, 2016).

Strategic innovations can enhance organization performance through its competitive advantage that it can create in an organization that uses it. Some of the strategic innovations that can be adopted for an organization to achieve its performance are product innovations strategy, process innovation, service innovation and technological innovation (Njeri, 2017). Use of technology innovation strategy can promote a friendly and helpful staff hence customer satisfaction. These innovation strategies are seen to have an impact on how organization is run and the outcomes in terms of performance (Frank, Muturi & Gerard, 2017).

Technological innovation is the introduction of significant technological changes in production and processes (Kamoche & Mueller, 2015). New technologies are not only essential for company or government, it is also important for nation (Baden-Fuller & Haefliger, 2013). Technology increase human performance when human or employees use technology for the benefits of the organization and use with ethical values. Individual person cannot adopt technology easily and on the other side group of people can adopt technology easily. Organization cannot run without or with old technology lest it progress to extinction. For the study technological innovation was evaluated on basis of automation and real-time production.

Process is defined as an interrelated set of activities designed to transform input into output which is offered to the end customer (O'Sullivan & Dooley, 2009). Process innovation can be viewed as an implementation of a new or an improved production or delivery method which includes changes in techniques, equipment and software (Omachonu & Einspruch, 2010). Davenport, (2013) takes note of that process innovation<sup>1</sup> includes the radical improvement of new services and items and new generation frameworks in an inventive way. Inventiveness here incorporates noteworthy upgrades in gear, generation strategies or programming. Process innovation comprise of new generation techniques/production methods and new sources of crude materials, semi-completed items or segments. The backbone of process innovation are proficiency and item quality and can come about in increasing competitive edge (Mwanyota, Maalu & Njihia, 2017).

Product innovation is the creation and subsequent introduction of a good or service that is either new, or an improved version of previous goods or services (Choi, Goh, Adam & Tan, 2016): (Chux, 2010). Product innovation is unavoidable if organizations are to stay applicable and manageable. There are many different theories that have been put forward meant to bringing out the connection between product innovation and organizations performance. These hypotheses can either avow or dismiss the solid establishment between product innovation and organization performance. If not nurtured through continuous improvements, the products are bound to decline and die naturally like any living being. With this understanding, product innovations are expected to be continuous and deliberate strategic approach if organizations expect to sustain profitability and growth.

Service innovation is increasingly seen as a vector of sustainable growth and competitive advantage at the firm-, industry- and economy level (Nambisan, 2013). With the increasing growth of services in today's organizations and economy, the importance of understanding service innovation concepts and practices has been on constant upsurge. Currently, service innovation has evolved into a vast field encompassing the study of intangible processes and dynamic interactions among technological and human systems that lead to managerial and organizational change in services.

### **1.1.2 Performance of Manufacturing Firms**

Performance can be measured through non-financial and financial means. Bakar and Ahmad (2010) observed that majority of organization often preferred using financial means to measure their performance. According to Tavitiyaman, Zhang and Qu (2012) measures of organizational performance are productivity, market base, profitability and reputation/position.

Kiragu (2015) highlights organizational performance in terms of four perspectives which are the financial, customer, internal processes and innovativeness. The financial perspective identifies the key financial drivers of enhancing performance which are profit margin, asset turnover, leverage, cash flow, and working capital. He further states that customer focus describes performance in terms of brand image, customer satisfaction, customer retention and customer profitability. Internal processes involve the efficiency of all the systems in the organization while innovativeness is concerned with the ease with which employees are able to adapt to changing conditions.

According to Harzing (2010), organizational performance is not only indicated by the sales figures, rather, changes in sales may simply reflect changes in the market size or changes in economic conditions. Performance of employees relative to competitors is measured by the proportion of the market that the employees are able to capture (market share). Sales may be determined on a value basis or on a unit basis and while the employee sales figures are readily available, total market sales is more difficult to determine. Many employees to increase their sales relative to competitors.

While organizations have generally surveyed organization by and large execution through budgetary measures, there is developing prominence to attempt an extended territory and more extensive frame of mind that incorporates nonfinancial measures. There might be plenty guidance for more prominent far reaching vital organization execution measurement structures. Research has demonstrated that nonfinancial measures are often the primary markers that drive lagging financial performance, (Aziati, Tasmin, Jia & Abdullah, 2014). This study used sales performance, operational efficiency, customer satisfaction and organizational growth as its measures for manufacturing organizational performance.

### **1.1.3 Cement Manufacturing Firms in Athi River Zone**

Cement manufacturing sector in Kenya is extremely competitive. This is fueled by the fact that almost 90% of the cement manufactured in Kenya is locally consumed with statistics at the end

of 2018 indicating that the national cement consumption stood at 6.3 million tons a year out of the 6.7 million tons that were manufactured. Cement manufacturing sector in the country is dominated by the six cement manufacturing companies which are Bamburi Cement Limited, Mombasa Cement Limited, East Africa Portland Cement Company, Savannah Cement Limited, ARM Cement Limited and National Cement Company Limited. As a result, the firms have been forced to develop innovative strategies that will ensure they have a competitive edge over their competitors to survive in the market which can only be achieved by employing strategic human resource management (Wanguu & Kipkirui, 2015).

The cement manufacturing firms in Kenya are also faced with challenges major among them competition from imports and operational inefficiency in the industry. Other challenges include; high cost of electricity which is sometime in short supply and expensive due to the high tariffs imposed and high cost of fuel, high cost of coal which has to be imported and subjected to taxes (Murunga, 2016). In light of competition and other challenges faced by the cement manufacturing firms in Kenya, the firms have implemented different strategies such as innovation in pursuit of efficiency and effectiveness (Chesaro 2013, Kenani, 2013).

## **1.2 Statement of the Problem**

The role of the cement companies in the Kenyan economy has increased significantly in the recent past especially due to the growth in the construction industry in the country. The sector, however, continues to face myriad of challenges that have seen it not realize its full potential. As Kenya races towards being a manufacturing hub, driven by Kenya Vision 2030 and Government's 'Big Four' agenda set around housing, manufacturing, agriculture and health, there are many opportunities for the cement manufacturing firms sector in the construction and manufacturing. The poor performance is signaled by cement firms such as East Africa Portland Cement Company (EAPCC) which laid off over 620 worker staff in 2019. ARM Cement and East African Portland Cement Company, are currently experiencing problems that have led to ceasing of production. This is a major cause for concern and we thus ask what could be the reason behind the poor performance. Some studies point the profits falling to inadequate in innovation and operational inefficiencies. Thus, this study sought to bring new knowledge into the cement manufacturing firms by assessing the influence of innovative strategies on performance these cement manufacturing firms in Kenya.

### **1.3 Study Objectives**

The study was guided by the following specific and general objectives.

#### **1.3.1 General Study Objective**

The main objective of this study was to examine the influence of innovative strategies and performance of cement manufacturing firms in Athi River Zone.

#### **1.3.2 Specific Objectives**

This study was guided by the following specific objectives;

- i. To evaluate the influence of technological innovation strategy on performance of cement manufacturing firms in Athi River Zone.
- ii. To examine the influence of product innovation strategy on organizational performance of cement manufacturing firms in Athi River Zone.
- iii. To determine the influence of process innovation strategy on performance of cement manufacturing firms in Athi River Zone.
- iv. To explore the influence of service innovation strategy on performance of cement manufacturing firms in Athi River Zone.

### **1.4 Research Questions**

- i. Does process innovation strategy influence performance of cement manufacturing firms in Athi River Zone?
- ii. What is the influence of product innovation strategy on performance cement manufacturing firms in Athi River Zone?
- iii. Does technological innovation strategy influence performance of cement manufacturing firms in Athi River Zone?
- iv. What is the influence of service innovation strategy on performance cement manufacturing firms in Athi River Zone?

### **1.5 Significance of the Study**

The results of this study was useful to the following group of people:

### **1.5.1 Manufacturing Firms**

Manufacturing firms' insight on the innovation strategies available and the impact of the strategies on their organization performance was revealed by the study. As a result, they can make informed decisions concerning which strategies to invest in. A clear conceptualization of innovation strategies and their relationship to manufacturing firm performance can be realized which can help progress innovations in the industry. It will provide an in-depth understanding of innovation strategies and can be an eye opener to manufacturing firms' owners who are looking into investing in innovation to improve their market share and maintain a sustainable competitive advantage

### **1.5.2 Government**

The findings of this study may be used by the government to infer on their policy making process. Formulation of policies that can enhance innovation and boost manufacturing industry can be deduced from the findings of this study. The government can also get insight information about manufacturing sectors which may be used to resolve the underlying problems affecting the industry. Creation of an enabling environment, products marketing and funding of manufacturing sector may be realized after getting information on innovative strategies undertaken by the sector.

### **1.5.3 Enterprises**

Small and medium enterprises may use the most prevalent innovative strategies employed by manufacturing firms to expand their market share. Competitive advantages realized through the best innovative strategies may see the SMEs expand and grow to multi-billions sector in the country.

### **1.5.4 Academics and Scholars**

The study findings was of significant importance to scholars and academia as it will contribute to the body of existing knowledge on innovation and firm performance, which can be used for references. The study will also contribute to the study of effects of innovation strategies and firm performance among manufacturing firms by making suggestions for areas of further study. It will bring out a better comprehension of innovative strategies that are effective manufacturing sector.

## **1.6 Scope of the Study**

The aim of this study was to assess the influence of innovative strategies on performance of large manufacturing firms in Kenya. The objective scope include influence of process innovation strategy, product innovation strategy, technology innovation strategy and service innovation strategy on organizational performance of cement manufacturing firms in Kenya. The objectives was used as they are involved with various forms of innovation. The study concentrated on the influence of innovation strategies on organization performance of manufacturing firms in Kenya. The study adopted a descriptive survey research design where the unit of analysis was 5 cement manufacturing firms in Athi River Zone. Consequently, the unit of observation was the staff at the managerial position and these included senior managers, middle level managers and supervisors from each firm. The target population was all the 204 senior management, middle level management supervisors and lead staff. Yomane (1967) sample determination formula was used to obtain 135 respondents. The study was conducted between July and November 2019.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The chapter discusses the relevant literature that is related to innovation strategies and organization performance. The theoretical review, empirical review and conceptualization of study variable are described in sections hereunder. The literature is also critically evaluated to reveal the knowledge gap that underpins the study.

#### **2.2 Theoretical Review**

Theoretical framework serves to guide and support the study as it finds answers to the underlying questions. It simply provides a structure that helps in approaching the study in a holistic manner. The framework also helps in the understanding of the variables and their grounds in relation to the existent literature (Osanloo, & Grant, 2016). The theories that informed the study are disruptive innovation theory, technology acceptance model, diffusion innovation theory and resource based view theory.

##### **2.2.1 Disruptive Innovation Theory**

Clayton (1995) put disruptive innovation theory forward. The theory describes a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market (Christensen, Raynor & McDonald, 2015). This eventually displaces established competitors and flourishes in the marketplace. As customers' needs change by the day, companies tend to innovate faster to accommodate the customers' needs. Most organizations eventually end up producing products or services that are actually too sophisticated, too expensive, and too complicated for many customers in their market (Yu & Hang, 2010).

