

**THE IMPACT OF TECHNOLOGICAL INNOVATION ON MANUFACTURING
FIRMS FOR SUSTAINABLE DEVELOPMENT: A CASE STUDY OF BAMBURI
CEMENT LTD., KENYA**

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**A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF MANAGEMENT
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DECLARATION

This Research Project is my original work and has not been presented for any diploma in any other University

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Declaration by the Supervisor

This research project has been submitted for examination with my approval as University Supervisor

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DEDICATION

I humbly dedicate this research project to my heavenly father for his sufficient grace until this far and my parents for continuous support, provision and guidance throughout my studies.

ACKNOWLEDGEMENT

I am forever indebted to our Almighty for giving me the strength, courage and endurance during the research for my project. I am immensely thankful to my supervisor, Mr Joseph ndirangu for his professional guidance, support, understanding, and commitment to this study and my parents for continuous support. I also acknowledge the contributions of my friends and colleagues your help and selflessness has been wonderful and to you my lecturers at Management University of Africa, I salute you all. You have adequately equipped and prepared me academically. I can now pursue my dream career with confidence. You gave much, you will receive much.

ABSTRACT

Managers in companies constantly strive to increase efficiency, implement best practice and deliver increased shareholder value. They seek to improve cash flow through efficiencies of scale and cost reductions measures but there are limits to cost saving. The best way to create value and sustainable growth in firm is to innovate ahead of the competition. This study focused on the impact technological innovation has on manufacturing firms; a case of Bamburi Cement Ltd. The specific objectives of the study were to establish the influence of technological innovation adopted in introduction of new products on sustainable development, to examine the influence of technological innovation adopted in introduction of new methods of production on sustainable development, to determine the influence of technological innovation adopted in opening new markets on sustainable development and to establish the influence of technological innovation adopted in sourcing appropriate raw materials on sustainable development. The study adopted a descriptive design where a quantitative research method was used to ensure establishment of correlations and cause effect relationship that is important in viability of the constructs. The target populace of the study was 120 staff of Bamburi Cement Ltd in Kenya where a sample of 60 respondents was obtained. The research used questionnaires to collect data. The data was processed using statistical package for social sciences (SPSS) and then presented on tables and figures for interpretation.

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LIST OF ACRONYMS OF ABBREVIATIONS

ICT: Information, Communication and Technology

NSE: Nairobi Stock Exchange

SPSS: Statistical Package for Social Sciences

R&D: Research and Development

OPERATIONAL DEFINITION OF TERMS

Technological innovations: is a new or improved product or process whose technological characteristics are significantly different from before. Implemented technological product innovations are new products (product innovations) or processes in application (process innovations) that have been brought to market. The product or process is considered to be an innovation if it achieves specified advantages for the enterprise concerned; these need not be new from the point of view of other companies or the market.

Implementing Partner: Either an associate government or non-government entity or agency that supplements the works of a larger organization or agency by helping to carry out institutional arrangements in line with the larger organization's goals and objectives for the end-user beneficiaries and which in principle bring additional resources of their own to meet requirements which would else have to be met by the company.

Technologically new product: are material (tangible) objects that have been designed by people and developed through technological practice to serve particular functions. In every technological product there is a crucial relationship between the (chemical) composition and structure of the materials used and their performance properties. Its technological characteristics or intended uses differ significantly from those of previously produced products.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter entails introduction, background of the study specifying the geographical and area of the study, statement of the problem, general objective, specific objectives, research questions, justification/significance, scope and chapter summary.

1.1 Background of the study

Recently, firms and nations wound up confronting the test of worldwide rivalry. The impact of this worldwide rivalry in business climate powers the organizations to adjust their business systems. New item improvement, expanded capacity in items and creation procedures, opening up of new business sectors, and examination of their flexibly chain the executives are a portion of the elective systems ordinarily misused so as to shape the upper hand that organizations attempt to get. Ingenuity is expanding its importance among firms' methodologies because of its clear commitment to the upper hand of firms .also; it gets one of the key instruments of firms' business procedures to enter new markets, to expand the current piece of the overall industry and to make competitive advantage. Therefore, innovation management research has become very important globally in recent years (Kuratko et al., 2005). Nowadays, the objective of innovations is not only lessening the expenses yet additionally a wide range of reasons, for example, improving item and administration quality, planning better items, persevering through the abbreviated item life cycle, reacting to client needs and consequently growing new administrations and items, new association models and new marketing techniques. In the literature, various researches conclude that the modern companies need to be innovative in order to compete better in their market (Evangelista et al., 1998).

Throughout history, from the invention of fire, the discovery of the wheel to computing, humankind has depend on innovation to progress socially, economically and in all other scopes of life. Crossan and Apaydin (2010) give a comprehensive definition of innovation as production or adoption, assimilation and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. Innovation is

both an outcome and a process. The core meaning of innovation thus relates to renewal or improvement, with novelty being a consequence of this improvement. It is necessary for people to change the way they make decisions, or choices outside of their norm for an improvement to take place.

Technological innovation is of supreme importance to the progress and performance of the globalized economy and thus the development of states. Gerguri and Ramadani (2010) argue that technological innovation provides new technologies and products to address challenges in the global production system as well as introducing safer, faster, cheaper and better ways of producing, delivering and consuming goods and services. This is especially significant for the advanced economies where creation is globalized. As a rule, creation is topographically isolated from utilization and hence, includes advances to guarantee that items and administrations are delivered and conveyed on schedule, without influencing the quality. Furthermore the, shortage of assets, both fake and characteristic, request usage of accessible contributions to a maintainable way. As a result, it becomes imperative to create, diffuse and sustain innovation.

Financial growth and social welfare are some of the indicators of positive growth and improvement in a country. According to Benjamin and Rai (2008), there is both theoretical and empirical evidence that technological innovation helps secure economic growth in the long-term. As a result, technological innovation secures human welfare and development. In addition, innovation occupies centre stage in addressing challenges associated with economic growth and therefore, facilitates economic growth and advancement of human health and welfare (Benjamin & Rai, 2008). For example, technological innovation can be utilized to alleviate diseases and yearning just as search for better indicative or treatment alternatives, and along these lines, secure the drawn out wellbeing and government assistance of individuals. Notwithstanding the connection between's mechanical advancement and improvement, the reception and usage of advances far and wide differs. Over the most recent couple of years, mechanical development in the data innovation area has changed the business climate around the world. Owing to advances in communication, there has been unprecedented growth in productivity, wealth creation and economic activities (Gerguri & Ramadani, 2010). For instance, teleconferencing competencies have revolutionized business conferences and communication, while Web 2.0 has changed how marketers intermingle with their consumers. Most of the industrialized worlds have taken advantage of the latest scientific advancements to further their markets. According to Mugabe (2011), Organization

for Economic Cooperation and Development (OECD) countries which include the United States, Spain, Switzerland, France, Belgium, Greece, the Netherlands and most of Europe account for 86% of patent applications filed in 1998 and 85% of all scientific and technical journal articles published globally.

In Africa, technological innovation has been implemented to a lesser extent compared to the rest of the world, and particularly industrialised countries. According to a report by New Partnership for Africa's Development (NEPAD), Africa lacks adequate African-led innovation system out of the dependence on traditional development approaches in the socio-economic transformation of the continent (2010). This is despite the link between science, technology and innovation (STI) and the growth of a country (NEPAD, 2010). South Africa, Malawi, and Uganda top the list of nations that devote the most on research and development (R&D) with 1.05%, 1.70% and 1.1% GERD percentage of GDP (NEPAD, 2010).

According to a report by the World Bank, Kenya has a particularly strong base of public sector institutions mandated to carry out research and develop innovations (Oyelaran-Oyeyinka, 2007).

However, there is lack of innovation priorities, adequate funding and sufficient knowledge and skills (Oyelaran-Oyeyinka, 2007). Regardless, various writers have reported growing technological innovativeness in the nation and increasingly competitive business surroundings as a result. Maingi et al. (2013) argue that innovativeness of the Kenyan financial sector including the expansive Savings and Credit Cooperatives (SACCO) system, robust and well-regulated banking systems, mobile money transfer platforms, and Islamic banking platforms, have all been developed in response to unique Kenyan needs. Companies registered on the Nairobi Stock Exchange (NSE) are predominantly receptive to technological innovation. In a study to determine the factors influencing financial innovation of firms in the NSE, Mwangi (2007) found that regulation, high corporate taxes, fluctuation of interest rates and unstable foreign exchange rates influenced financial innovation of firms at the NSE. Investigation on the impact and influence of NSE-listed companies like Bamburi Cement Ltd to the growth of our nation as a direct result of their technology innovation is possibly ambiguous and not extensively covered, hence the essential for this study.

1.1.1 The Kenya Manufacturing Sector

Manufacturing sector comprises establishment that involves in the mechanical, physical or chemical revolution of materials, substances or component into new products.

Kenya has a large manufacturing sector serving both the local market and exports to the East African region and the rest of the world. It is dominated by subsidiaries of multinationals. The sector has contributed 13% of the gross domestic product (GDP) in the year 2004. In 2004 the sector expanded by 1.4% compared to 1.2 in 2002 (PWC, 2006).

Under the economic pillar of the Kenya vision 2030, manufacturing is one of the key sectors expected to deliver the envisaged 10 per cent economic growth rate per annum, by increasing and sustaining its influence to Gross Domestic Product (GDP) by at least 10 per cent per annum by the year 2012. The sector will also support the country's social development agenda through creation of jobs, generation of foreign exchange, and attracting local and foreign investment. The sector faces various challenges. The challenges include: competition from cheaper imports, shorter product life cycle, low investment in capital and high cost of production. In order to counter these challenges firms in the Kenya's manufacturing sector must be innovative enough to come up with products that are competitive in the market and innovative processes to reduce the cost of production.

1.2 Statement of the problem

Manufacturing sector is yet to experience a big leap to high sustainable growth in the country. The sector plays an important role in economic recovery and employment creation, bringing to form the core aspect of achieving competition in a global environment. A brief analysis of economic history, especially in United Kingdom, will show that industrial and technological innovations have led to substantial economic benefits for the innovating company and the innovating country (Trott, 2008).

The concern for improving the production of ideas, knowledge and information are the elements that drive technological innovation. To understand this phenomenon it is essential to explore the environment of technological development and innovation systems, as well as the characteristics of innovation processes. In particular, the innovation system relates the innovative firm with agents such as universities, research centres, regulators, competitors, customers and suppliers. The process of technological innovation brings together several

innovation activities of the firm and the relationship with activities, such as, knowledge, technologies, information, human resources, financial and business practices, as remarked by the OECD (2006). Innovation enables determination of challenges facing the economy and social life including unemployment, depletion of resources and the need for faster, safer and healthier production, transport and processing systems. The advancement of innovation, in particular technological innovation, in developing countries is becoming a trendy subject.

The developing interest in the subject stems from an acknowledgment that it is important to return to nuts and bolts in the wake of encountering the constraints of executing the advancement that will add to the turn of events of the developing country.