Characteristics of disruptive businesses, at least in their initial stages, can include: lower gross margins, smaller target markets, and simpler products and services that may not appear as

attractive as existing solutions when compared against traditional performance metrics (Corsi & Di Minin, 2014). Because these lower tiers of the market offer lower gross margins, they are unattractive to other firms moving upward in the market, creating space at the bottom of the market for new disruptive competitors to emerge.

The theory is relevant as it informs the product innovation concept of innovation strategy. Products/services that manufacturers are producing should be unique so that they could flourish in the crowded market. Therefore, manufacturers should aim at quality and unique products that cannot be disrupted from the market by other vendors.

### **2.2.2 Technology Acceptance Model Theory**

The theory was corroborated by Davis (1993). This theory elaborates the phenomenon that can affect and shape users' acceptance of new information technology. It is comprised of two specific variables that are vital determinants of users' attitude toward using technology and actual use of the system. These two variables are perceived usefulness and perceived ease of use with reference to the innovative technology that the user ought to adopt (Cheung, & Vogel, 2013). These two variables consider the utility and the simplicity of the new technology to the prospective users, in matters innovation.

The perceived usefulness explains the degree to which how much somebody trusts that utilizing a framework will improve their execution (Park, Nam, & Cha, 2012). The clients ought to comprehend the extent to which the framework and development uncovered to utility of their tasks. Perceived ease of use is the degree to which user believes that benefits of systems' use outweighs the efforts for using it. The simplicity and the understandable nature of the innovation and system are the properties that involve ease of use. In the process of technology adoption, individuals have to assess their attitudes towards this new information technology, in order to prevent a failure in implementation, waste of resources and sustainability (Kim, & Shin, 2015).

The theory is relevant as it informs the technological innovation strategy which allows efficiency in execution of operation. The users need to have a positive attitude towards the use of technology for innovation. With this, they can be able to use the new technology with ease as they execute their duties. Technology adoption by the manufacturing firm cannot only bring ease with which operations are executed but a competitive advantage in favor of technology adopting firm.

### **2.2.3 Diffusion of Innovation Theory**

Rogers (1962) authored diffusion of Innovation Theory. This theory is one of the most established sociology hypotheses. Diffusion of Innovation Theory started in correspondence to clarify how, after some time, a thought or item picks up energy and diffuses (or spreads) through an explicit populace or social framework. The final product of this dispersion is that individuals, as a major aspect of a social framework, adopt another thought, behavior, or service/product (Ma, Lee & Goh, 2014).

Rogers (1995) contended that time is associated with three parts of innovation diffusion: the innovation choice process, the level of creativity and the development rate of selection (Chang, 2010). He outlines five fundamental time dependent strides in innovation choice process that the adopter must go through as: information, influence, choice, execution and affirmation. It was additionally discovered that diverse people in a social framework don't really receive an innovation in the meantime (Akowsky, Guirguis, Hughes, Sadowski & Yuksel, 2013).

The theory is relevant as it informs the service innovation strategy in that it involves the interaction between technological and human systems. Service innovation strategy should therefore be able to fulfill procedures such as knowledge, persuasion, decision, implementation and confirmation. Manufacturing firm need to communicate their ideas clearly so that they can be adopted by the target consumers.

### **2.2.4 Resource-Based View (RBV) Theory**

Barney proposed Resource Based View theory in 1991. According to Barney, RBV focuses attention on an organization's internal resources as a means of organizing processes and obtaining a competitive advantage. Wernerfelt (1984), Rumelt (1984) & Barney (1986), initiated the useful resource-based totally view has due to the fact that turn out to be one of the dominant contemporary methods to the evaluation of sustained aggressive advantage. A critical premise of the resource-primarily based view is that corporations compete on the idea in their resources and abilities (Lin, & Wu, 2014).

RBV includes the study of the relationship among assets (technological manner innovations and organizational procedure innovations) and operational overall performance. The primary idea of the RBV is that a firm wishes heterogeneous resources, which can be treasured, inimitable, and

non-substitutable to gain an extra sustainable overall performance than its competitors (Terziovski, 2010). Furthermore, the RBV acknowledges the significance of intangible belongings of a company.

The theory is relevant as technological innovation can be seen as distinctive abilities developed with amassed sources. These skills in turn contribute to competitive benefit. The RBV concept has been used in a number of researches within the context of producing. Performance of an organization is informed by the resource based view theory. With the availability of ample resources, an organization can exploit all potential opportunities to its maximum capacity.

## **2.3 Empirical Review**

The section provides a review on the related empirical studies according to the study's variables.

### **2.3.1 Technological Innovation Strategy and Performance**

Imran (2014) study checked the impact of technological advancement on employee performance in banking sector in Malaysia. Findings indicated that a total of 140 questionnaires had been distributed among different banks and out of which 100 were completed and returned. After analyzing the data very efficiently, it was found that technological advancement had noteworthy effect on inspiration and training of employees. Inspiration had noteworthy effect on worker execution however; training had no significant effect on employee performance. Moreover as the concerned for technological advancement and employee performance, there was significant relationship among them.

Sibanda (2015) in a study sought to determine the influence of information technology on organization strategy in South Africa. The study used descriptive design to conduct 12 in-depth interviews within IBM South Africa to determine real-life drivers that helped create the alignment. The study findings revealed that consumers are becoming more empowered; therefore, organizations need to be more flexible in their business models and strategies. Furthermore, the integration of cross-functional roles in the organization at the management level allow for improved alignment between information technology and strategy as better integrated roles bring a combination of these two elements.

Ndunga, Njati and Rukangu (2016) determined the impact of technological advancement on organization's performance. From the investigation findings, it was presumed that money related

execution of business banks' branches in Meru towns is decidedly impacted by development. Innovation selection by business banks shows a high capability of financial performance enhancement in this manner yielding expanded returns for the investors. Innovations flexibility has come about to their expanded reception rate among the banks and their clients with the take-up additionally quickened by the way that the appropriation is from both the banks and their clients. The recommendations of the study were that banks can manage their costs better in continuing to invest in technology innovation as opposed to continued investment in brick and motor branches. The internet and mobile channels can process a higher volume of transactions compared to the use of the conventional manual processes.

Charles (2016) conducted a study on the impact of system innovation on organizational performance. The study investigated the impact of technological innovation on organizational performance. The objectives of the study were to determine relationship between strategic planning and marketing planning capabilities on organizational performance in the manufacturing industry. The study employed survey research. The hypotheses formulated for this study were tested using correlation, regression analysis, Pearson's Correlation and Analysis of Variance (ANOVA). The findings from the study revealed that strategic planning and marketing capability independently and jointly influence organizational performance. In addition, there was positive interaction between performance variables (that is resources availability, staff quality, productivity, sales revenue, financial strength, public image and good will).

### **2.3.2 Product Innovation Strategy and Performance**

Gima and Li (2015) in a study to examine the impact of product innovation procedure on the execution of new technology adventures in China found that, the innovation execution interface was dependent upon both environmental elements, including natural disturbance and institutional help, and the relationship-based methodologies of the endeavors, for example, strategic unions for product improvement and political systems administration. Their outcomes proposed the requirement for concurrent thought of condition and relationship-based methodology factors as moderators in the discourse on product innovation strategy among new technology ventures.

Maurice (2013) explored the connection between organization execution and item innovation by development. The findings of the study were deciphered utilizing Likert model and SPSS bundle

for the examination of some appropriate measurable strategies, for example, factor examination, regression, and dependability examination. The discoveries demonstrated that the effect of product innovation on performance execution was higher in Nigeria when shoppers perceive item development as more grounded, progressively good and increasingly exceptional. Innovativeness/quality of the creativity procedure applies a positive impact on product development and performance within the organization. In this manner, it was suggested that imaginative/quality advancements ought to be kept up consistently to create appropriate items constantly.

Kamakia (2014) conducted a study to assess the impact of product innovation on execution of business banks in Kenya. The results of the study demonstrated correspondence of product innovation to staff was, as it were, with majority agreeing that product innovation affected organization performance. It was found out that to command a higher market share; a commercial bank needed innovative ideas. Most of the respondents firmly agreed that organization strategy and objectives impacted innovation and to continued execution. The study concluded that product innovation impacts on customer satisfaction and that the reputation in the market makes the bank stand out. A competitive bank is one that undertakes rapid innovations and to command a higher market share, commercial banks need innovative ideas.

### **2.3.3 Process Innovation Strategy and Performance**

Agyei-Mensah (2017) conducted a study to examine the effect of innovative capabilities on performance in the banking industry. The specific objectives of the study were; to examine innovation capabilities of UT Bank, to assess customers' perception of UT Bank's innovative capabilities and to examine the relationship between innovative capability and performance of UT Bank Ghana. The study findings indicated that, Product innovation, marketing innovation and process innovation had a moderate relationship with organizational performance. However, organizational innovation and collaborations had a weak relationship with organizational performance. It is therefore recommended that banks become more proactive in developing products and services that create value for customers. Banks must also empower their frontline executives to become more customer oriented as that presents an opportunity to get customer inputs toward innovative decision making.

Nyamoita (2015) determined the impact of process development in service organizations in Kenya. The discoveries demonstrated a positive factually noteworthy relationship between sale of power, a proportion of the prepaid process innovation and money related execution pointer of profit for resources. Customer and sales (kWh) per representative, with 0.727 and 0.599 significance individually does not influence the monetary execution. The asset structure fundamentally influences the money related execution negatively with a significance of 0.004. Debt proportion with importance of 0.522 does not significantly affect money related execution of KPLC. The study prescribed that there was requirement for government to encourage innovation among the service organizations which was turn anticipated that would enhance income gathering, enhance utility charging and exactness, decrease pointless expenses and be increasingly focused in the market.

Kenfac and Yang (2013) explored how regions in Sweden connected process development in the waste administration division. The explanation behind this abstract examination of four areas in Sweden was to inspect the impacts of process development in waste collection forms on districts' exhibitions in Sweden by the utilization of grounded theory technique. Amid this investigation, it was found that, the utilization of process innovation positively affect the regions budgetary and clients performance. Additionally, the significance of process development as a well ordered process and not an abrupt change was found to be critical for a successful process innovation. Applying corporate social obligation as a self-direction instrument inside an organization, which add to environmental sustainability for organization; also showed positive relation with municipalities' performances?

### **2.3.4 Service Innovation Strategy and Performance**

Lin (2013) examined the impact of service innovation on performance in developing countries such as China. Service innovation affected firm performance through direct and indirect paths where service quality plays a positive mediating role, and the direct impact is larger than the indirect one; Similarly, the innovation mode is cost-reductive, which focuses on eliminating internal cost rather than improving service quality; Further, the assessment of service quality emphasizes the dimensions of assurance and reliability.

Mohamud (2017) explored the relationships between service innovation, customer value creation (CVC) and customer satisfaction (CS) with specific emphasis to Ghanaian telecommunication

operators. The study unveiled that a service firm's ability to achieve CS is dependent on how telecommunication operators harness and deploy their service innovation activities. In addition, the study showed that CVC mediated the relationship between service innovation and CS. The study concluded that, service innovation must create value for customers in order to enhance CS.

Ngumi (2014) established the built up impact of bank advancements on money related execution of Commercial banks in Kenya. The research concentrated on innovations in the area of automated teller machines, debit and credit cards, internet banking, mobile banking, electronic funds transfer and point of sale terminals. The study findings revealed that bank innovations had factually significant effect on salary, return on resources, and benefit and client stores of business banks in Kenya. It additionally uncovered that cell phones had a higher directing impact than web benefits on the bank innovations while affecting budgetary execution of business banks in Kenya. It was inferred that bank an innovations impacted financial execution of business banks in Kenya decidedly. It is therefore recommended to the management of commercial banks and the Government continue to explore and implement sustainable business linkages and collaborations with mobile phone service providers as well as the internet service providers as a way of accelerating the penetration of innovations and eventually creating desired impacts in the economy.

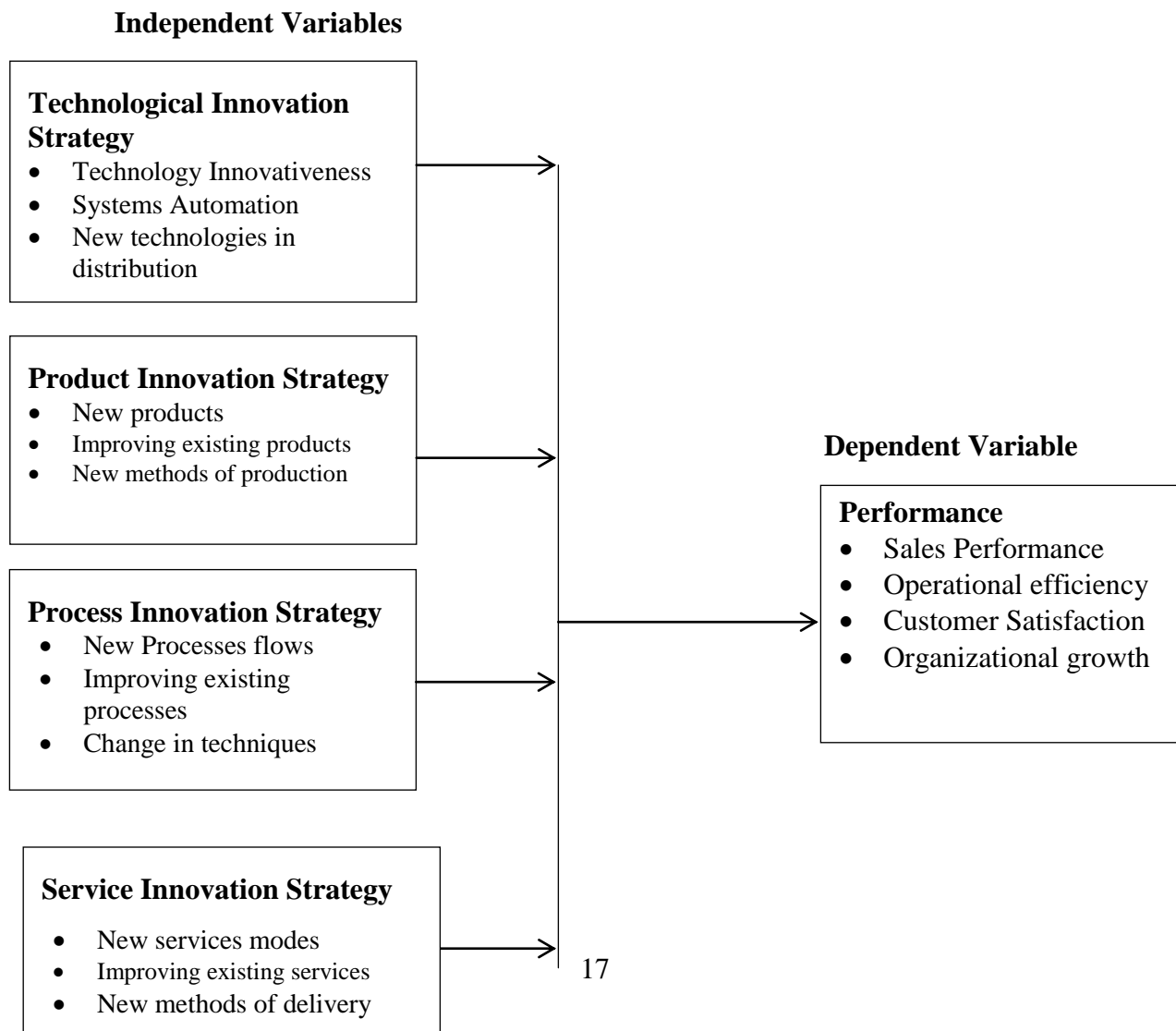
Aas and Pedersen (2014) conducted a study on the impact of service innovation on financial performance. The study empirically investigated if firms focusing on service innovation perform better financially than firms not focusing on service innovation. Analysis of the financial performance of 3575 Norwegian firms in the manufacturing industries supported the proposition that firms focusing on service innovation have significantly higher growth of operating results than firms not focusing on service innovation. However, this proposition was not supported in a corresponding analysis of 1132 Norwegian firms in the service industries. They elaborated on these results by investigating a variety of performance measures and by comparing the effects of service innovation between manufacturing and service industries.

Lin (2013) examined the impact of service innovation on performance in developing countries such as China. The study constructed a more integrative model linking service innovation, service quality and performance then collected 277 samples in the Chinese tourism sector. The study found that service innovation affects firm performance through direct and indirect paths

where service quality plays a positive mediating role. The direct impact is larger than the indirect one; secondly, the innovation mode is cost-reductive, which focuses on eliminating internal cost rather than improving service quality. Thirdly, the assessment of service quality emphasizes the dimensions of assurance and reliability.

## 2.4 Conceptual Framework

Conceptual framework helps the reader see proposed relationships between the variables in the study and shows the interaction of variables diagrammatically (Kothari, 2013). In general, the research is looking at product innovation strategy, process innovation strategy, technological innovation strategy and service innovation strategy (independent variables) and their influence on organization performance of manufacturing firms in Kenya (Dependent variable) and the moderating influence of firm characteristics on the on their relationship. The variables together with their indicators/measures are shown on Figure 2.1.



## **Figure 2.1: Conceptual Framework**

### **2.5 Critique of Literature and Research Gap**

The reviewed studies were evaluated to reveal the existing knowledge gap. The evaluation revealed Conceptual/ideological and contextual gaps. The researcher will bridge the gaps by conducting a study on influence of innovative strategies on organization performance of manufacturing firms in Kenya. Kenfac and Yang (2013) explored how extraordinary regions in Sweden connected process development in the waste administration division. The explanation behind this abstract examination of four areas in Sweden was to inspect the impacts of process development in waste collection forms on districts' exhibitions in Sweden by the utilization of grounded theory technique. Gima and Li (2015) examined the impact of product innovation procedure on the execution of new technology adventures in China and found that, the innovation execution interface was dependent upon both environmental elements, including natural disturbance and institutional help, and the relationship-based methodologies of the endeavors, for example, strategic unions for product improvement and political systems administration. Imran (2014) study checked the impact of technological advancement on employee performance in banking sector in Malaysia. It was found that technological advancement had significant impact on motivation and training of employees. Whilst the studies were conducted on innovation strategies, their findings could differ from those of manufacturing firms in Kenya, as they were conducted in Sweden, China and Malaysia.

Agyei-Mensah (2017) examined the effects of innovative capabilities on performance in the banking industry. Ngumi (2014) established the built up impact of bank advancements on money related execution of business banks in Kenya. Sibanda (2015) examined the influence of information technology on organization strategy in South Africa. These studies focused on the concepts of innovative capabilities, bank innovation and ICT which are slightly different from the facets of innovation strategy. This reveals the conceptual gap that was addressed.

## 2.6 Measurement of Study Variables

**Table 2.1: Operationalization of Variables**

<b>Variables</b>	<b>Operational Indicators</b>	<b>Measure</b>	<b>Type of Scale</b>
Process Innovation Strategy	<ul style="list-style-type: none"> <li>• Innovative processes flows</li> <li>• Improving existing processes</li> <li>• Change in techniques</li> </ul>	5-point Likert Type Scale 1= Strongly Disagree 5= Strongly Agree	Interval Scale
Technological Innovation Strategy	<ul style="list-style-type: none"> <li>• New technologies Marketing</li> <li>• New technologies advertisement</li> <li>• New technologies in distribution</li> </ul>	5-point Likert Type Scale 1= Strongly Disagree 5= Strongly Agree	Interval Scale
Product Innovation Strategy	<ul style="list-style-type: none"> <li>• Products entry</li> <li>• Improving existing products</li> <li>• New methods of production</li> </ul>	5-point Likert Type Scale 1= Strongly Disagree 5= Strongly Agree	Interval Scale
Service Innovation Strategy	<ul style="list-style-type: none"> <li>• New services modes</li> <li>• Improving existing services</li> <li>• New methods of delivery</li> </ul>	5-point Likert Type Scale 1= Strongly Disagree 5= Strongly Agree	Interval Scale
Performance	<ul style="list-style-type: none"> <li>• Sales Performance</li> <li>• Operational efficiency</li> <li>• Customer Satisfaction</li> <li>• Organizational growth</li> </ul>	5-point Likert Type Scale 1= Strongly Disagree 5= Strongly Agree	Interval scale

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter provides a discussion of the outline of the research methodology that was used in this study. It focused on the research design, target population, sampling procedure data collection methods and comes to a conclusion with the data analysis and data presentation methods that was used in this study.

#### **3.2 Research Design**

The function of a research design was to ensure that the data obtained during the data collection was adequate in answering the initial question(s) as unambiguously as possible (Mugenda, 2010). According to Kothari (2012) a good research design must yield maximum information and provide an opportunity for considering many different aspects of the problem. The study employed a descriptive research design. A descriptive research design was used as it enabled the researcher to describe the characteristics of the variables of interest.

#### **3.3 Target Population and Sampling Frame**

Population refers to the entire group of people, events or things of interest that the researcher wishes to investigate (Sekaran, 2015). According to Ngechu (2014), a population is a well-defined set of people, services, elements, and events or group of things that are being investigated. The target population was all the 204 senior management, middle level management supervisors and lead staff. The target population is as shown in Table 3.1.

**Table 3.1: Target Population**

No	Firm	Senior Management	Middle Level Management	Supervisors & Staff Leaders	Total
1	Bamburi Cement Limited	4	8	23	35
	National Cement Company				
2	Limited	3	7	22	32
3	Mombasa Cement	5	9	24	38
	East Africa Portland				
4	Cement Company	3	7	22	32
5	Savannah Cement	4	8	23	35
6	ARM Africa Ltd	3	7	22	32
	<b>Total</b>	<b>22</b>	<b>46</b>	<b>136</b>	<b>204</b>

Source (KAM, 2018)

### 3.4 Sampling and Sampling Procedure

Sampling refers to the process of obtaining information about an entire population by examining only a part of it. A sample is the segment of the population that is selected for investigation (Bryman & Bell, 2013). This study adopted Yamane (1967) simplified formula to calculate the sample size which provided the number of responses that should to be obtained using the equation;

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

Where:

$n$  = sample size

$N$  = population size

$e$  = the level of precision

1 = Constant

This formula assumes a degree of variability of 0.5, the level of precision of 5% and a confidence level of 95%.

$$n = 204 / [1 + 204(0.05)^2]$$

$$= 135.09 \approx 135 \text{ respondents}$$

$n = 135$  respondents.