This set of privatization, liberalization, and deregulation policies have clearly validated their limits for promoting sustainable development in the developing world. Similarly, policies focusing on modernization, in the sense of building infrastructure and institutions with a more interventionist government, have not yielded the expected fruits (Ramadani, 2010). Hence, there has been an inclination to investigate the black box of the driving force of monetary improvement that is innovation, its creation and dissemination. Despite the fact that legislatures have a long such act of advancing development by different proportions of both an immediate and aberrant nature, the unequivocal detailing of advancement approaches started around 50 years prior during the 1960s. From that point forward such approaches have been extended and improved, while new diagnostic ideas, for example, the idea of public development framework, have been explained. It should be certain that the idea of advancement envelops not just mechanical development, for example the dissemination of new items and administrations of a mechanical sort into the economy, yet similarly it incorporates non-mechanical types of advancement, for example, association developments. The latter include the introduction of new management or marketing techniques, the adoption of new supply or logistic arrangements, and improved approaches to internal and external communications and positioning (Benjamin, 2008). While there is extensive experience aggregated in the field of advancement strategy in created/OECD nations, quite a bit of this isn't legitimately pertinent to agricultural nations on account of the idea of the difficulties the last are confronting. Truth be told, non-industrial nations face veritable impediments to development and this is accurately why they stay immature. These impediments get from improper business and administration atmospheres and inadequate instruction. Simultaneously, there is no decision: advancement strategies should adapt to these troublesome circumstances. Accordingly, there is a need to consider inventive methodologies

adjusted to the requirements and potential outcomes of non-industrial nations. According to Horn (2004), the situation is, however, rendered more complicated because the developing world presents very diverse situations in terms of levels of development, culture, among others. While there is impressive experience collected in the field of advancement strategy in created/OECD nations, a lot of this isn't legitimately pertinent to non-industrial nations due to the idea of the difficulties the last are confronting. Indeed, non-industrial nations face certifiable obstructions to development and this is exactly why they stay immature. These deterrents get from unseemly business and administration atmospheres and deficient schooling. Simultaneously, there is no decision: development strategies should adapt to these troublesome circumstances. Along these lines, there is a need to consider inventive methodologies adjusted to the necessities and potential outcomes of agricultural nations.

1.3 Objectives of Study

General Research Objective

The general objective of this study is to find out the the impact of technological innovation on manufacturing firms for sustainable development, a case study of Bamburi Cement Ltd., Kenya.

1.3.1 Specific Objectives

- i. To find out how technological innovation adopted affect the introduction of new products for sustainable development at Bamburi Cement Ltd.
- ii. To establish the extent at which technological innovation adopted affects the introduction of new methods of production for sustainable development at Bamburi Cement Ltd.
- iii. To determine how technological innovation adopted affects the opening up of new markets for sustainable development at Bamburi Cement Ltd.
- iv. To assess the influence of technological innovation adopted in sourcing appropriate raw materials for sustainable development at Bamburi Cement Ltd.

1.4 Research Questions

- i. How does technological innovation adopted affect the introduction of new products for sustainable development at Bamburi Cement Ltd?
- ii. To what extent does technological innovation adopted affects the introduction of new methods of production for sustainable development at Bamburi Cement Ltd?
- iii. How technological innovation adopted does affect the opening up of new markets for sustainable development at Bamburi Cement Ltd?
- iv. To what extent does technological innovation adopted affect in sourcing appropriate raw materials for sustainable development at Bamburi Cement Ltd?

1.5 Significance of the study

1.5.1 Bamburi Cement Ltd

The study will be important to the company since it will provide the relevant information on how to foster innovation in the firm. The study may be used to tackle this challenge by identifying areas that needs attention from managers in order to increase a firms' innovativeness.

1.5.2 Others Researchers and academicians

The findings of the study will help broaden the academic content in as far as innovation is concerned to both academicians and researchers. The study may also be used as base for further studies.

1.5.3 Government

Government may use the study to come up with policies that will encourage, support and advance innovations in the country. The government plays an important role in facilitating innovation. It can do this by financing R&D, regulating competition, purchasing products of innovation, infrastructure building etc.

1.6 Scope of the study

The research study will explore the the impact of technological innovation on manufacturing firms for sustainable development: a case study of Bamburi Cement Ltd., Kenya. The study will target staff in leadership positions and those not in leadership positions working at Bamburi Cement Ltd. Therefore the total population to be targeted will be 120 employees of the company.

1.7 Chapter Summary

The chapter has highlighted the background of the study on the global and local perception on the impact of technological innovation on manufacturing firms for sustainable development. The statement problem that establishes the reason for the study, the research objectives offers the premises on which the whole research project is done. The scope identifies the coverage areas of the study and significance of the study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

In this chapter, the researcher presented a review of literature related to the study. The chapter first covers theoretical literature on Resource Based Theory in relation to the study. Literature is then reviewed based on the research objectives. The theory and the conceptual framework underlying the study are also discussed in this chapter. The chapter bases its argument on information retrieved from books, journals, research papers, web articles, conference proceedings and session papers.

2.1 Theoretical Literature

According to Kilbourn (2006), the theoretical perspective in research reflects the researcher theoretical orientation, which is crucial to interpreting the data in qualitative, irrespective of whether it is explicit or implicitly stated. In other words, theoretical perspective plays a role as the filter for focusing and binding the data to be collected.

2.1.1 Resource Based Theory

This theory tries to explain the internal sources of a firm's sustained competitive advantage (Kraaijenbrink, Spender and Groen, 2010). It was the Penrose who established the foundation of the resource based view as theory (Roos & Ross, 1997). Penrose first provides a logical explanation to the growth rate of the firm by clarifying the casual relationship among firm resources, production capability and performance. Her concern is mainly on efficient and innovative use of resources. She claimed that bundles of productive resources controlled by firms could vary significantly by firm, that firm in this sense are fundamentally heterogeneous even if they are in the same industry (Barney & Clark, 2007).¹² According to Resource Based Theory (RBT), human capital is considered to be a basis of competitive benefit for entrepreneurial "firms. Ownership of firm-specific assets enables a corporation to develop a competitive advantage. Sustainable competitive advantage results from resources that are inimitable, not substitutable, tacit in nature, and synergistic (Barney, 1991). Therefore, managers need to be able to identify the key resources and drivers of performance and value in their organizations. The RBT additionally expresses that an organization's

competitive advantage is gotten from the organization's capacity to amass and misuse a suitable mix of assets. Such assets can be unmistakable or theoretical, and speak to the contributions to a company's creation cycle, for example, capital, gear, the abilities of individual workers, licenses, financing, and capable administrators. As an organization's adequacy and abilities increment, the arrangement of accessible assets will in general expand. Through proceeded with use, these "abilities", characterized as the limit with regards to a bunch of assets to intuitively play out a stretch undertaking or a movement, become more grounded and more hard for contenders to comprehend and impersonate. Research and Development expenditures can be used to augment future production possibilities (Rylander, 2011).

Prahalad and Hamel (2013) concentrate their attention on the collective learning processes of the organization, on the development of skills and technology integration. Their idea of "centre abilities" is identified with systems by which firms learn and amass new aptitudes so as to create business capacities to outflank contenders. One of the targets of the hypothesis is to assist chiefs with acknowledging why capabilities can be seen as an organizations' most significant resource and, simultaneously, to see how those resources can be utilized to improve business execution. A resource-based view of the firm accepts that attributes related to past experiences, organizational culture and competences are critical for the success of the firm (Campbell and Luchs, 1997; Hamel and Prahalad, 2013). Conner (1991) suggests that an in-house team is likely to produce technical knowledge, skill, or routine that fits better with the firm's current activities.

2.1.2 Complexity Theory

Complexity theory suggests that all systems have an order of behaviour and evolution. In business, the intricacy hypothesis portrays a processing plant or firm whose arrangement of activity is contained a few free parts in spite of the fact that they act as a solitary unit. The parts are receptive to changes in their current circumstance and exhibit designed conduct and attributes that present the general framework. Additionally, the system is self-organizing, and the processes of change are conceptualized as non-linear (Walby, 2003). In this unique circumstance, mechanical advancement is a piece of the framework that shapes the entire association and collaborates with different segments that incorporate creation measures, re-appropriating and promoting among others to impact on another through their communications and produce a change saw in the entire framework that is the firm.

2.2 Empirical Literature Review

The empirical study of literature is an interdisciplinary field in research and includes: psychology, sociology, and philosophy, contextual study of literature and history of reading literary texts. It also analyzes the public response of the text mostly through means like media such as literary texts, films, theatrical performances and visual artworks.

2.2.1 Technological Innovation and New Products

Technological innovations can be used in the establishment of new products that help a firm attain a competitive edge. The new products are formed from either scratch or current products. The purpose of creating new products is to ensure variety to consumers such that their preferences and needs are met (Hauser & Dahan, 2007). Innovation isn't stale however constantly develops and gives new occasions to create and re-create items. For instance, since the presentation of the main current PC during the 1980s, it has developed, moved and progressed. After some time, the idea of registering has been applied to create different items, for example, cell phones. Nonetheless, mechanical development headway isn't direct and hence, the making of new items doesn't follow a straight way. In the example given above, computing cannot be said to be the sole foundation of the smartphone technology because it was preceded by the discovery of the telephone, pagers and many other technologies that made a mobile phone possible.

In the case of business, technological innovation may or not be linear. In situations when a specific organization champions for the improvement of a specific innovation, all subsequent items may not be essentially as a result of different advancements. Notwithstanding, new innovation is an occasion to make new items and administrations, which are enhancements of the past ones. It is an intricate process involving a deep understanding of the client's preferences, the technology available and what the suppliers and competitors are doing (Hauser & Dahan, 2007). It will in general be costly with high starting expenses and high disappointment rates. In any case, once in a while, the organization hits the nail on the head, and the items are made and sold effectively.

In Kenya, versatile communication has developed dramatically and has flourished in all perspectives, presently at 80.5% infiltration (CA, 2014). Nonetheless, web infiltration is right now low at 34% (CA, 2014). Kenya is notable for its inventiveness and development on the

versatile stage. Developments, for example, portable cash for example M-PESA has had such an immense effect on the financial turn of events. Progress made with cell phone innovation can prompt fast enhancements in availability.

In essence, the mobile phone has been established to be the most powerful marketing tool available for business entities: traders and buyers alike. Regardless of it being at first evolved as a social cooperation device, it has advanced to be an incredible advertising instrument totally altering availability for little holders in non-industrial nations. Since the adoption of the mobile phone technology, various studies have observed enhanced communication, information exchange and service delivery innovation (Tickner,2009)

Adoption of technology is a critical aspect of manufacturing innovations and their effect on maintaining a sustainable livelihood. For an innovation to be easily adopted, the results should be visible to other people (Boisvert & Chang, 2006). Adoption is administered by factors such as social capital, location, resources, information and institutional support.

Policy makers such as the government play a key role in guaranteeing that manufacturing innovation project meet sustainability of livelihoods. Stewart (2010) argues that regulation and government policies are necessary to ensure accurate information about products and processes at the market.

Government approaches and guideline influence advancements in two different ways: consistence trouble and circumventive development. Consistence weight may make firms redirect assets and exertion from development towards consistence. Circumventive advancement happens where the extent of guideline isn't very much characterized and thus the organizations avoid guideline. According to Aerni (2004), government policies regarding high sea fishing were responsible for the evolution of the fishing industry from small scale to large scale. He also contends that innovations such as aquatic biotechnology and transgenic fish breeding seem to arise from policy uncertainty resulting from probable future regulation.

2.2.2 Technological Innovation and New Methods of Production

Technological innovation empowers creation and diversion of new strategies for creation to encourage less expensive, more effective and opportune creation of goods and services. According to Kask and Sleber (2002), high-tech manufacturing causes an 80% increase in output while less than 20% of growth input can be attributed to an increase in inputs. The

increase in output without much increase in the number of inputs is worthy for the economy and the society in general. It reduces the rate of depletion of resources and does not increase the consumption rate (Kask & Sleber, 2002). Production involves changing of raw materials to finished products and services and may include high or low technology application. Low technology creation will in general utilize a larger number of individuals than cutting edge occupations for organizations of comparative sizes. Also, low-tech creation cycles may include more individuals doing easygoing positions. The outcome is that the firm goes through a great deal of cash paying wages and compensations without overlooking the expense of harmed items because of human blunder. Applying mechanical development in the creation lessens the quantity of harmed items and guarantees quality. Furthermore, more merchandise can be delivered per unit contrasted with a creation framework with a low-tech application. According to Rinnebach (2014), the aim of technology application in any industrial process is to ensure timeliness and detailed planning of the process. Subsequently, technological innovation in the creation cycle brings about better methods of creation just as idealness, quality, and decreased expenses. The consequences of such a cycle are higher efficiency, better net revenues and seriousness on the lookout.

2.2.3 Technological innovation and new markets

Technological innovation assists the creation of new markets for products. For example, the development of the mobile money transfer technology in Kenya created and tapped into a new market comprising of the previously unbanked population. Technological innovation additionally empowers organizations delivering actual merchandise to investigate and arrive at new business sectors. For instance, the Internet is an advancement that opened new and practically boundless business sectors for organizations through the online business stage. An organization doesn't need to be restricted to its prompt market which is frequently topographically restricted. Offering on the web and making conveyances to clients far route in different pieces of the nation or globe dramatically opens the market for the said organization. According to Rinnebach (2014), technological innovation creates geographical expansion and differentiation. Rinnebach (2014) also observed that traditional fashion markets in the US and Europe are saturated and therefore, emerging markets in China, India, the Middle East and Brazil are good alternatives.

2.2.4 Technological innovation and sourcing of raw materials

The last few years has qualified a shift in the obtaining behavior of many firms in many countries. With improved global security, transport, communication and relations, firms prefer to buy their raw materials from the cheapest markets which in most cases are located in Africa and Asia. A study to investigate the impact of outsourcing strategies and specific IT applications on production and outsourcing found that technology was important in facilitating the two processes (Bardan, Mithas, & Lin, 2007).

The researchers accepted that the usage of data and correspondence innovation empowered the organizations to work together inside and across authoritative limits to help joint dynamic, increment the perceivability of providers' activities and encouraged data trade. The capacity to encourage between hierarchical correspondence and collaboration is the sign of advanced innovation application in cutting edge business tasks in light of the fact that mechanical development has made it feasible for firms situated in Africa, Europe or the United States to purchase from China, Bangladesh, India, Malaysia and other Asia monsters. Nations in Asia can deliver high measures of items at the most minimal expenses because of modest work and working expenses. Mechanical developments empower organizations sourcing from less expensive organizations, in a convenient way and on a tight spending plan. Moreover, they can undoubtedly ship their crude materials either without anyone else or by utilization of outsiders and have the option to follow their shipments constant. Moreover, it is conceivable to source different materials from various countries and effectively organize dispatching. According to Rinnebach (2014), sourcing of raw materials from other places, often geographically distant places is enabled by advanced technologies. Apart from raw materials, production and almost every other part of commercial operations may be outsourced. According to Bardan (2007), outsourcing allows companies to leverage suppliers' complementary skills and resources to access specialized skills, technologies, and capacity.

2.3 Summary and Research Gaps

The ideals and concept of sustainable development were introduced in response to diminishing planetary resources and the need to continue using them with insignificant effects on the business, society, and the environment. Technological innovation is widely perceived as the driver of sustainable development in modern times (Ashford & Hall, 2011).

According to Beder (1993), population, consumption of resources and technology are factors that impact the environment but technology is the only variable that can be manipulated. The key concern of sustainable development is how to balance environmental protection and economic development while ensuring availability of environmental resources for the future generations (Beder, 1993). Hence, the design and execution of technology to fit good environmental practices has been continuing. Such technologies are focused on accomplishing more efficient and cleaner production procedures throughout the life cycle of a product.

In organizations, practical advancement utilizing technological innovation is significant due to lawful requests and guidelines as well as because of the rising number of buyers deciding on ecologically cordial items and administrations just as organizations requesting to work just with naturally cognizant accomplices.

2.4 Conceptual Framework

Independent variables

dependent variable

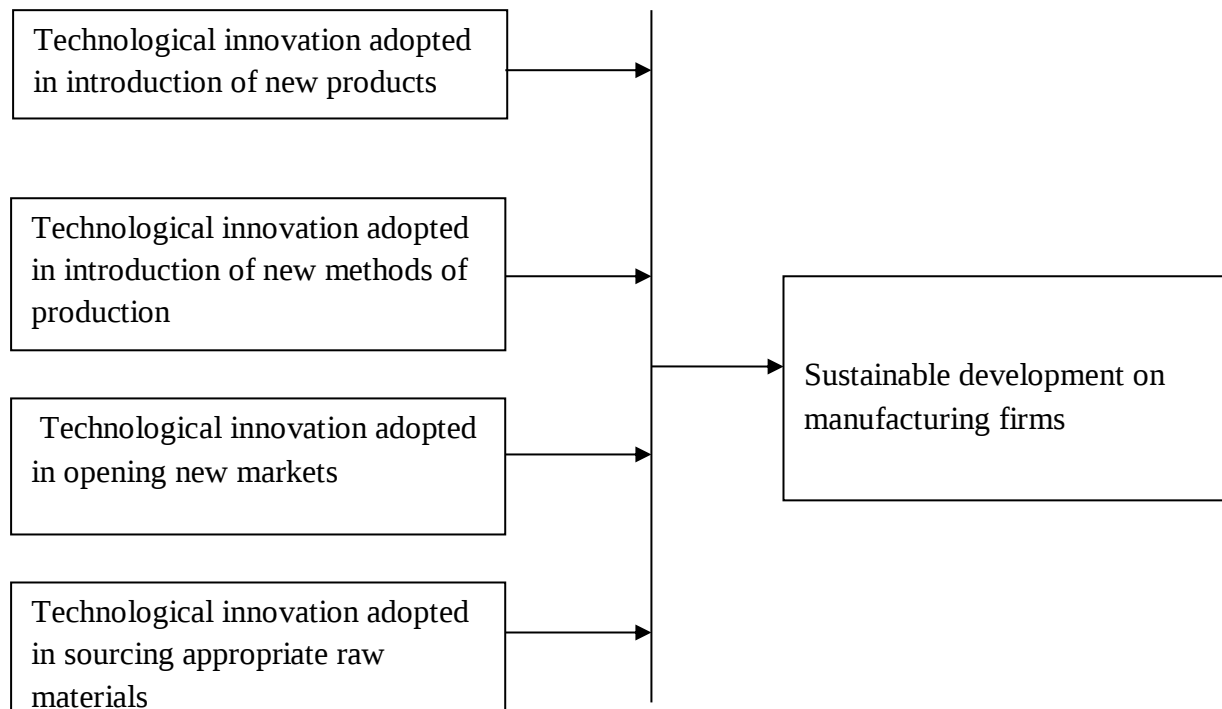


Figure 2. 1 : Conceptual Framework

2.5 Operationalization of variables

2.5.1 New products

It is a product whose mechanical attributes or expected uses contrast fundamentally from those of recently delivered items. Such developments can include profoundly new advancements. They can be founded on joining existing innovations in new uses, or can be gotten from the utilization of new information. The first microprocessors and digital cameras were examples of new products using new technologies. The first portable MP3 player, which combined existing software standards with miniaturised hard drive technology, was a new product combining existing technologies.

2.5.2 New methods of production

Manufacturing technology has grown exponentially over the past two decades, as many auto industry segments have adopted methods aimed at reducing labour and material costs while increasing productivity, efficiency and component quality. Production methods can shift incredibly, contingent upon the determinations of the item and the amount required. Deciding the creation techniques is ordinarily essential for the cycle arranging period of plan, that is, the means identified with changing over the plan into an eventual outcome. Creation strategies must be considered cautiously and arranged appropriately on the grounds that the creation cycle for the most part speaks to an enormous venture of time and cash.

2.5.3 New markets

A new market is a market where the end product or service is new – in other words there isn't really existing demand, but there could be. SpaceX just closed a big financing last week – space travel is a new market for certain.

2.5.4 Appropriate raw materials

This are materials or substances used in the primary production or manufacturing of goods. Raw materials are items that are purchased and sold on products trades around the world. Merchants purchase and sell crude materials in what is known as the factor market since crude materials are variables of creation as are work and capital. The sort of crude materials stock an organization needs will rely upon the kind of assembling they do. For assembling

organizations, crude materials stock requires point by point planning and an exceptional structure for bookkeeping on the accounting report and pay articulation.

2.6 Chapter Summary

The chapter focused on the reviewing of the existing related literature to the study. The literature review has thus been centered on the introduction, theoretical review, empirical review, and summary of knowledge, research gaps, conceptual framework and the operationalization of variables.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

The chapter contains the operationalization of the study by fronting the design to be used, the population targeted, the instruments and how the data collection is carried out by the researcher and then the research ethics to be used.

3.1 Research Design

This refers to the overall design and plan on how to answer the research questions of the study. It refers to the overall strategy chosen to incorporate the different mechanisms of the study in a coherent and systematic way, thereby, ensuring effective address of the research problem. The specialist utilized a clear research configuration to complete the investigation. As indicated by (Mugenda, 2003), a distinct research configuration is characterized as a procedure of gathering information keeping in mind the end goal to answer questions concerning the flow status of the subject in the investigation.

According to Hair (2010), using quantitative methods of study in an empirical research ensures establishment of correlations and cause effect relationship that is important in viability of the constructs. The research design that was adopted for this study was descriptive design that determined the impact of technological innovation on manufacturing firms for sustainable development at Bamburi Cement Ltd. This design enabled the researcher to use quantitative research methods in data collection, analysis and interpretation.

3.2 Target Population

As indicated by Ngechu (2004), a population is characterized as a set of individuals, administrations, components, and occasions, gathering of things or family units that are being explored. Mugenda and Mugenda (2003) additionally characterize the population as that populace which the specialists need to sum up the aftereffects of the finding.