Therefore, the 135 respondents was apportioned as per the target population. Table 3.2 shows the sample size. Stratified random sampling technique was used in selecting the respondents.

**Table 3.2: Sample Size**

No	Firm	Senior Management	Middle Level Management	Supervisors & Lead Staff	Sample Size
1	Bamburi Cement Limited National Cement	3	5	15	23
2	Company Limited	2	5	15	21
3	Mombasa Cement East Africa Portland	3	6	16	25
4	Cement Company	2	5	15	21
5	Savannah Cement	3	5	15	23
6	ARM, Africa Ltd	2	5	15	21
	<b>Total</b>	<b>15</b>	<b>30</b>	<b>90</b>	<b>135</b>

Source (KAM, 2018)

### 3.5 Research Instrument

Primary data was collected by means of a semi-structured questionnaire. The questionnaires was self-administered through the use of email, drop and pick later method to the managers and supervisors in the organization. According to Cooper and Schindler (2006) the use of structured questions on the questionnaire allowed for uniformity of responses to questions. The questionnaire was in 2 sections. Section A contained demographic information and section B was a series of statements to capture perception on innovative strategies. The key variables include the independent variables, which are product innovation strategy, process innovation strategy, technological innovation strategy and service innovation strategy. The use of questionnaire ensured collection of data from many respondents within a short time and respondents was free to give relevant information because they was assured of their anonymity (Mugenda & Mugenda, 2010).

### **3.6 Pilot Study**

The purpose of the pilot test was to refine the questionnaire so that respondents have no problems in answering the questions and thus eliminate problems in recording the data. In addition, it enables obtain some assessment of the question's validity and the likely reliability of the data that was collected. Preliminary analysis using the pilot test data can be undertaken to ensure that the data collected enables the investigative questions to be answered (Saunders, Lewis & Thornhill 2012).

According to Mugenda and Mugenda (2003), a pretest sample ranges from 1% to 10% depending on the sample size. In this study, 10% of the sample size was used for the pilot test. Therefore, 13 questionnaires was piloted by issuing them to respondents who were not included in the final study sample.

Therefore, in order to check the validity and reliability of the questionnaires in gathering the data required for purposes of the study, a pilot study was carried out. The purpose of pilot testing was to establish the accuracy and appropriateness of the research design and instrumentation (Saunders, Lewis & Thornhill (2009). Newing (2011) states that the importance of pilot testing cannot be overemphasized; you will almost always find that there are questions that people fail to understand or interpret in different ways, places in the questionnaire where they are not sure where to go next, and questions that turn out simply not to elicit useful information. Cooper and Schindler (2006) concur that the purpose of pilot test was to detect weaknesses in design and implementation and to provide proxy for data collection of a probability sample. Sekaran (2006) reinforces that pilot test is necessary for testing the reliability of instruments and the validity of a study. Once the questionnaire is pilot tested and amended and the sample selected, the questionnaire was then used to collect data in line with Saunders, Lewis and Thornhill (2012).

### **3.7 Validity and Reliability of Research Instrument**

Mugenda and Mugenda (2003) states that validity is the accuracy and meaningfulness of inferences, which are based on the research results. Validity exists if the data measure what they are supposed to measure. In order to test and enhance the validity of the questionnaire, fifteen questionnaires was pilot tested and reviewed with a view to improve validity of the data that was collected (Kothari, 2004). Validity refers to whether a questionnaire measures what it purports to measure (Bryman & Cramer, 1997). This study used both construct validity and content validity.

For construct validity, the questionnaire was divided into several sections to ensure that each section assessed information for a specific objective, and also ensure that the same closely ties to the conceptual framework for this study. To ensure content validity, the questionnaire was subjected to thorough examination on some randomly selected project supervisors. They were asked to evaluate the statements in the questionnaire for relevance.

Reliability is the consistency of a set of measurement items (Cronbach, 1951). Reliability is the consistency of measurement, or the degree to which an instrument measures the same way each time it is used under the same condition with the same subjects. Reliability refers to the repeatability, stability or internal consistency of a questionnaire (Jack & Clarke, 1998). Cronbach's alpha was used to test the reliability of the measures in the questionnaire (Cronbach, 1995). According to Cooper and Schindler (2003), Cronbach's alpha had the most utility for multi-item scales at the interval level of measurement, requires only a single administration and provides a unique, quantitative estimate of the internal consistency of a scale. A measure is considered reliable if a person's score on the same test given twice, is similar. 10% of the sample size was used for the pilot test. Therefore, 13 questionnaires were piloted by issuing them to respondents who were not included in the final study sample.

Cronbach's alpha coefficient was generated to assess reliability. The closer Cronbach's alpha coefficient was to 1, the higher the internal consistency reliability (Sekaran & Bougie, 2016). The study used a coefficient of 0.7.

Results are shown in Table 3.3.

**Table 3.3 Reliability Analysis**

<b>Variable</b>	<b>Items</b>	<b>Cronbach Alpha</b>	<b>Comment</b>
Performance	4	0.781	Reliable
Technological Innovation Strategy	6	0.742	Reliable
Process Innovation Strategy	6	0.786	Reliable
Product Innovation Strategy	6	0.853	Reliable
Service Innovation Strategy	6	0.787	Reliable

the results in table 3.2 shows that Cronbach's alpha for all the items under performance, technological innovation strategy, process innovation strategy, product innovation strategy and

service innovation strategy were all above 0.7 implying that the instrument was sufficiently reliable for measurement.

### **3.8 Data Collection Procedure**

Data collection refers to acquisition of subjects and collection of information needed for an investigation; techniques of collection varied depending on the research design, (Kothari, 2012). Primary data was selected for this investigation. Primary data was selected by using a semi structured questionnaire. The study used drop and pick method and the researcher used scheduled phone calls to follow-up on the dropped questionnaires.

### **3.9 Data Processing and Analysis**

Data analysis according to Kothari (2012) involves a number of closely related operations which are performed with the purpose of summarizing the collected data and organizing them in such a manner that they answer the research questions. Before the actual analysis of data using SPSS, data was cleaned, edited, checked for accuracy and coded. The completed questionnaires was edited for completeness and consistency; data was checked for errors and omissions. Quantitative data collected using a questionnaire was analyzed by the use of descriptive statistics using the Statistical Package for Social Sciences (SPSS) and was presented through percentages, means, standard deviations and frequencies.

A regression model was used to test the influence of innovative strategies on organizational performance. This helped to evaluate and understand the relationships between the dependent and independent variables of the study. The regression was:

$$\text{Multiple Regression: } Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where;

Y = Performance

X<sub>1</sub> = Technological Innovation

X<sub>2</sub> = Process Innovation

X<sub>3</sub> = Product Innovation

$X_4$  = Service Innovation

$\beta_0$  = Constant Term;

$\beta_1, \beta_2, \beta_3, \beta_4$  = Beta coefficients;

$\varepsilon$  = Error Term.

Test for this research hypothesis; t-test was used and the correspond P-value computed; if p-value  $< \alpha$  ( $\alpha$  is the level of significance) then the null hypothesis was rejected. The hypothesis was tested by using multiple linear regression and determined using p-value. The acceptance/rejection criteria was that, if the p value is less than 0.05, we reject the  $H_0$  but if it is more than 0.05, the  $H_0$  is not rejected.

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.0 Introduction

This chapter focused on data analysis, findings and interpretation. Results were presented in tables and diagrams. The analyzed data was arranged under themes that reflected the research objectives.

#### 4.1 Response Rate

The response rate was analyzed to show the representative from the sample size. A response rate is very important to the credibility of the research results. A low response rate may decrease the statistical power of the data collected and undermine the reliability of the results. It may also undermine the ability of the researcher to generalize the results to the larger target audience. This is further complicated by the fact that a low response rate can be indicative of a non-response bias within the sample. A low response rate can give rise to sampling bias if the non-response is unequal among the participants regarding exposure and/or outcome.

The study administered 135 questionnaires and the results are as shown in Table 4.1.

**Table 4.1: Response Rate**

<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
Returned	102	75.55%
Unreturned	33	24.45%
Total	135	100%

According to Mugenda and Mugenda (2003) and Kothari (2004), a response rate of above 50% is adequate for a descriptive study. Babbie (2004) also asserted that return rates of above 50% are acceptable to analyze and publish, 60% is good and 70% is very good. Based on these assertions from renowned scholars, 75.55% response rate is very good for the study. Thus, the response rate of 75.55% under this study was very good for study.

## 4.2 Demographic Characteristics

This section consists of information that describes basic characteristics such as gender of the respondent, age of the respondent level of education, duration of time in manufacturing sector.

### 4.2.1 Gender of the respondents

The respondents were asked to indicate their gender and the results are as shown in the Table 4.2.

**Table 4.2: Gender of Respondents**

<b>Gender</b>	<b>Percentage</b>
Male	64.7
Female	35.3
Total	100

The results show that majority of the respondents were men who represented 64.7% of the sample while 35.3% were female. This implies that the composition of the staff in sampled areas of cement manufacturing firm had more male than female staff.

### 4.2.2 Age of the respondents

The respondents were asked to indicate their age and the results are as shown in the Table 4.3.

**Table 4.3: Age of Respondents**

<b>Age</b>	<b>Percentage</b>
Below 30 years	16.7
30-39 years	31.4
40-49 years	30.4
Over 50 years	21.6
Total	100

The results show that majority of the respondents were between ages 30-39 years who represented 31.4% followed by 40-49 years represented by 30.4%. Those over 50 years were 21.6% and lastly below 30 years with 16.7%.

#### 4.2.3 Level of Education

The respondents were asked to indicate their level of education and the results are as shown in the Table 4.4.

**Table 4.4: Level of Education**

<b>Education</b>	<b>Percent</b>
Diploma	16.7
Bachelor's	43.1
Master	28.4
PhD	11.8
Total	100

Results show that 43.1% of the respondents had their level of education being bachelors, 28.4% had master's level qualification while 16.7% had diploma level qualification and 11.8% had PhD qualification. The outcomes suggest that, the respondents were able to comprehend the survey and give substantial reaction since they would be advised to understanding as guided by their level of instruction which for this situation majority share having graduate as their education level.

#### 4.2.4 Duration as Staff

The respondents were asked to indicate the duration while working in the textile industry and the results are as shown in shown in the Table 4.5.

**Table 4.5: Duration as Staff**

<b>Duration</b>	<b>Percent</b>
Less than 5 years	25.5
5-10years	47.1

Above 11 years	27.5
Total	100

The results showed that majority of the respondents with 47.1% have been in the cement industry for 5-10 years. This was followed by 27.5% who had been staff for above 11 years, while 25.5% have been staff for a period less than 5 years. This implies that majority of the respondents have been in the cement industry for a good period of time thus they were informed to respond to the study questionnaire.

### 4.3 Descriptive Statistics

This section presents the descriptive results on technological innovation strategy, product innovation strategy, process innovation strategy and service innovation strategy on performance of cement firms.

#### 4.3.1 Technological Innovation Strategy

The first objective of the study was to evaluate the influence of technological innovation strategy on performance of cement manufacturing firms in Athi River Zone. The study evaluated the respondents' level of agreement with the various statements on the technological innovation strategy using a scale of 1 – 5 where 5- strongly agree, 4- agree, 3- neutral, 2- disagree and 1- strongly disagree. The findings are as illustrated in Table 4.6.