The target population was drawn from the management, inventory department and the general Bamburi Cement Limited.

Table 3. 1 : Target Population

Population Category	Target	Percent (%)
Management	24	20
Inventory department	36	30
General staff `	60	50
Total	120	100

Source: Author 2020

3.3 Sample and Sampling Technique

A sample is a finite part of a arithmetical population whose properties are studied to gain facts about the whole (Webster, 2015 According to Gay (2009) sampling is a system of selecting some of individuals for a study in any such way that the people or elements constitute a larger organization or the population from which they may be selected.

The research used stratified random sampling because it gives all individuals of the target populace a recognized risk of being decided on for inclusion inside the sample and this does not depend on preceding occasions in the selection method. In other words, the selection of people does no longer affect the hazard of anybody else in the population being selected Kumar, (2015). Statistically, so as for generalization to take place, they have a look at sampled 50% of the respondents for discount of sampling errors (Mugenda, mugat & C.k father 2013)

Table 3. 2 : Sample and Sample Technique

Population Category	Target population (N)	Sample population (n)	Percentage (%)
Management	24	12	20
Inventory department	36	18	30
General staff `	60	30	50
Total	120	60	100

Source: Author 2020

3.4 Data collection Instruments

Questionnaires were used to collect data from the respondents. Questionnaires are commonly used to obtain important information about the study population and they best suit this study due to the fact that the researcher can get responses immediately based on the objectives of the research, and to address the research questions (Mugenda and Mugenda, 2003).

3.5 Pilot Study

3.5.1 Validity

Validity refers back to the volume to which the studies device measures what it seems to degree according to researcher's subjective assessment (Kumar, 2009). It is the degree to which ends from the evaluation of the information collected constitute the situation below examine (Mugenda and Mugenda, 2003).

In order to test the validity of the questionnaire for use for the study, the researcher administered the questionnaire to five respondents. These respondents as well as their solutions will not a part of the real or actual study though it was most effectively used for checking out validity functions of the research instruments. After the questions have been responded to, the researcher requested the respondents for any pointers or any necessary corrections to make sure similarly development and validity of the device.

3.5.2 Reliability

Reliability refers to the consistency or rather the stability of the scores obtained from tests and assessment procedures. Mugenda and Mugenda (2003) argue that reliability is a measure of the degree to which a researchers' instrument yields consistent results or data after repeated trials. To ensure reliability, Charles (1995), postulates that consistency with which questionnaire or test items are answered or individuals scores remain relatively the same can be determined through the test-retest method at two different times.

This method will involve administering the questionnaire at an interval of one week as a pilot test to the same group and then comparing the two scores. Comments that were made by the pre-testing respondents were used to adjust and improve the instrument.

3.6 Data Collection Procedure

Data will be collected using a questionnaire. A questionnaire consists of a list of questions relating to the field of enquiry, and providing space for answers to be filled by the respondents. Closed and open ended questions were used in the questionnaire to gather

information from the respondents. Consequently, by using these two types of questions, both quantitatively and quantitative data was collected from the respondents. Before initiation of the actual survey, three research assistants were to be identified to assist the researcher in administration of the questionnaire.

The assistants were briefed about the project and its objectives and then trained on the administration of the questionnaire to the subject. Questionnaires were prepared and then distributed to the respondents through hand delivery equivalent to the number of sample size and then the respondents were given time comprising to a period of seven days to fill them. Thereafter, the questionnaires were collected back for the final analysis.

3.7 Data Processing and Analysis

This is the process of gathering, modelling and transforming raw data with the goal of highlighting useful information, suggesting, conclusion and supporting decision making (Kothari, 2001). The purpose of data analysis was to prepare crude data into interpretable design.

A number of criteria are proposed by Kumar (2005), to select an appropriate statistical technique, two of which are the appropriateness of the technique to the research question, and the characteristics of data. This is research which involves measuring or counting traits (i.e. quantities). The answers from the questionnaires were coded in relation to how they relate for easy Statistical Package for Social Sciences (SPSS) use as the most efficient and convenient processing and analysing of data.

Based on these criteria descriptive statistics e.g. measures of central tendency were used in this study. Data was presented in the form frequency tables and charts to summaries the responses to each question.

3.8 Ethical Considerations

Rosenthal (2004) defines ethics in research as the ability of a researcher to report exactly what happened. It involves maintaining honesty and discipline in conducting and reporting scientific research and credit for ideas and efforts.

3.8.1 Confidentiality and privacy

Participants' privacy was respected by conveying them with unique identifier codes to protect their identity and their responses. The study has indiscriminate findings, thus information was not associated to an individual.

3.8.2 Informed Consent

Participants were knowledgeable and their consent was sought for the purpose of this study. The informed consent included expected duration of research and right of participants to decline or withdraw during the process.

3.9 Chapter Summary

The chapter has presented the methodology that was used in the research study. The nature of the study has justified the choice of the descriptive design. Details of the target population, sample size and sampling procedure, research instrument, data collection procedure and how the analysis was done have been provided.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.0 Introduction

This chapter contains the presentations of the results and findings obtained from the direct responses and data analysis. The data had been analysed quantitatively. Analysis of data is a process of inspecting, transforming, and modelling data with the goal of highlighting useful information, suggestive observations and supporting decision making.

4.1 Presentation of research findings

The researcher explored the actual number of the respondents that partook the study from the total sample. The results were tabulated in the table as shown;

Table 4. 1 : Response Rate

Category	Frequency	Percentage
Response	54	90
Non-response	6	10
Total	60	100

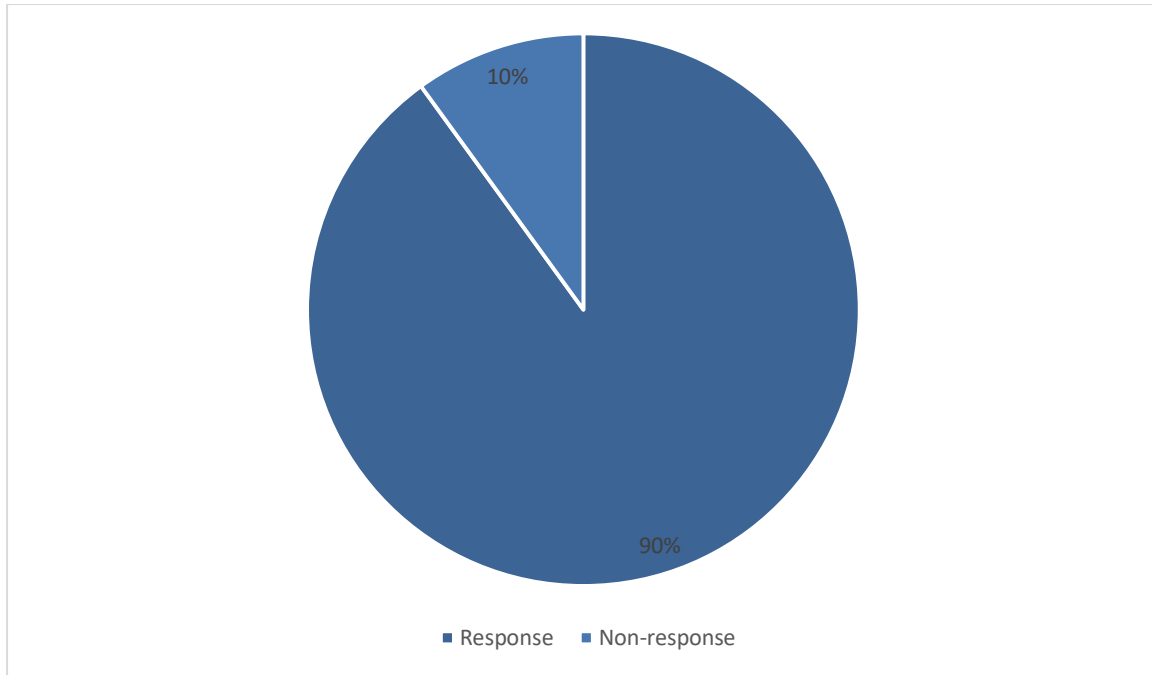


Figure 4. 1 : Response Rate

The study indicated that those who responded to the study were 90% while those who did not were 10%. The response rate met the threshold of sufficient rate for the study since it was above 50% of the sampled respondents (Kumar, 2015).

4.1.2 Background information

4.1.2.1 Age of respondents

The study aimed at establishing the age of the respondents and the results were tabulated in the table as shown;

Table 4. 2 : age respondent

Category	Frequency	Percentage
Below 25 years	10	19
26-30 years	12	22
31-35 years	19	35
36-40 years	8	15
Above 40 years	5	9
Total	54	100

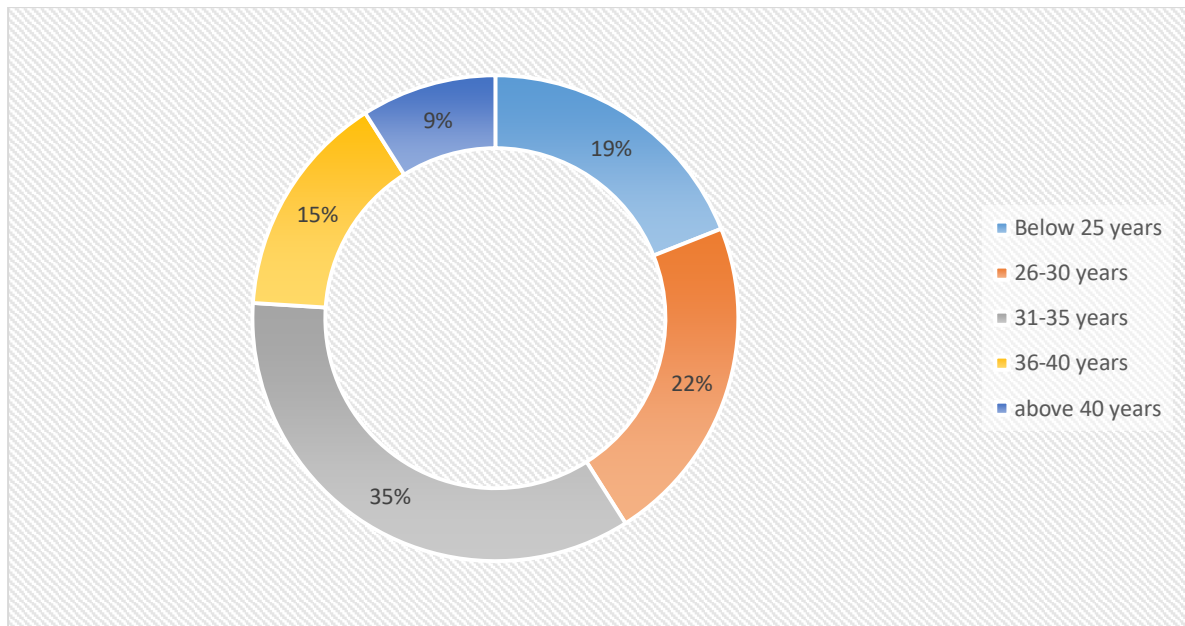


Figure 4. 2 : age respondent

The age of respondents was established to be those below 25 years were at 19%, between 26-30 years at 22%, between 31-35 years at 35%, between 36-40 years at 15% and those above 40 years were at 9%. The target age distribution for the study should be represented to ensure an all-inclusive and authentic study (Rubin, 2012). The study met this threshold.

4.1.2.2 Gender of respondents

The study sought to determine the age of those respondents that took part in the study. The findings were presented on the table as shown;

Table 4. 3 : Gender of respondents

Category	Frequency	Percentage
Female	31	57
Male	23	43
Total	54	100

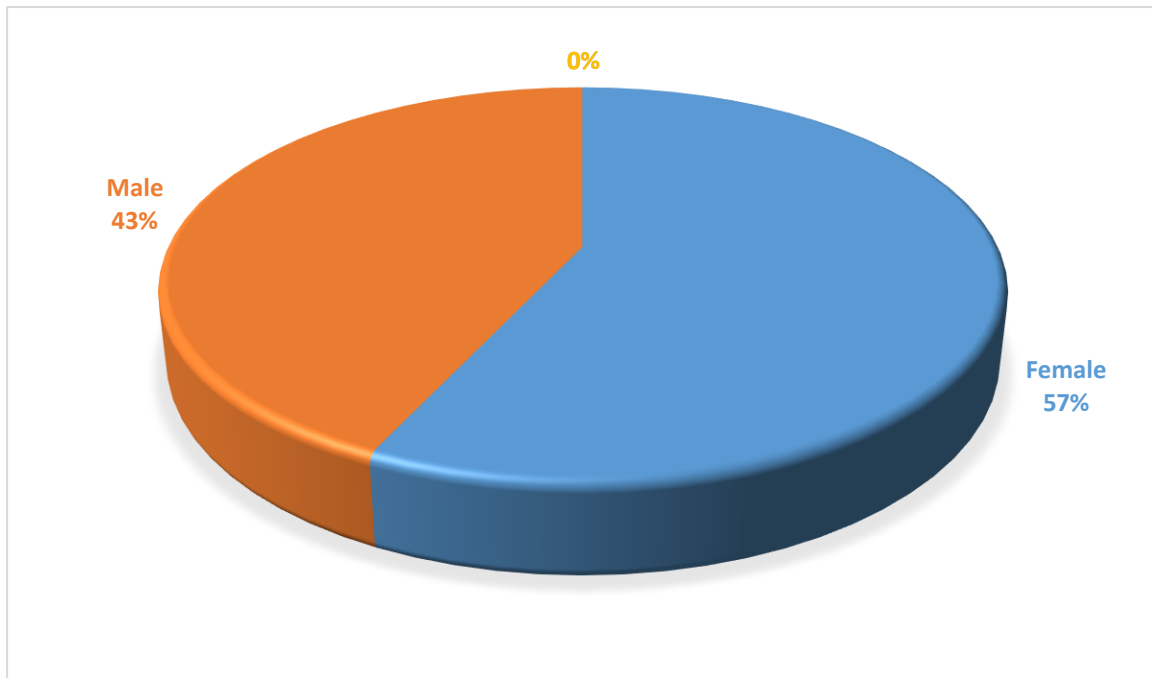


Figure 4. 3 : Gender of respondents

The results indicated that 57% of the respondents were female while the remaining 43% were male. The perception of both gender in the study was important and the study met the 1/3 gender rule in Kenya (Kenyan Constitution, 2010).

4.1.2.3 Academic qualifications

The academic qualifications of the respondents were sought and the results were tabulated on the table as shown;

Table 4. 4 : Academic qualifications

Category	Frequency	Percentage
K.C.S.E	5	9
Certificate	10	19
Diploma	18	33
Degree	13	24
Post-graduate	8	15
Total	54	100

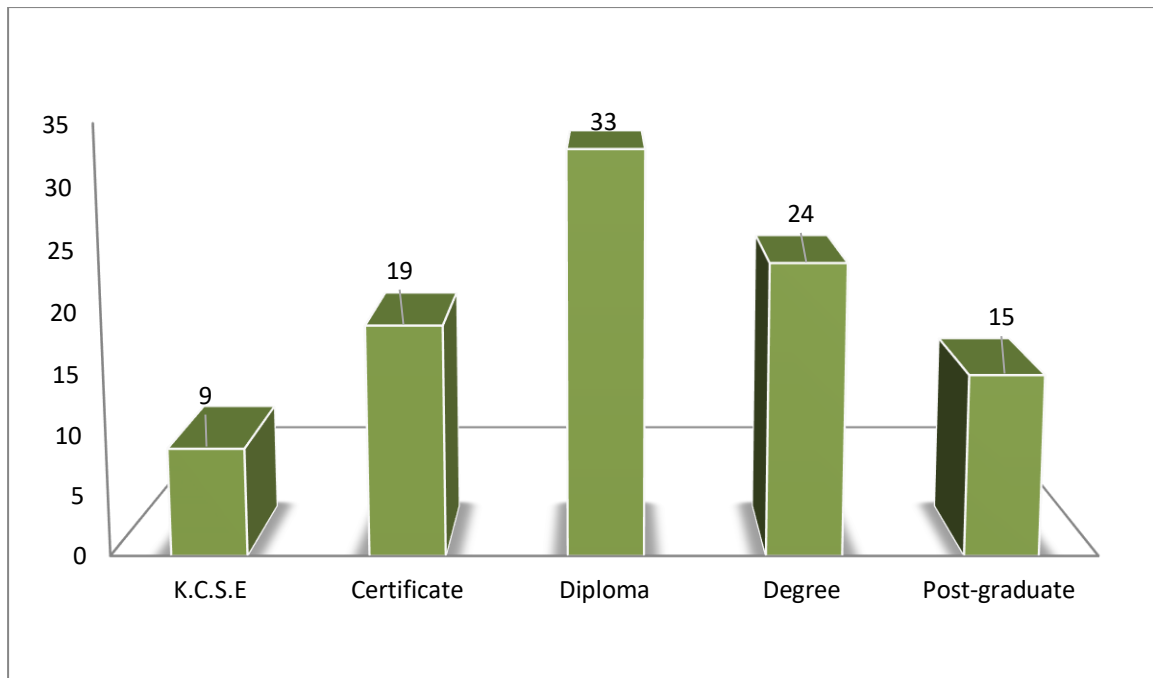


Figure 4. 4 : Academic qualifications

The academic qualifications of respondents was established to be that those with K.C.S.E were at 9%, certificate at 19%, diploma at 33%, degree at 24% and post-graduate at 15%. Measuring of the academic levels of respondents in a study is necessary to indicate the level of professionalism and authenticity of the data obtained from the respondents (Aaker& Day, 2015).

4.1.2.4 Current position

The position that respondents hold in the organization was sought to be determined and the data presented on the table as shown;

Table 4. 5 Current position

Category	Frequency	Percentage
Management staff	10	19
Inventory staff	20	37
General staff	24	44
Total	54	100

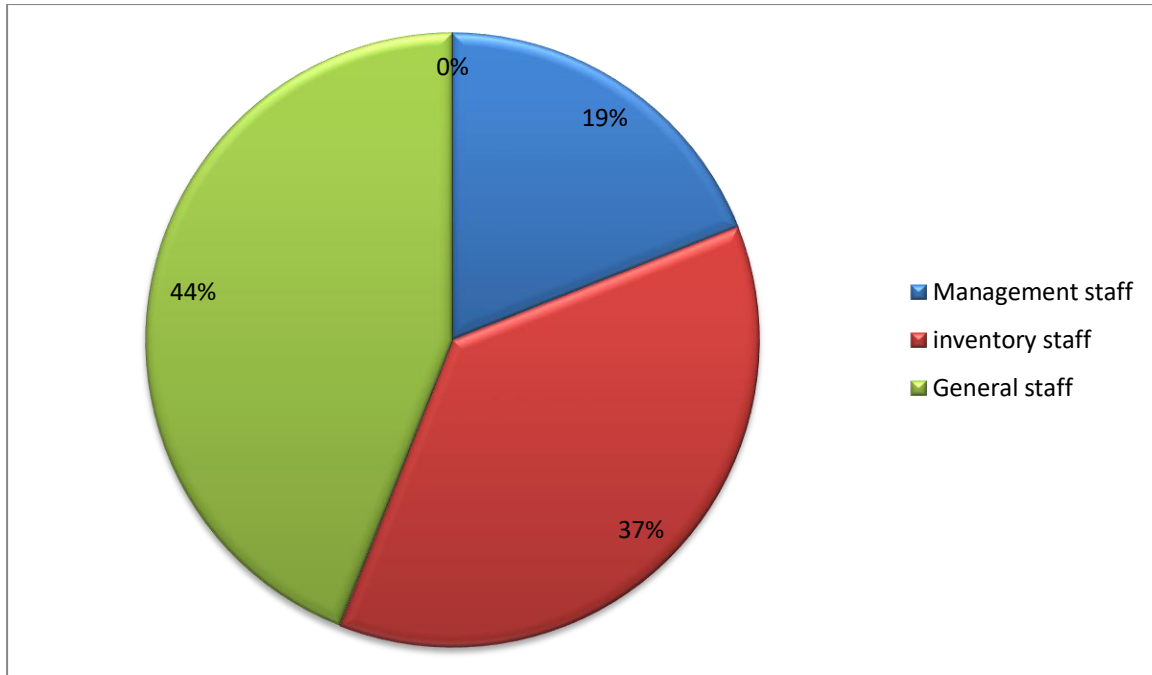


Figure 4. 5 : Current position

The current position respondents held in the organization was determined to be that management staff were at 19%, inventory staff at 37% and general staff at 44%. The departmental positions were well represented in the study to meet the sought objectives of the study from the positions held. The academic qualifications of the respondents, experience and expertise in a field of interest in the study is crucial in obtaining the relevant information for the study (Parahoo, 2010).