**Table 4.6: Technological Innovation Strategy**

Statements	Mean	Std. Deviation
Automation of services and operation enhances efficiency in an organization	3.57	1.30
Real time production has been aided by technology which in turn improves production	3.74	1.13
Technology has increased human performance when human or employees use technology for the benefits of the organization	3.72	1.16
Motivation and training of employees has been improved by technology adoption	3.43	1.27
Technology use has enhanced a higher volume of production compared to the use of the conventional manual processes	3.77	1.02
Technology has brought about competitive advantage on to the manufacturers using it	3.50	1.31
Average	3.62	1.20

The findings shown in Table 4.6 indicate that the respondents agreed that automation of services and operation enhances efficiency in an organization with a mean of 3.57 and that real time production has been aided by technology which in turn improves production with a mean of 3.74. On whether technology has increased human performance when human or employees use technology for the benefits of the organization, the respondents agreed with 3.72 and that motivation and training of employees has been improved by technology adoption with a mean of 3.43. The respondents were asked if technology use has enhanced a higher volume of production compared to the use of the conventional manual processes and they agreed with a mean of 3.77. Lastly, the respondents agreed that technology has brought about competitive advantage on to the manufacturers using it with a mean of 3.50. The overall mean was 3.62 that showed that majority agreed and the standard deviation was 1.20.

#### **4.3.2 Product Innovation Strategy**

The second objective of the study was to evaluate the influence of product innovation strategy on performance of cement manufacturing firms in Athi River Zone. The study evaluated the respondents' level of agreement with the various statements on the product innovation strategy using a scale of 1 – 5 where 5- strongly agree, 4- agree, 3- neutral, 2- disagree and 1- strongly disagree. The findings are as illustrated in Table 4.7.

**Table 4.7: Product Innovation Strategy**

<b>Statements</b>	<b>Mean</b>	<b>Std. Deviation</b>
Creativity/quality of the innovation process has exerted a positive influence on product development	3.44	1.24
Communication of product innovation in our firm entails uniqueness and quality	3.62	1.19
Product innovation has impacted on customer satisfaction and its reputation in the market	3.65	1.28
The firm has undertaken rapid innovations for it to command a higher market share	3.34	1.19
Product innovation has been unavoidable for organizations to stay relevant and sustainable	3.55	1.24
Product development has demanded the integration of many actors of different knowledge and expertise in order to develop a high	3.56	1.11

technological product

Average

3.53

1.21

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The findings shown in Table 4.7 indicate that the respondents agreed that Creativity/quality of the innovation process has exerted a positive influence on product development with a mean of 3.44 and that Communication of product innovation in our firm entails uniqueness and quality with a mean of 3.62. The respondents further agreed that product innovation has impacted on customer satisfaction and its reputation in the market with a mean of 3.65 and that the firm has undertaken rapid innovations for it to command a higher market share with a mean of 3.34. On whether product innovation has been unavoidable for organizations to stay relevant and sustainable, the respondents agreed with a mean of 3.55 and lastly that Product development has demanded the integration of many actors of different knowledge and expertise in order to develop a high technological product with a mean of 3.56. In overall, the mean was 3.53 that showed that majority agreed and the standard deviation was 1.21.

#### 4.3.3 Process Innovation Strategy

The third objective of the study was to evaluate the influence of process innovation strategy on performance of cement manufacturing firms in Athi River Zone. The study evaluated the respondents' level of agreement with the various statements on the process innovation strategy using a scale of 1 – 5 where 5- strongly agree, 4- agree, 3- neutral, 2- disagree and 1- strongly disagree. The findings are as illustrated in Table 4.8.

**Table 4.8: Process Innovation Strategy**

<b>Statements</b>	<b>Mean</b>	<b>Std. Deviation</b>
Process innovation has continually implemented new or improved production or delivery method in our firm	3.75	1.07
Process inventiveness has incorporated noteworthy upgrades in systems, strategies or programming in our firm	3.46	1.31
New markets have created the room for expansion and meeting more customer demands due to process innovativeness	3.38	1.29
Applying corporate social responsibility as a self-regulation mechanism inside our organization has been part of process innovation	3.43	1.22

Process innovation has presented an opportunity to get customer inputs toward innovative decision making.	3.60	1.20
Government has fostered innovation among the manufacturing companies	3.75	1.15
Average	3.56	1.21

The findings show that the respondents agreed that process innovation has continually implemented new or improved production or delivery method in our firm with a mean of 3.75 and that process inventiveness has incorporated noteworthy upgrades in systems, strategies or programming in our firm with a mean of 3.46. On whether new markets have created the room for expansion and meeting more customer demands due to process innovativeness, the respondents agreed with a mean of 3.38 and that applying corporate social responsibility as a self-regulation mechanism inside our organization has been part of process innovation with a mean of 3.43. The respondents were asked if process innovation has presented an opportunity to get customer inputs toward innovative decision making and they agreed with a mean of 3.60. In overall, the mean was 3.56 that showed that majority agreed and the standard deviation was 1.21.

**4.3.4 Service Innovation Strategy**

The fourth objective of the study was to evaluate the influence of service innovation strategy on performance of cement manufacturing firms in Athi River Zone. The study evaluated the respondents’ level of agreement with the various statements on the service innovation strategy using a scale of 1 – 5 where 5- strongly agree, 4- agree, 3- neutral, 2- disagree and 1- strongly disagree. The findings are as illustrated in Table 4.9.

**Table 4.9: Service Innovation Strategy**

Statements	Mean	Std. Deviation
Service innovation involves intangible processes and dynamic interactions among technological and human systems	3.72	1.16
New feedback channel have been helpful in service innovation	3.43	1.27
Diverse and new delivery methods are availed by service innovation	3.77	1.02
Innovation in services has involved transformation that	3.50	1.31

involves how service is designed, developed and managed		
Customer value creation has mediated the relationship between service innovation and customer satisfaction	3.75	1.07
Internet service providers have accelerated the penetration of innovations and eventually creating desired impacts in the economy	3.46	1.31
Average	3.61	1.19

The respondents were asked if service innovation involves intangible processes and dynamic interactions among technological and human systems and they agreed with a mean of 3.72 and that new feedback channel have been helpful in service innovation with a mean of 3.43. The respondents further agreed that diverse and new delivery methods are availed by service innovation with a mean of 3.77 and that innovation in services has involved transformation that involves how service is designed, developed and managed with a mean of 3.50. On whether customer value creation has mediated the relationship between service innovation and customer satisfaction, the respondents agreed with a mean of 3.75. Lastly the respondents agreed that internet service providers have accelerated the penetration of innovations and eventually creating desired impacts in the economy with a mean of 3.46. In overall, the mean was 3.61 that showed that majority agreed and the standard deviation was 1.19.

#### 4.3.5 Performance

The dependent objective of the study was to evaluate the performance of cement manufacturing firms in Athi River Zone. The study evaluated the respondents' level of agreement with the various statements on the performance using a scale of 1 – 5 where 5- strongly agree, 4- agree, 3- neutral, 2- disagree and 1- strongly disagree. The findings are as illustrated in Table 4.10.

**Table 4.10: Performance**

<b>Statements</b>	<b>Mean</b>	<b>Std. Deviation</b>
Our organization has experienced an increased corporate profitability over the last five years	2.90	1.37
Our organization has experienced an increased market share over the last five years.	3.22	1.41
Organization has experienced increased customer base over the last five years.	3.08	1.37

Our organization has experienced improved customer service delivery over the last five years.	3.05	1.37
Average	3.06	1.38

Under performance, the respondents disagreed that the organization has experienced an increased corporate profitability over the last five years with a mean of 2.90. The respondent agreed that the organization has experienced an increased market share over the last five years with a mean of 3.22. On whether the organization has experienced increased customer base over the last five years the respondents agreed with a mean of 3.08. Lastly, the respondent agreed that the organization has experienced improved customer service delivery over the last five years with a mean of 3.05. In overall, the mean was 3.06 that showed that the level of agreement on performance was weak and the standard deviation was 1.38.

#### 4.4 Correlation Analysis

Correlation analysis was conducted to establish the relationship between the independent and dependent variables. The correlation matrix is presented in Table 4.6.

**Table 4.11: Correlation Matrix**

		Perfor mance	Technological Innovation Strategy	Process Innovation Strategy	Product Innovation Strategy	Service Innovation Strategy
Performance	Pearson Correlatio n	1.000	.778**			
	Sig. (2-tailed)		0.000			
Technological Innovation Strategy	Pearson Correlatio n	.778**	1.000			
	Sig. (2- tailed)	0.000				
Process Innovation Strategy	Pearson Correlatio n	.763**	.706**	1.000		
	Sig. (2- tailed)	0.000	0.000			
Product Innovation Strategy	Pearson Correlatio n	.773**	.756**	.696**	1.000	
	Sig. (2- tailed)	0.000	0.000	0.000		
Service Innovation Strategy	Pearson Correlatio n	.699**	.705**	.707**	.746**	1.000
	Sig. (2- tailed)					

Sig. (2-tailed)	0.000	0.000	0.000	0.000
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The results in Table 4.11 revealed that technological innovation strategy and performance of cement manufacturing firms are positively and significantly related ( $r= 0.778$ ,  $p=0.000$ ). The results further indicated that process innovation strategy and performance of cement manufacturing firms are positively and significantly related ( $r= 0.763$ ,  $p=0.000$ ). Product innovation strategy and performance of cement manufacturing firms was positively and significantly related ( $r= 0.773$ ,  $p=0.000$ ). Lastly, results showed that service innovation strategy and firm performance are positively and significantly related ( $r= 0.699$ ,  $p=0.000$ ). This implies that an increase in technological innovation strategy, process innovation strategy, product innovation strategy and service innovation strategy leads to an increase on performance of cement manufacturing firms.

#### 4.5 Diagnostic Tests

##### 4.5.1 Multicollinearity Test

Multicollinearity test was conducted to determine if two or more of the predictor (independent) variables in the regression model was highly correlated. Variance inflation factor (VIF) were used to test multicollinearity and VIF of below 10 indicated acceptable limits. If the VIF value of exploratory variables are greater than 10, then variables were regarded as highly collinear.

**Table 4.12: Multicollinearity Test Using Tolerance and VIF**

	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
Technological Innovation Strategy	0.35	2.857
Process Innovation Strategy	0.399	2.509
Product Innovation Strategy	0.325	3.081
Service Innovation Strategy	0.359	2.783

From the findings above all the variables had tolerance values  $>0.2$  and VIF values  $<10$  as shown in Table 4.12 and thus according to Myres (2015) who indicated that where  $VIF \geq 10$  indicate presence of Multicollinearity, there was no multicollinearity among the independent variables.

### 4.5.2 Test for Heteroscedasticity

Heteroscedasticity is the circumstance in which the variability of a variable is unequal across the range of values of a second variable that predicts it. Running a regression model without accounting for heteroscedasticity would lead to unbiased parameter estimates. To test for heteroscedasticity, the Breusch-Pagan/Godfrey test was used. Heteroscedasticity test was run using Breusch-Pagan / Cook-Weisberg test in order to test whether the error terms are correlated across observations in the cross sectional of the data (Long & Ervin, 2000). The hypothesis was that;

$H_0$ : Data does not suffer from Heteroscedasticity.