4.1.3 Introduction of new products

4.1.3.1 Product improvement on introduction of new products

The objective of the researcher was to establish whether product improvement helps in introduction of new products or not. The data obtained was tabulated on the table as shown;

Table 4. 6 : Product improvement on introduction of new products

Category	Frequency	Percentage
Strongly agree	17	31
Agree	23	43
Disagree	9	17
Strongly disagree	5	9
Total	54	100

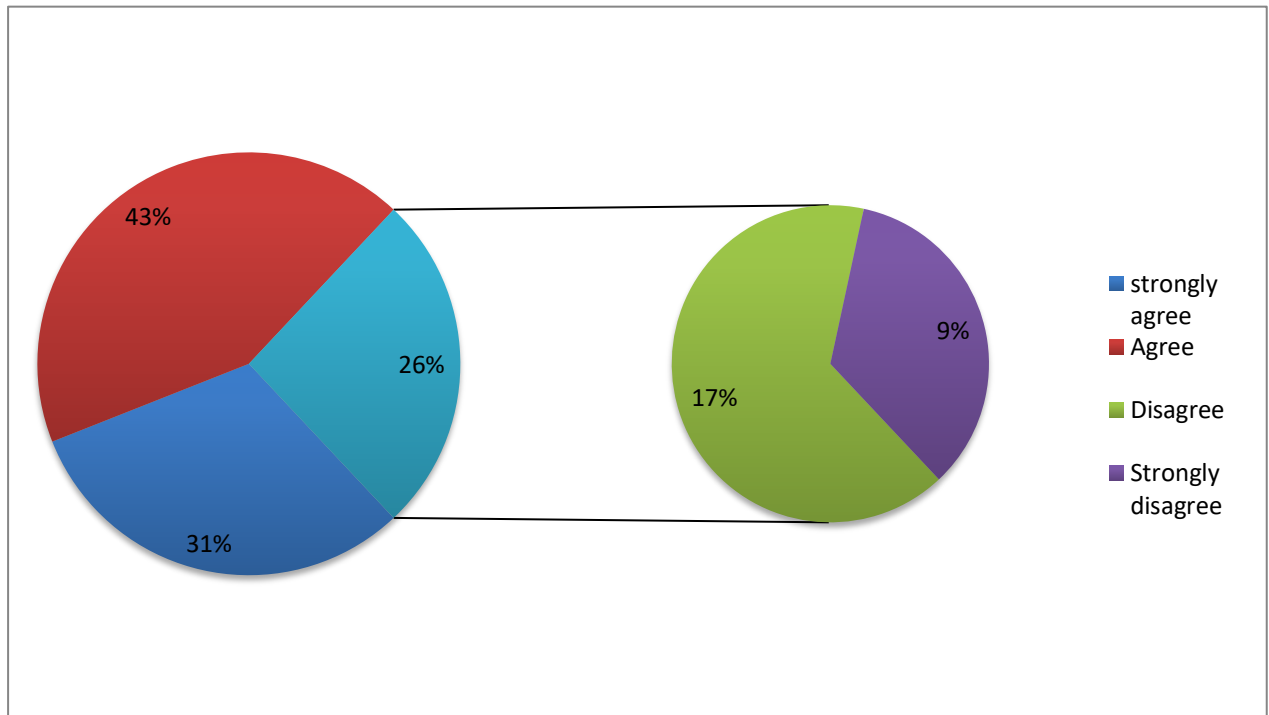


Figure 4. 6 : Product improvement on introduction of new products

The use of product improvement in organization helps in introduction of new products according to 74% who agreed while the remaining 26% of the respondents did not agree.

4.1.3.2 Research and development on introduction of new products

This was to determine the extent at which effective research and development helps in the introduction of new products in an organization. The results were presented on the table as shown;

Table 4. 7 : Research and development on introduction of new products

Category	Frequency	Percentage
Great extent	22	41
Moderate extent	16	30
Less extent	11	20
No impact	5	9
Total	54	100

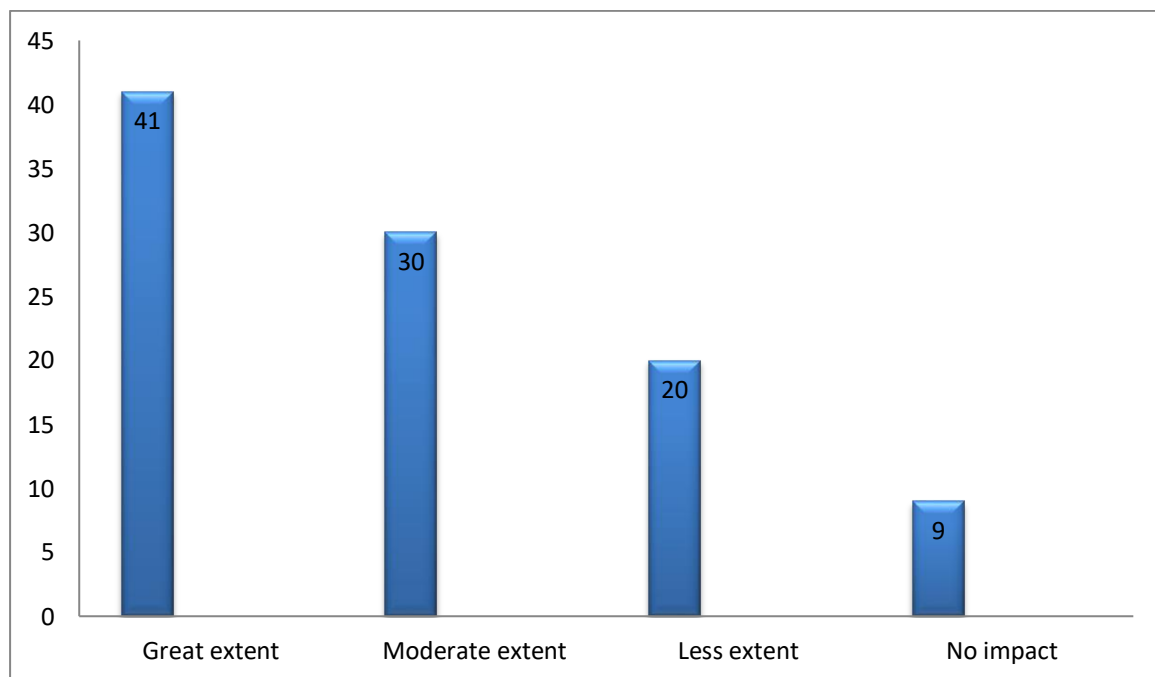


Figure 4. 7 : Research and development on introduction of new products

The effective research and development was noted to help in introduction of new products in an organization to a great extent according to 41%, moderate extent at 30%, less extent at 20% and no impact at 9%.

4.1.4 Introduction of new method of production

4.1.4.1 Development of new channels on introduction of new method of production

The study sought to determine whether development of new channels help in introduction of new method of production for sustainable development in an organization or not. The findings were presented on the table as shown;

Table 4. 8 : Development of new channels on introduction of new method of production

Category	Frequency	Percentage
Yes	30	56
somehow	14	26
No	8	15
Don't know	2	3
Total	54	100

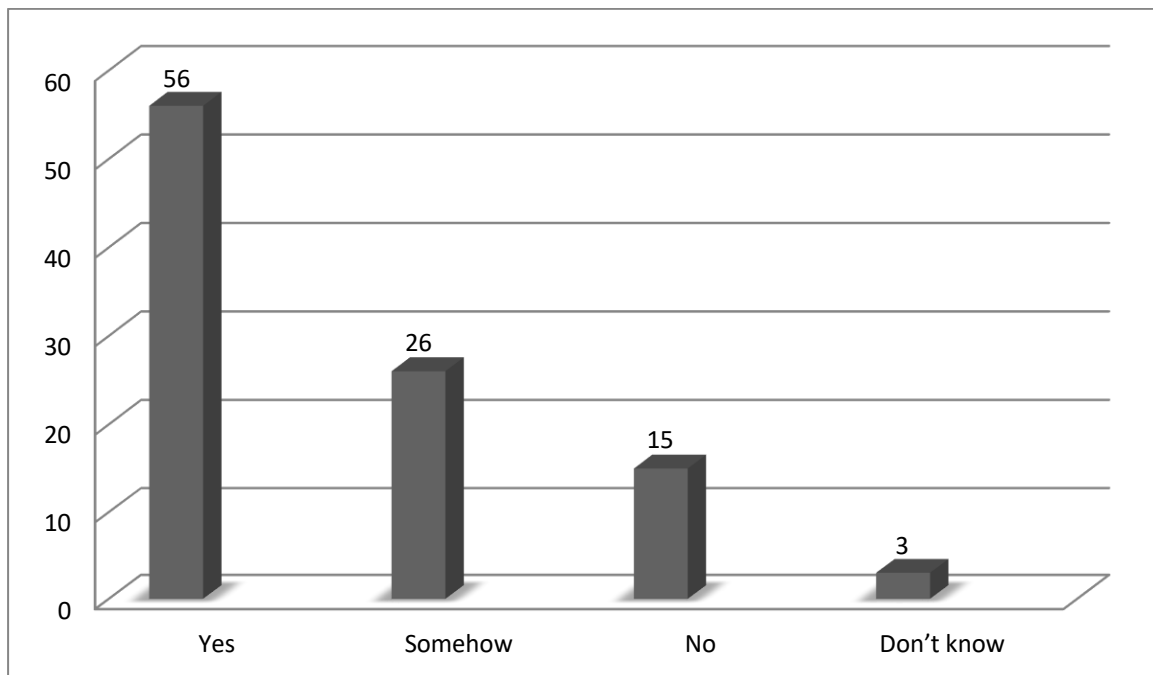


Figure 4. 8 : Development of new channels on introduction of new method of production

The study established that development of new channels helps in introduction of new method of production for sustainable development in an organization according to 56%, somehow at 26%, no at 15% and don't know at 3%.

4.1.4.2 Customer suggestions on introduction of new method of production

The extent at which customer suggestions helps in effective introduction of new method of production for sustainable development was sought and the data presented on the table as shown;

Table 4. 9 : Customer suggestions on introduction of new method of production

Category	Frequency	Percentage
Great extent	27	50
Moderate extent	15	28
Less extent	8	15
No impact	4	7
Total	54	100

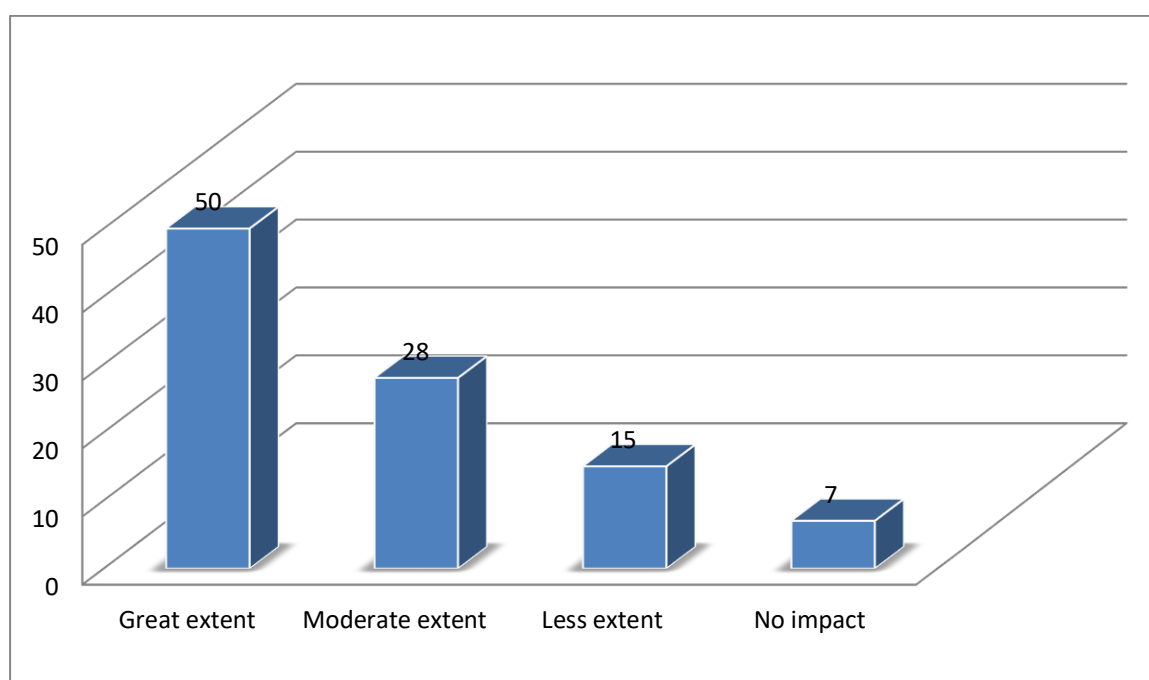


Figure 4. 9 : Customer suggestions on introduction of new method of production

The results indicated that customer suggestions help in the effective introduction of a new method of production for sustainable development to a great extent according to 50%, moderate extent at 28%, less extent at 15% and no impact at 7%.

4.1.5 Opening of new markets

4.1.5.1 Increase in product intensity for opening up of new markets

The study aimed at determining whether product intensity helps in opening up of new markets in the organization for sustainable development or not and the findings were tabulated on the table shown;

Table 4. 10 : Increase in product intensity for opening up of new markets

Category	Frequency	Percentage
Yes	26	48
somehow	15	28
No	8	15
Don't know	5	9
Total	54	100

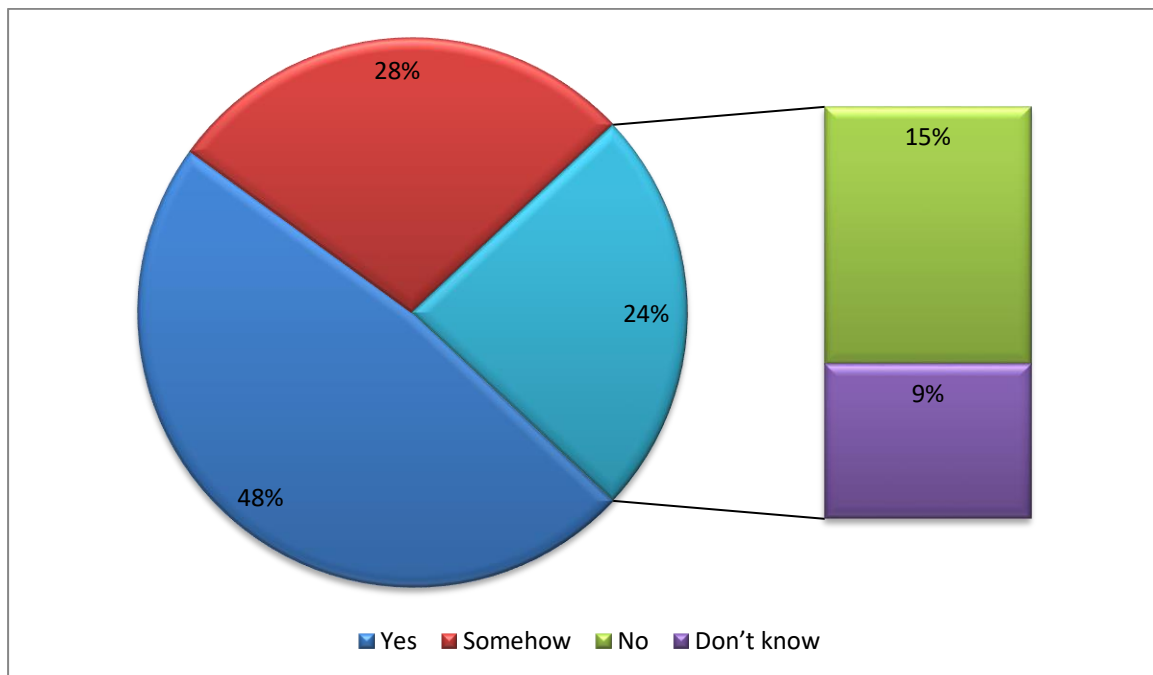


Figure 4. 10 : Increase in product intensity for opening up of new markets

The study noted that product intensity helps in opening up of new markets according to 48% of the respondents, 28% for somehow, 15% for no and 9% for don't know.

4.1.5.2 Internet on opening up of new markets

This was to explore whether internet leads to opening up of new markets through e-commerce or not and the findings were tabulated on the table as shown;

Table 4. 11 : Internet on opening up of new markets

Category	Frequency	Percentage
Strongly agree	25	46
Agree	18	33
Disagree	9	17
Strongly disagree	2	4
Total	54	100

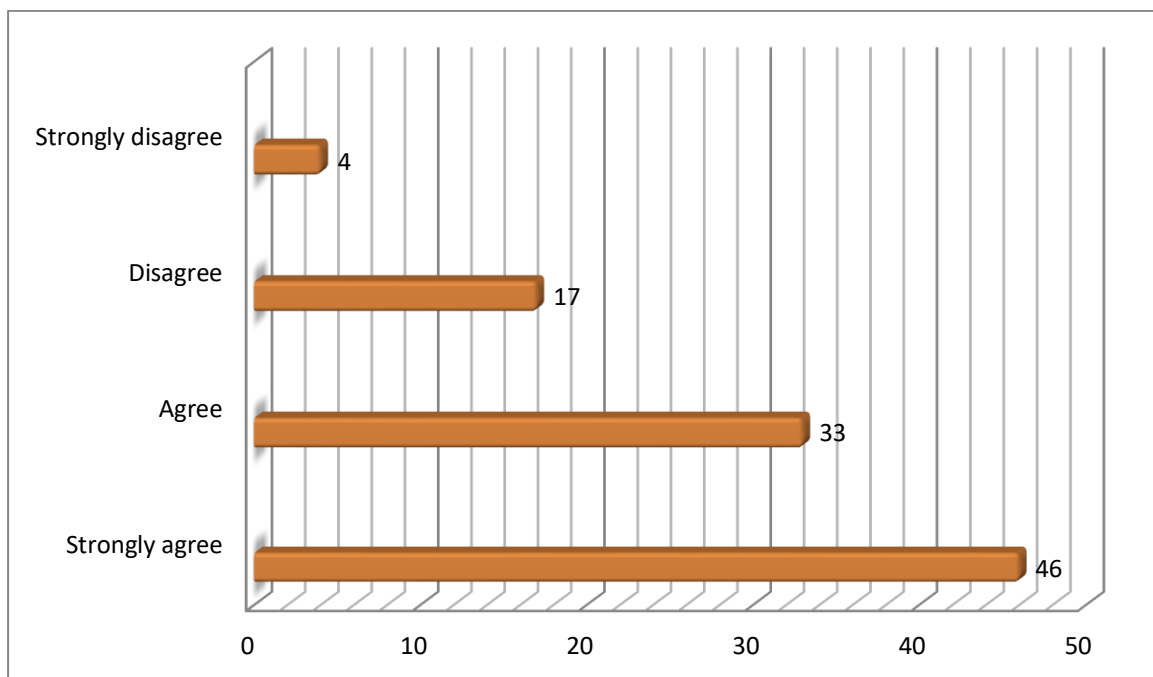


Figure 4. 11 : Internet on opening up of new markets

The results established 79% agreed that internet leads to opening up of new markets through e-commerce while 21% did not agree to this.

4.1.6 Sourcing appropriate raw materials

4.1.6.1 Technological efficiency and Sourcing appropriate raw materials

This was to determine whether technological efficiency would leads to sourcing of appropriate raw materials for sustainable development or not and the findings were presented on the table as shown;

Table 4. 12 : Technological efficiency and Sourcing appropriate raw materials

Category	Frequency	Percentage
Yes	32	59
somehow	10	19
No	7	13
Don't know	5	9
Total	54	100

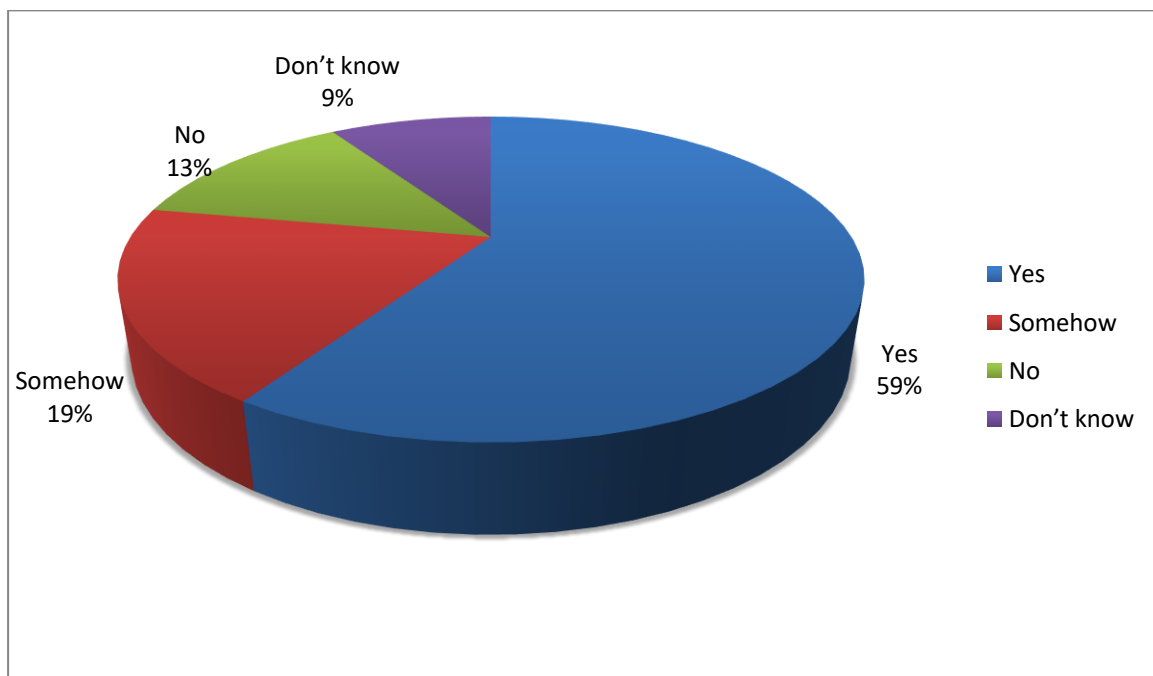


Figure 4. 12 : Technological efficiency and Sourcing appropriate raw materials

The results postulated that 59% agreed on technological efficiency leading to sourcing of appropriate raw materials for sustainable development to a large extent, 19% for somehow, 13% for no and 9% did not know.