If the p-value is less than 0.05, the null hypothesis is rejected. Results are presented in Table 4.13.

**Table 4.13: Heteroscedasticity Results**

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Breusch-Pagan / Cook-Weisberg test for heteroscedasticity		
Ho: Constant variance		
Variable: fitted values of Performance		
<hr/>		
chi2(1)	=	2.00
Prob > chi2	=	0.157

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Results in Table 4.14 show that the p-value is greater than the 5%. Then the alternative hypothesis was rejected at a critical p value of 0.05 since the reported value was  $0.157 > 0.05$  and thus the data did not suffer from heteroscedasticity.

### 4.6 Regression Analysis

The study sought to carry out regression analysis to establish the statistical significance relationship between the technological innovation strategy, process innovation strategy, product innovation strategy and service innovation strategy on performance of cement manufacturing firms. According to Chatterjee and Hadi (2015), regression analysis is a statistical process of estimating the relationship among variables. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent and one or more independent variables. More specifically, regression analysis helps one to understand

how the typical value of the dependent variable changes when any one of the independent variable is varied, while the other independent variables are held fixed (Gunst, 2018).

The results presented in Table 4.14 present the fitness of model used of the regression model in explaining the study phenomena.

**Table 4.14: Model Fitness**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.856a	0.732	0.721	0.2504

The variables technological innovation strategy, process innovation strategy, product innovation strategy and service innovation strategy were found to be satisfactory variables in explaining firm performance of cement manufacturing firms. This is supported by coefficient of determination also known as the R square of 0.732. This means that technological innovation strategy, process innovation strategy, product innovation strategy and service innovation strategy explain 73.2% of the variations in the dependent variable, which is performance of cement manufacturing firms. This results further means that the model applied to link the relationship of the variables was satisfactory.

The Analysis of Variance (ANOVA) results are shown in Table 4.15.

**Table 4.15: Analysis of Variance**

	Sum of Squares	df	Mean Square	F	Sig.
Regression	16.647	4	4.162	66.351	.000b
Residual	6.084	97	0.063		
Total	22.731	101			

The findings further confirm that the regression model of is significant and supported by F= 66.351 ( $p < 0.000$ ) since p-values was 0.000 which is less than 0.05.

The study conducted a regression of coefficient analysis to establish the statistical significance relationship between the independents variables notably technological innovation strategy,

process innovation strategy, product innovation strategy and service innovation strategy on the dependent variable that was performance of cement manufacturing firms

The regression of coefficient results are as shown in Table 4.16.

**Table 4.16: Regression of Coefficients**

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.932	0.140		13.779	0.000
Technological Innovation Strategy	0.197	0.057	0.304	3.426	0.001
Process Innovation Strategy	0.205	0.054	0.314	3.769	0.000
Product Innovation Strategy	0.183	0.059	0.288	3.127	0.002
Service Innovation Strategy	0.031	0.057	0.048	0.548	0.585

The regression of coefficients results show that technological innovation strategy and performance is positively and significantly related ( $\beta=0.197$ ,  $p=0.001$ ). The results further indicated that process innovation strategy and performance are positively and significantly related ( $\beta= 0.205$ ,  $p=0.000$ ). The results further indicated that product innovation strategy and performance are positively and significantly related ( $\beta= 0.183$ ,  $p=0.002$ ). Lastly, results showed that service innovation strategy and performance were positively and but insignificantly ( $\beta =0.031$ ,  $p=0.585$ ).

The multiple regression model was laid as below.

$$Y= 1.932+ 0.197X_1 + 0.205X_2 + 0.183X_3 + 0.031X_4$$

Where:

Y = Performance

X<sub>1</sub> = Technological Innovation

X<sub>2</sub> = Process Innovation

X<sub>3</sub> = Product Innovation

X<sub>4</sub> = Service Innovation

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter addressed the summary of the findings, the conclusions and the recommendations. This was done according to the objectives of the study.

#### **5.2 Summary**

This section provides a summary of the findings from the analysis. This was done according to the objectives of the study where analysis was done from the data collected. The primary objective of the study that was to examine the influence of innovative strategies and performance of cement manufacturing firms in Athi River Zone.

##### **5.2.1 Technological Innovation Strategy and Performance**

The first objective of the study was to evaluate the influence of technological innovation strategy on performance of cement manufacturing firms in Athi River Zone. Correlation results indicated that technological innovation strategy and performance of cement manufacturing firms are positively and significantly related. Regression results indicated that technological innovation strategy and performance is positively and significantly related. This means that a unitary improvement in technological innovation strategy leads to an improvement in on performance of cement manufacturing firms by 0.197 units holding other factors constant.

The findings are consistent with Imran (2014) who found that technological advancement had noteworthy effect on inspiration and training of employees. Inspiration had noteworthy effect on

worker execution however; training had no significant effect on employee performance. Moreover as the concerned for technological advancement and employee performance, there was significant relationship among them. Sibanda (2015) study findings revealed that consumers are becoming more empowered; therefore, organizations need to be more flexible in their business models and strategies. Furthermore, the integration of cross-functional roles in the organization at the management level allow for improved alignment between information technology and strategy as better integrated roles bring a combination of these two elements.

Ndunga, Njati and Rukangu (2016) conducted a study on the impact of technological advancement on organization`s performance Innovation selection by business banks shows a high capability of financial performance enhancement in this manner yielding expanded returns for the investors. Innovations flexibility has come about to their expanded reception rate among the banks and their clients with the take-up additionally quickened by the way that the appropriation is from both the banks and their clients. Charles (2016) study revealed that strategic planning and marketing capability independently and jointly influence organizational performance. In addition, there was positive interaction between performance variables.

### **5.2.2 Product Innovation Strategy and Performance**

The second objective of the study was to evaluate the influence of product innovation strategy on performance of cement manufacturing firms in Athi River Zone. Correlation results indicated that product innovation strategy and performance of cement manufacturing firms are positively and significantly related. Regression results indicated that product innovation strategy and performance is positively and significantly related. This means that a unitary improvement in product innovation strategy leads to an improvement in on performance of cement manufacturing firms by 0.031 units holding other factors constant.

The findings are consistent with Gima and Li (2015) who found that, the innovation execution interface was dependent upon both environmental elements, including natural disturbance and institutional help, and the relationship-based methodologies of the endeavors, for example, strategic unions for product improvement and political systems administration. Their outcomes proposed the requirement for concurrent thought of condition and relationship-based methodology factors as moderators in the discourse on product innovation strategy among new technology ventures. The findings are also in line with Maurice (2013) whose findings

demonstrated that the effect of product innovation on performance execution was higher in Nigeria when shoppers perceive item development as more grounded, progressively good and increasingly exceptional. Innovativeness/quality of the creativity procedure applies a positive impact on product development and performance within the organization. In this manner, it was suggested that imaginative/quality advancements ought to be kept up consistently to create appropriate items constantly.

The findings are also in line with Kamakia (2014) whose results showed that correspondence of product innovation to staff was, as it were, with majority agreeing that product innovation affected organization performance. It was found out that to command a higher market share; a commercial bank needed innovative ideas. Most of the respondents firmly agreed that organization strategy and objectives impacted innovation and to continued execution.

### **5.2.3 Process Innovation Strategy and Performance**

The third objective of the study was to evaluate the influence of process innovation strategy on performance of cement manufacturing firms in Athi River Zone. Correlation results indicated that process innovation strategy and performance of cement manufacturing firms are positively and significantly related. Regression results indicated that process innovation strategy and performance is positively and significantly related. This means that a unitary improvement in process innovation strategy leads to an improvement in on performance of cement manufacturing firms by 0.183 units holding other factors constant.

The findings are in line with Agyei-Mensah (2017) whose study findings indicated that, Product innovation, marketing innovation and process innovation had a moderate relationship with organizational performance. However, organizational innovation and collaborations had a weak relationship with organizational performance. Nyamoita (2015) study demonstrated a positive factually noteworthy relationship between sale of power, a proportion of the prepaid process innovation and money related execution pointer of profit for resources. Customer and sales (kWh) per representative, with 0.727 and 0.599 significance individually does not influence the monetary execution. The asset structure fundamentally influences the money related execution negatively with a significance of 0.004. Debt proportion with importance of 0.522 does not significantly affect money related execution of KPLC. Kenfac and Yang (2013) established that the utilization of process innovation positively affect the regions budgetary and clients

performance. Additionally, the significance of process development as a well ordered process and not an abrupt change was found to be critical for a successful process innovation.

#### **5.2.4 Service Innovation Strategy and Performance**

The fourth objective of the study was to evaluate the influence of service innovation strategy on performance of cement manufacturing firms in Athi River Zone. Correlation results indicated that service innovation strategy and performance of cement manufacturing firms are positively and significantly related. Regression results indicated that service innovation strategy and performance is positively and significantly related. This means that a unitary improvement in service innovation strategy leads to an improvement in on performance of cement manufacturing firms by 0.183 units holding other factors constant.

The findings agree with Lin (2013) who established that service innovation affected firm performance through direct and indirect paths where service quality plays a positive mediating role, and the direct impact is larger than the indirect one; Similarly, the innovation mode is cost-reductive, which focuses on eliminating internal cost rather than improving service quality; Further, the assessment of service quality emphasizes the dimensions of assurance and reliability.

Mohamud (2017) explored the relationships between service innovation, customer value creation (CVC) and customer satisfaction (CS) with specific emphasis to Ghanaian telecommunication operators. The study unveiled that a service firm's ability to achieve CS is dependent on how telecommunication operators harness and deploy their service innovation activities. Ngumi (2014) findings revealed that bank innovations had factually significant effect on salary, return on resources, and benefit and client stores of business banks in Kenya. Aas and Pedersen (2014) supported the proposition that firms focusing on service innovation have significantly higher growth of operating results than firms not focusing on service innovation. However, this proposition was not supported in a corresponding analysis of 1132 Norwegian firms in the service industries. They elaborated on these results by investigating a variety of performance measures and by comparing the effects of service innovation between manufacturing and service industries.

### **5.3 Conclusion**

The study sought to examine the influence of innovative strategies and performance of cement manufacturing firms in Athi River Zone. The study concluded that strategic innovations played a significant role on cement manufacturing firms. This is because there existed a positive and significant relationship between technological innovation strategy, process innovation strategy, product innovation strategy and service innovation strategy on cement manufacturing firms. Based on the findings in relation to specific objective, the study concluded that strategic innovations positively lead to competitive performance.

The study concludes that, the cement manufacturing firm's ability to introduce new improved product to facilitate their entry and creation of new markets for their services, application of modern technologies and innovative strategies to target specific markets well as the introduction of new product/service designs affect their performance. This is as this allows them to enter the market and acquire a significant share of the market boosting their customer base and consequently bringing about their improved profitability and competitiveness.

#### **5.4 Recommendations**

The study recommends that the manufacturing firms should invest in innovative technology so as to survive intense competition currently experienced in the manufacturing sector. The study recommended that manufacturing firms should invest in automating routine tasks so as to improve efficiency in the production process. The study further recommends that the firms should adopt business process reengineering and embark on minimizing waste in the manufacturing process. This will reduce production costs and improve overall performance. The manufacturing firms should restructure organizational structures to enhance inter-functional team working as it will provide smooth environment for innovations.

Further the study recommends that the manufacturing firms should continuously produce new products and re-engineer existing products so as to prolong the product life cycle. This will increase the firms' returns. Also manufacturing firms should invest on increasing product portfolio so as to spread the market risk and enhance performance. The study recommends that manufacturing firms should keenly invest in technology so as to support firm strategy. The study recommends that manufacturing firms should have a process feedback channel that captures customer complaints and effectively use the complaints to improve service and products.

Further the study recommends that the firms should design a marketing strategy that makes customers feel a part of the company through social responsibility and promotions. The study recommended that the cement manufacturing firms should invest in benchmarking with the best technology in the industry so as to cut a niche in the industry without necessarily reinventing the wheel.

### **5.5 Suggested Areas for further Research**

The study suggests further survey on study innovative strategies and performance in other industries. This research should be replicated in other industries in order to establish whether there is consistency among them on innovative strategies and business performance. The study should supplement the findings of this study by providing information on the strength and weaknesses experienced in the implementation of innovative strategies.

## REFERENCES

- Abbasi, A., & Malik Q.A. (2015). Firms' Size Moderating Financial Performance in Growing Firms: An Empirical Evidence from Pakistan. *International Journal of Economics and Financial Issues*, 2015, 5(2), 334-339.
- Abdi, A. M., & Ali, A. Y. S. (2013). Innovation and business performance in telecommunication industry in Sub-Saharan African context: case of Somalia. *Asian journal of management sciences & education*, 2(4) 257-273.
- Ageyi-Mensah, M. (2017). *Effects of innovative capabilities on performance in the banking industry: A case of UT Bank Ghana* (Doctoral dissertation, University of Ghana).
- Almirall, E., Lee, M., & Majchrzak, A. (2014). Open innovation requires integrated competition-community ecosystems: Lessons learned from civic open innovation. *Business Horizons*, 57(3), 391-400.
- Atta-Ankomah, R. (2016). Chinese technologies and pro-poor industrialisation in Sub-Saharan Africa: The case of furniture manufacturing in Kenya. *The European Journal of Development Research*, 28(3), 397-413.
- Azaze A, Abdul, A. & Evelyn, J (2010). Market orientation and new product performance: The mediating role of product advantage. *African Journal of Marketing Management*, 2(5): 100
- Aziati, A. N., Tasmin, R. H., Jia, L. B., & Abdullah, N. H. (2014). The relationship of technological innovation capabilities and business innovation capabilities on organization performance: Preliminary findings of Malaysian food processing SMEs. In *Engineering, Technology and Innovation (ICE), 2014 International ICE Conference on* (pp. 1-8). IEEE.
- Baden-Fuller, C., & Haefliger, S. (2013). Business models and technological innovation. *Long range planning*, 46(6), 419-426.

- Bakar, L. J. A., & Ahmad, H. (2010). Assessing the relationship between firm resources and product innovation performance: A resource-based view. *Business Process Management Journal*, 16(3), 420-435.
- Baraza, D. (2017). *Effects of Competitive Strategies on Performance of Manufacturing Firms in Kenya; A Case Study Of East Africa Breweries Limited* (Doctoral dissertation, Kenyatta University).
- Bhappu, A. D., & Schultze, U. (2006). The role of relational and operational performance in business-to-business customers' adoption of self-service technology. *Journal of Service Research*, 8(4), 372-385.
- Bowers, C. A., Baker, D. P., & Salas, E. (1994). Measuring the importance of teamwork: The reliability and validity of job/task analysis indices for team-training design. *Military Psychology*, 6(4), 205.
- Brooks, C. (2008). *RATS Handbook to accompany introductory econometrics for finance. Cambridge Books.*
- Camisón, C., & Villar-López, A. (2014). Organizational innovation as an enabler of technological innovation capabilities and firm performance. *Journal of business research*, 67(1), 2891-2902.
- Camisón, C., & Villar-López, A. (2014). Organizational innovation as an enabler of technological innovation capabilities and firm performance. *Journal of business research*, 67(1), 2891-2902.
- Cardinal, L. B., Sitkin, S. B., & Long, C. P. (2010). A configurational theory of control. *Organizational control*, 51-79.
- Chang, H. C. (2010). A new perspective on Twitter hashtag use: Diffusion of innovation theory. *Proceedings of the Association for Information Science and Technology*, 47(1), 1-4.
- Cheung, R., & Vogel, D. (2013). Predicting user acceptance of collaborative technologies: An extension of the technology acceptance model for e-learning. *Computers & Education*, 63, 160-175.
- Christensen, C. M., Raynor, M. E., & McDonald, R. (2015). What is disruptive innovation. *Harvard Business Review*, 93(12), 44-53.
- Chux, G. I. (2010). Impact of product development and innovation on market share. *African Journal of Business Management*, 4(13): 2659-2667.
- Cohen J, Cohen P, West SG, Aiken LS (2003) Applied multiple regression/correlation analyses for the behavioral sciences, 3<sup>rd</sup> edition. *Lawrence Erlbaum*, Mahwah, NJ.
- Cooper, D., & Schindler, P. (2014). Business Research Methods. *Social Research*, (12th Edition), 792.

- Corsi, S., & Di Minin, A. (2014). Disruptive innovation... in reverse: Adding a geographical dimension to disruptive innovation theory. *Creativity and Innovation Management*, 23(1), 76-90.
- Crane, L. M. (2011). *Measuring Financial Performance: A Critical Key to Managing Risk National Crop Insurance Services*.
- Di Gangi, P. M., & Wasko, M. (2009). Steal my idea! Organizational adoption of user innovations from a user innovation community: A case study of Dell IdeaStorm. *Decision Support Systems*, 48(1), 303-312.
- Ecuru, J., Lating, P. O., & Trojer, L. (2014). Innovation characteristics of formal manufacturing firms in Uganda. *African Journal of Science, Technology, Innovation and Development*, 6(5), 415-423.
- Gallery, G., Cooper, E., & Sweeting, J. (2008). Corporate disclosure quality: lessons from Australian companies on the impact of adopting International Financial Reporting Standards. *Australian Accounting Review*, 18(3), 257-273.
- Gujarati, D., & Porter, D. (2003). Multicollinearity: What happens if the regressors are correlated? *Basic econometrics*, 363.
- Gunday, G., Ulusoy, G., Kilic, K., & Alpkan, L. (2011). Effects of innovation types on firm performance. *International Journal of production economics*, 133(2), 662-676.
- Hervas-Oliver, J. L., Sempere-Ripoll, F., & Boronat-Moll, C. (2014). Process innovation strategy in SMEs, organizational innovation and performance: a misleading debate?. *Small Business Economics*, 43(4), 873-886.
- Hope, K. (2014) 'Informal economic activity in Kenya: Benefits and drawbacks', *African Geographical Review* 33(1): 67–80.
- Imran, M., Maqbool, N., & Shafique, H. (2014). Impact of technological advancement on employee performance in banking sector. *International Journal of Human Resource Studies*, 4(1), 57.
- Kamakia, S. (2014). "Effect of product innovation on performance of commercial banks in Kenya." MBA thesis, Kenyatta University.
- Karabulut, A. T. (2015). Effects of Innovation Strategy on Firm Performance: A Study Conducted on Manufacturing Firms in Turkey. *Procedia-Social and Behavioral Sciences*, 195, 1338-1347.
- Karabulut, A. T. (2015). Effects of innovation types on performance of manufacturing firms in Turkey. *Procedia-Social and Behavioral Sciences*, 195, 1355-1364.
- Kenya Association of Manufacturers. (2018) *Sectors*. <http://www.kam.co.ke/index.php/kam-sectors>

- Kombo, H. K., K'Obonyo, P., & Ogutu, M. (2016). Knowledge Strategy and Innovation in Manufacturing Firms in Kenya. *International Academic Journal of Human Resource and Business Administration*, 3(4), 207-227.
- Kothari, C. (2004). Research Methodology: Methods & Techniques. 2<sup>nd</sup> Ed.: *New age International Publishers*. New Delhi, India,
- Kothari, C. R. (2013) Research Methodology. Methods and Techniques, Revised Edition. *New Age International Publishers*, New Delhi.
- Li, H., & Atuahene-Gima, K. (2015). Product innovation strategy and the performance of new technology ventures in China. *Academy of management Journal*, 44(6), 1123-1134.
- Lilly, L., & Juma, D. (2014). Influence of Strategic Innovation on Performance of Commercial Banks in Kenya: The Case of Kenya Commercial Bank in Nairobi County. *European Journal of Business Management*, 2(1), 336-341.
- Lin, L. (2013). The impact of service innovation on firm performance. *The Service Industries Journal*, 33(15-16), 1599-1632.
- Lin, Y., & Wu, L. Y. (2014). Exploring the role of dynamic capabilities in firm performance under the resource-based view framework. *Journal of business research*, 67(3), 407-413.
- Liu, L., Borman, M., & Gao, J. (2014). Delivering complex engineering projects: Reexamining organizational control theory. *International Journal of Project Management*, 32(5), 791-802.
- Lusch, R. F., & Nambisan, S. (2015). Service innovation: A service-dominant logic perspective. *MIS quarterly*, 39(1).
- Ma, L., Sian Lee, C., & Hoe-Lian Goh, D. (2014). Understanding news sharing in social media: An explanation from the diffusion of innovations theory. *Online Information Review*, 38(5), 598-615.
- Magutu, P. O. (2013). Supply chain strategies, technology and performance of large-scale manufacturing firms in Kenya. *Unpublished PhD thesis, University of Nairobi*.
- Mahfoudh I. O., (2012) *Effect of selected firm characteristics on financial performance of firms listed in the agricultural sector at the Nairobi securities exchange* (Doctoral dissertation, University of Nairobi).
- Mahmoud, M. A., Hinson, R. E., & Anim, P. A. (2017). Service innovation and customer satisfaction: the role of customer value creation. *European Journal of Innovation Management*.
- Makowsky, M. J., Guirguis, L. M., Hughes, C. A., Sadowski, C. A., & Yuksel, N. (2013). Factors influencing pharmacists' adoption of prescribing: qualitative application of the diffusion of innovations theory. *Implementation Science*, 8(1), 109.

- Mason, E. (2009). Price and Production Policies of Large-Scale Enterprise. *American Economic Review*, 29, 61-74.
- Maurice, I. U. (2013). Impact of product development and innovation on organizational performance. *International journal of management and sustainability*, 2(12), 220-230.
- Ministry of Industry, Trade and Cooperatives. (2016) *Kenya's Industrial Transformation Programme*. <http://www.industrialization.go.ke/index.php/downloads/282-kenya-s-industrial-transformation-programme>
- Mose, J. M., Njihia, J. M., & Magutu, P. O. (2013). The critical success factors and challenges in e-procurement adoption among large scale manufacturing firms in Nairobi, Kenya. *European Scientific Journal*, *ESJ*, 9(13).
- Mugenda, A. G. "Social Science Research: Theory and Principles. Nairobi." *Kijabe printers* (2008).
- Mugenda, O. M., & Mugenda, A. G. (2012). Research methods dictionary. A conceptual framework', *The Innovation Journal: The Public Sector Innovation Journal*,
- Mwanyota, J. L., Maalu, J. K., & Njihia, M. J. (2017). The Influence of Process Innovation and Operational Performance on the Relationship between Adoption of Reverse Logistics and Competitive Advantage: A Critical Review of Literature. *DBA Africa Management Review*, 7(2).
- Mwaura, A. W., Letting, N., Ithinji, G. K., & Orwa, B. H. (2016). Green distribution practices and competitiveness of food manufacturing firms in Kenya.
- Nambisan, S. (2013). Information technology and product/service innovation: A brief assessment and some suggestions for future research. *Journal of the Association for Information Systems*, 14(4), 215.
- Naran, M. (2013). *The effect of company size and voluntary disclosure on financial performance of commercial banks in Kenya* (Doctoral dissertation, University of Nairobi).
- Nasiri, A., Alleyne, A. R., & Yihui, L. (2016). Analysis of innovation management in German enterprises. *Cogent Business & Management*, 3(1), 1216727.
- Ndunga, R., & Ibuathu, C. R. (2016). S. Influence of Technological Innovation on Bank Performance in Meru Town, Kenya [J]. *International Journal of Economics, Commerce and Management*, 4(11), 481-495.
- Newbert, S. L. (2007). Empirical research on the resource- based view of the firm: an assessment and suggestions for future research. *Strategic management journal*, 28(2), 121-146.