4.1.6.2 Staff competence and sourcing of appropriate raw materials

The researcher sought to establish the extent at which Staff competence will help in sourcing of appropriate raw materials and the data was presented on the table as shown;

Table 4. 13 : Staff competence and sourcing of appropriate raw materials

Category	Frequency	Percentage
Great extent	29	54
Moderate extent	13	24
Less extent	8	15
No impact	4	7
Total	54	100

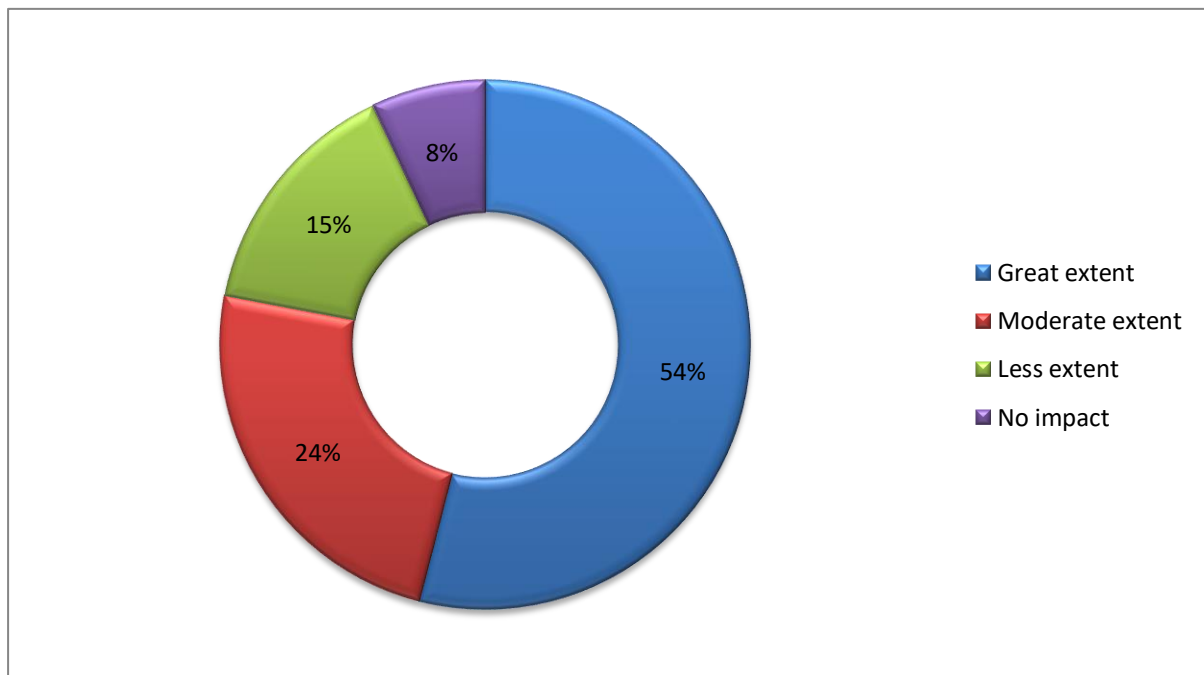


Figure 4. 13 : Staff competence and sourcing of appropriate raw materials

The study noted that staff competence helps in sourcing of appropriate raw materials according to 54%, moderate extent at 24%, less extent at 15% and no impact at 7%.

4.2 Limitations of the study

In pursuit of this study, several limitations were encountered. Some employees did not answer all the questions in the questionnaire. Some customers felt like it was a waste of their precious time while others perceive it as nagging and this affected their willingness to fill all the questions honestly. This was solved by creating a better approach and only focusing energy on the friendly customers.

The study was limited to Bamburi cement headquarters due to the limited resources available to carry out studies in other several branches. The researcher did not have enough time to have a wider scope of study in other branches and even full day at the Bamburi cement headquarters since the only time available during the study was in the afternoon which was not convenient for some respondents.

4.3 Chapter Summary

The study focused on the findings from the field by presenting data from each variable in different sub-heading to make specific explorations. The data was presented in well labelled tables and graphs from which an interpretation was made and some statement made to make clear the findings for easy analysis in the next chapter.

CHAPTER FIVE

SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

5.0 Introduction

This chapter presents summary of the findings, conclusions and recommendations based on the findings and suggestions for further research.

5.1 Summary of Findings

5.1.1 Background information

The study indicated that those who responded to the study were 90% while those who did not were 10%. The response rate met the threshold of sufficient rate for the study since it was above 50% of the sampled respondents (Kumar, 2015). The age of respondents was established to be those below 25 years were at 19%, between 26-30 years at 22%, between 31-35 years at 35%, between 36-40 years at 15% and those above 40 years were at 9%. The target age distribution for the study should be represented to ensure an all-inclusive and authentic study (Rubin, 2012). The study met this threshold. The results indicated that 57% of the respondents were female while the remaining 43% were male. The perception of both gender in the study was important and the study met the 1/3 gender rule in Kenya (Kenyan Constitution, 2010). The academic qualifications of respondents was established to be that those with K.C.S.E were at 9%, certificate at 19%, diploma at 33%, degree at 24% and post-graduate at 15%. Measuring of the academic levels of respondents in a study is necessary to indicate the level of professionalism and authenticity of the data obtained from the respondents (Aaker & Day, 2015). The current position respondents held in the organization was determined to be that management staff were at 19%, inventory staff at 37% and general staff at 44%. The departmental positions were well represented in the study to meet the sought objectives of the study from the positions held. The academic qualifications of the respondents, experience and expertise in a field of interest in the study is crucial in obtaining the relevant information for the study (Parahoo, 2010).

5.1.2 Introduction of new products

The use of product improvement in organization helps in introduction of new products according to 74% who agreed while the remaining 26% of the respondents did not agree. The

effective research and development was noted to help in introduction of new products in an organization to a great extent according to 41%, moderate extent at 30%, less extent at 20% and no impact at 9%.

5.1.3 Introduction of new method of production

The study established that development of new channels helps in introduction of new method of production for sustainable development in an organization according to 56%, somehow at 26%, no at 15% and don't know at 3%. The results indicated that customer suggestions helps in effective introduction of new method of production for sustainable development to a great extent according to 50%, moderate extent at 28%, less extent at 15% and no impact at 7%.

5.1.4 Opening of new markets

The study noted that product intensity helps in opening up of new markets according to 48% of the respondents, 28% for somehow, 15% for no and 9% for don't know. The results established 79% agreed that internet leads to opening up of new markets through e-commerce while 21% did not agree to this.

5.1.5 Sourcing appropriate raw materials

The results postulated that 59% agreed on technological efficiency leading to sourcing of appropriate raw materials for sustainable development to a large extent, 19% for somehow, 13% for no and 9% did not know. The study noted that staff competence helps in sourcing of appropriate raw materials according to 54%, moderate extent at 24%, less extent at 15% and no impact at 7%.

5.2 Conclusion

On Introduction of new products, the study concluded that the use of product improvement in organization helps in introduction of new products. The conclusion determined that effective research and development was noted to help in introduction of new products in an organization to a great extent.

On Introduction of new method of production, the conclusion was that development of new channels helps in introduction of new method of production for sustainable development in an organization. It was also concluded that customer suggestions helps in effective introduction of new method of production for sustainable development to a great extent.

On Opening of new markets, the study noted that product intensity helps in opening up of new markets. Also the conclusion was that internet leads to opening up of new markets through e-commerce.

On Sourcing appropriate raw materials, the conclusion agreed on technological efficiency leading to sourcing of appropriate raw materials for sustainable development to a large extent. The conclusion also noted that that staff competence helps in sourcing of appropriate raw materials.

5.3 Recommendations

5.3.1 Introduction of new products

In the strategic planning of an organization to enhance sustainable development of an organization, introduction of new products should be considered since it's a reliable factor on sustainable development. Creation of new products is determined by the effective research and development to help in sustainable development in an organization to a great and therefore this should be considered.

5.3.2 Introduction of new method of production

The organizations considering for introduction of new method of production should have high financial capability to enable diversification.

5.3.3 Opening of new markets

Competitive advantage of an organization is very important and therefore technology processing should be well effected to achieve this. Also for sustainable development, technology should be given for effective opening up of new market and increase in sales volume.

5.3.4 Sourcing appropriate raw materials

Staff training budgets should be put aside so as to make it simpler for associations to slip into day by day utilization of technological innovation with an all-around prepared staff anxious to be innovative, effective and mindful this would leads to sourcing of appropriate raw materials leading to increase productivity.

5.4 Suggestions for Further Studies

The current study was done in at Bamburi cement headquarters; similar study can be conducted in the in other companies dealing with cement production while maintaining same variables. Equally, introduction of a moderating variable can be considered in future studies. The moderating variable can be on leadership and management style. Further studies can also consider evaluating risk management strategies on the financial performance of cement production and processing companies.

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APPENDIX I: LETTER OF INTRODUCTION

I am a student of The Management University of Africa. As a partial requirement of the coursework assessment, I am required to submit a research report on **THE IMPACT OF TECHNOLOGICAL INNOVATION ON MANUFACTURING FIRMS FOR SUSTAINABLE DEVELOPMENT: A CASE STUDY OF BAMBURI CEMENT LTD., KENYA** I would highly appreciate if you could kindly complete the Questionnaire to assist me collect data. Your information alongside others will help me in my research and will be used sternly for academic purposes and will be treated as confidential, therefore, do not write your name on the questionnaire.

Thank you in advance,

Yours faithfully,

SUMEYA ALI ABDI

APPENDIX II: QUESTIONNAIRE

SECTION A: BACKGROUND INFORMATION

(N.B Answer by Ticking where applicable)

1. Gender

Male ☐

Female ☐

2. Age bracket

18-29 years ☐

30-39 years ☐

40-49 years ☐

50 years and above ☐

3. Academic level

O level ☐

A level ☐

College ☐

Degree ☐

Masters ☐

4. Job experience

Less than 5 years ☐

5-8 years 9-13 years ☐

14-18 years ☐

Above 18 years ☐

5. Position held in the company

SECTION B:

For each of the statement below, please place a right tick as appropriate.

Note that: SA: Stand for Strongly Agree A: Stand for Agree U: Stand for Undecided D: Stand for Disagree SD: Stand for Strongly Disagree.

a) Introduction of new products

Statements	SA	A	U	D	SD
Adequate employees competency ensure they have the required skills and knowledge to enhance introduction of new products					
Professionalism is key to successful introduction of new products for sustainable development in the company					
Effective research and development in term of processing and production enhances effective introduction of new products.					

b) Introduction of new method of production

Statements	SA	A	U	D	SD
Introduction of new channels process and room leads to effective introduction of new method of production					
Costumers suggestions are very crucial in the introduction of the new method of production for sustainable development					
Increased in competition ensures that companies employed new method of production for competitive advantage					

c) Opening of new markets

Statements	SA	A	U	D	SD
Availability of enough resources guarantees opening up of new markets for the company products.					
Product intensity is very essential in the opening up of the market thus penetration for sustainable development					
Availability of internet is key in opening up of new markets through the e-commerce thus boosting the sales					

d) Sourcing appropriate raw materials

Statements	SA	A	U	D	SD
Budgeting is crucial during the procurement processes in order to reduce unnecessary spending's on the raw materials					
Procurement plan implementation affect the overall sourcing of appropriate raw materials in an organization					
Technological intensity should be goal oriented to ensure effective sourcing of raw materials for sustainable development					

Thank you so much for your time and cooperation