- Njeri, A. (2017). *Effects of Innovation Strategy on Firm Performance in Telecommunications Industry: A Case of Safaricom Kenya Limited* (Doctoral dissertation, United States International University-Africa).
- O'Sullivan, D. & Dooley, L. (2009) *Applying Innovation*, Sage Publication, London.
- Olughor, R. J. (2015). Effect of innovation on the performance of SMEs organizations in Nigeria. *Management*, 5(3), 90-95.
- Omachonu, V. K., & Einspruch, N. G. (2010). Innovation in healthcare delivery systems: a conceptual framework. *The Innovation Journal: The Public Sector Innovation Journal*, 15(1), 1-20.
- Osanloo, A., & Grant, C. (2016). Understanding, Selecting, and Integrating a Theoretical Framework in Dissertation Research: Creating the Blueprint for Your "House". *Administrative Issues Journal: Connecting Education, Practice, and Research*, 4(2).
- Park, S. Y., Nam, M. W., & Cha, S. B. (2012). University students' behavioral intention to use mobile learning: Evaluating the technology acceptance model. *British Journal of Educational Technology*, 43(4), 592-605.
- Saeidi, S. P. & Sofian, S., (2015). How does corporate social responsibility contribute to firm financial performance? The mediating role of competitive advantage, reputation, and customer satisfaction. *Journal of Business Research*, 68(2), 341-350.
- Saunders, M., Lewis, P., & Thornhill, A. (2012). *Research Methods for Business Students*. 6<sup>th</sup> Ed.
- Schumpeter, J. A. (1934). Change and the Entrepreneur. *Essays of JA Schumpeter*.
- Sekaran, U., & Bougie, R. (2010) *Research Methods for Business: A Skill Building Approach*, (5th Edition). Hoboken, N.J./Chichester: *John Wiley and Sons*.
- Sintset Kenfac, G., Nekoumanesh, S., & Yang, M. (2013). Process Innovation: Impacts on Organization's Performance: A *Qualitative Study of Four Swedish Municipalities*.
- Slater, S. F., Mohr, J. J., & Sengupta, S. (2014). Radical product innovation capability: Literature review, synthesis, and illustrative research propositions. *Journal of Product Innovation Management*, 31(3), 552-566.
- Soi, C. C. (2016). *Effect of Innovation Strategies on the Performance of Firms in the Telecommunication Industry in Kenya* (Doctoral dissertation, United States International University-Africa).
- Swanson, R. (2009). *Analysis for improving performance. Tools for Diagnosing organisations and documenting workplace expertise*. Beijing.

- Tahir and Razali (2012). The Relation between Enterprise Risk Management and Firm Value: Evidence from Malaysian Public listed Companies. *International Journal of Economics and Management*. No. 2, pp 32-41.
- Tavassoli, S., & Karlsson, C. (2015). *Firms' Innovation Strategies Analyzed and Explained* (No. 396). Royal Institute of Technology, CESIS-Centre of Excellence for Science and Innovation Studies.
- Tavitiyaman, P., Qiu Zhang, H., & Qu, H. (2012). The effect of competitive strategies and organizational structure on hotel performance. *International Journal of Contemporary Hospitality Management*, 24(1), 140-159.
- Terziovski, M. (2010). Innovation practice and its performance implications in small and medium enterprises (SMEs) in the manufacturing sector: a resource- based view. *Strategic Management Journal*, 31(8), 892-902.
- Tidd, J., & Bessant, J. (2014). *Strategic innovation management*. John Wiley & Sons.
- Varis, M., & Littunen, H. (2010). Types of innovation, sources of information and performance in entrepreneurial SMEs. *European Journal of Innovation Management*, 13(2), 128-154.
- Vola, P. (2013). The Role of Performance Measurement Systems within Family Businesses: a Proposed Balanced Scorecard Model. *International Journal of Research in Education Methodology*, 4(1), 428-446.
- Voss, G. B., & Voss, Z. G. (2000). Strategic orientation and firm performance in an artistic environment. *Journal of marketing*, 64(1), 67-83.
- Were, A. (2016). Manufacturing in Kenya. Features, Challenges and Opportunities. *International Journal of Science, Management and Engineering*, 4(6), 15-26.
- Were, A. (2016). Manufacturing in Kenya: Features, Challenges and opportunities. *A scoping exercise*, 11-22.
- World Bank (2016b) 'Informal enterprises in Kenya'. Nairobi: *World Bank*.
- World Bank. (2014). *Data*. Retrieved June 2018, from World Development Indicators: <http://data.worldbank.org/products/wdi>
- Yu, D., & Hang, C. C. (2010). A reflective review of disruptive innovation theory. *International journal of management reviews*, 12(4), 435-452.
- Zincirkiran, M., Emhan, A., & Yasar, M. F. (2015). Analysis of teamwork, organizational commitment and organizational performance: A Study of health sector in Turkey. *Asian Journal of Business and Management (ISSN: 2321-2802)*, 3(02).
- Zizlavsky, O. (2011). Factors of an innovation potential development are known, but not always mastered, “. *Economics and management*, 16(1)

## **APPENDICES**

### **Appendix I: Introduction Letter**

**KCA UNIVERSITY**

**SCHOOL OF BUSINESS AND PUBLIC MANAGEMENT**

#### **TO WHOM IT MAY CONCERN**

Dear sir/Madam

#### **RE: JAMES KARIUKI ADM NO: 13/3550**

This is to confirm that the above named is a bonafide student in the Master of business administration (corporate management) degree program in this university. The student has successfully completed part 1(course work) of his degree studies and was embarking on part 2 (dessertation). The student is required to submit a research project report in his area of specialization which involve going out in the field to collect data from various organizations.

Any assistance accorded her was highly appreciated

**COORDINATOR**

**SCHOOL OF BUSINESS AND PUBLIC MANAGEMENT**

## **Appendix II: Questionnaire**

This questionnaire is to collect data for purely academic purposes. The study seeks to assess the influence of innovative strategies on organization performance of manufacturing firms in Kenya. All information was treated with strict confidence. Do not indicate your name anywhere on this questionnaire.

*Answer all questions as indicated by either filling in the blank or ticking the option that applies.*

### **Section A: Background of Respondents**

1. What is your gender?

- i. Male [ ]
- ii. Female [ ]

2. What is your age?

- i. Below 30 years [ ]
- ii. 30-39 years [ ]
- iii. 40-49 years [ ]
- iv. Over 50 years [ ]

3. What is your highest level of education?

- i. Diploma [ ]
- ii. Bachelor's [ ]
- iii. Master [ ]
- iv. PhD [ ]

4. What is your position in the organization?

- i. Senior managers [ ]
- ii. Middle level managers [ ]
- iii. Supervisors [ ]

5. How many years have you been in the organization?

- i. Less than 5 years [ ]
- ii. 5-10years [ ]
- iii. Above 11 years [ ]

### Section A: Technological Innovation Strategy and Performance

The section is concerned with establishing the influence of technological innovation strategy on organization performance of cement manufacturing firms in Kenya. Please express your agreement and disagreement by marking the appropriate box.

Statement	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
Automation of services and operation enhances efficiency in an organization					
Real time production has been aided by technology which in turn improves production					
Technology has increased human performance when human or employees use technology for the benefits of the organization					
Motivation and training of employees has been improved by technology adoption					
Technology use has enhanced a higher volume of production compared to the use of the conventional manual processes					
Technology has brought about competitive advantage on to the manufacturers using it					

## Section B: Process Innovation Strategy and Performance

The section is concerned with evaluating the influence of process innovation strategy on organization performance of cement manufacturing firms in Kenya. Please express your agreement and disagreement by marking the appropriate box.

Statement	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
Process innovation has continually implemented new or improved production or delivery method in our firm					
Process inventiveness has incorporated noteworthy upgrades in systems, strategies or programming in our firm					
New markets have created the room for expansion and meeting more customer demands due to process innovativeness					
Applying corporate social responsibility as a self-regulation mechanism inside our organization has been part of process innovation					
Process innovation has presented an opportunity to get customer inputs toward innovative decision making.					
Government has fostered innovation among the manufacturing companies					

### Section C: Product Innovation Strategy and Performance

The section is concerned with evaluating the influence of product innovation strategy on organization performance of cement manufacturing firms in Kenya. Please express your agreement and disagreement by marking the appropriate box.

Statement	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
Creativity/quality of the innovation process has exerted a positive influence on product development					
Communication of product innovation in our firm entails uniqueness and quality					
Product innovation has impacted on customer satisfaction and its reputation in the market					
The firm has undertaken rapid innovations for it to command a higher market share					
Product innovation has been unavoidable for organizations to stay relevant and sustainable					
Product development has demanded the integration of many actors of different knowledge and expertise in order to develop a high technological product					

### Section D: Service Innovation Strategy and Performance

The section is concerned with establishing the influence of service innovation strategy on organization performance of cement manufacturing firms in Kenya. Please express your agreement and disagreement by marking the appropriate box.

Statement	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
Service innovation involves intangible processes and dynamic interactions among technological and human systems					
New feedback channel have been helpful in service innovation					
Diverse and new delivery methods are availed by service innovation					
Innovation in services has involved transformation that involves how service is designed, developed and managed					
Customer value creation has mediated the relationship between service innovation and customer satisfaction					
Internet service providers have accelerated the penetration of innovations and eventually creating desired impacts in the economy					

### Section E: Performance

The section assesses organization performance of cement manufacturing firms in Kenya. Please express your agreement and disagreement by marking the appropriate box.

<b>Statement</b>	<b>Strongly disagree 1</b>	<b>Disagree 2</b>	<b>Neutral 3</b>	<b>Agree 4</b>	<b>Strongly agree 5</b>
Our organization has experienced an increased corporate profitability over the last five years					
Our organization has experienced an increased market share over the last five years.					
Organization has experienced increased customer base over the last five years.					
Our organization has experienced improved customer service delivery over the last five years.					

### Appendix III: List of Cement Manufacturing Companies

No	Firm
1	Bamburi Cement Limited
2	National Cement Company Limited
3	Mombasa Cement
4	East Africa Portland Cement Company
5	Savannah Cement
6	ARM Africa Ltd

