

**EFFECT OF KENYA BUREAU OF STANDARDS REGULATIONS
ON ORGANIZATIONAL PERFORMANCE OF STEEL COMPANIES
IN KENYA**

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DECLARATION

I declare that the work in this dissertation has not been previously published or submitted elsewhere for award of a degree. I also declare that this is my own original work and contains no material written or published by other people except where due reference is made and author duly acknowledged.

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DEDICATION

I would like to dedicate this first and foremost to the Almighty God, my family, relatives, church members, friends, lecturers and all my fellow colleague students in KCA University.

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ABSTRACT

The purpose of the study was to establish the effect of Kenya Bureau of Standard regulations on the performance of steel companies in Kenya. The study adopted a descriptive research design and with a target population of 185 respondents and a sample of 162 respondents from senior level managers selected from twenty steel companies in Nairobi County. The study particularly focused on the effect of technological innovation requirements, standard conformity requirements, and supervisory policies of the Kenya Bureau of Standards on the organizational performance of steel companies. Primary data was collected through the use of questionnaires. Data was analyzed using descriptive statistics and a multiple linear regression analysis model. The output of the analysis was presented using a statistical summary applied by use of graphs, charts, and tables. Data analysis was done by use of SPSS statistical software, version 12. The study findings indicated presence of a positive and statistically significant relationship between each of the three independent variable (i.e. technological innovation requirements, standard conformity requirements, and supervisory policies) and organizational performance of steel companies. From the findings it was evidenced that the coefficient of determination (R^2) was 0.697 from the analysis representing a good model of fitness. The study therefore recommended enhancement of the three factors due to their beneficial effects of the steel industry in Kenya.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

A standard is a well-developed policy documentation that is generally acceptable by consensus of the users and executed by a recognized organization mandated to benchmark on the continuous guidelines and repetitive application across all parties bound (KEBS, 2004). According to Doole, (2008) standardization is the application of a strategic and uniform specification of a product or service features in relation to material composition, quantity, quality, brand, time and procedure. Andrew (2010) noted that regulation is aimed at ensuring the regulated entities operate within set minimums in terms of quality of their goods or services so as to enhance quality and value for money to the eventual consumers.

In the year 2004, the government of Kenya enacted the law known as ‘The Standards Act, Cap 496.’ The regulation was meant to support standardization of some of the previously unspecified products thereby defining quality standards and setting the procedures of converting raw material to finished goods. The Act specifies several aspects of quality control testing such as: tools and methodologies of testing, sampling techniques for testing specimen, safety measures in manufacturing, and conformity with global standards of quality (GoK, 2004).

In addition to the standardization requirements imposed by the Standards Act, the Kenya Bureau of Standards (KEBS) has issued several regulations pertinent to the manufacture of steel in the country (KEBS, 2013). These regulations relate to: Technological innovations in plant design that are necessary for production of quality steel products in an eco friendly environment, conformity to standardization of finished products in terms of length, weight, design, and carbon-iron ratio. Moreover, the regulations also stipulate the policies and procedures for regulation and inspection of

steel companies by the Kenya Bureau of Standards to appraise conformance with statutory procedures (KEBS, 2013).

In spite of the beneficial effects of these regulations, the steel industry has largely been incompliant with them. The low level of compliance can be attributed to high costs of compliance and inadequate enforcement by the relevant authorities (Michael, 2013).

According to (NCA, 2015), availability of products of inferior quality in the market and unwillingness or failure to comply with minimum standards for materials used in the construction sector has led to massive loss among the proprietors as well as loss of lives of the citizens. To mitigate some of these risks related to steel products and quality in the industry, there is need to have a careful analysis and strong regulations by KEBS in the construction industry to prevent importation and manufacture of low quality and unstandardized steel products (Dimuna, 2014).

1.1.1 The Steel Industry in Kenya

The development of steel and iron in Kenya dates back to colonial times, though at that time most of the steel products were imported from European countries. The largest investment that involved use of steel and iron products was during the construction of Kenya- Uganda railway in 1902 (Parrenas, 2005). In today's modern economy, steel manufacturing companies and supplies forms the backbone of the construction industries and growth of the economy. It is estimated that the demand for steel products is burgeoning as a result of growth of construction sector and development of major government flagship projects geared to middle income by 2030 vision (Mwangi, 2015) These projects for industrialized Kenya will include construction of Lamu port development, standard gauge railway and roads projects, housing, Industrial parks and the development of the special economic zones all of which utilize steel products. The Iron and Steel industry in Kenya forms about 13 percent of the

manufacturing sector, which in turn contributes significantly to the GDP growth. (Kenya Association of Manufacturers, 2015)

The sector is heavily dependent on the imported steel raw materials from Asia given there is limited supply from Kenya and commercial mining of iron ore has not tipped in the country. However, the Kenyan government has devised policy to regulate the steel industry and address issues related to low quality products that has been threat to the construction and buildings that have caused havoc. This policy initiative put forward by regulatory institutions is geared towards commercial exploitation of existing iron ore and coal deposits and utilization of locally available scrap metal to produce high quality steel in Kenya (Maina and Njagi, 2015). It is against this background that the Government restricted the export of scrap metal. In addition, it is estimated that Kenya spends close to 60 billion shillings per annum on importation of steel products.

This import cost can be scaled down if high quality steel is produced locally. The development of the iron and steel sector has a spillover effect to other sectors of the economy and has the potential to create employment opportunities to Kenyans (Otieno, 2012). A single steel plant of a capacity to produce 350,000 metric tons of steel per year can generate about 10,000 jobs not to mention the jobs created through other steel related activities. This can be replicated and expanded to already established companies like Athi River Steel, Devki group limited, Termal Steel, Brollo Kenya Limited and many others. (Kenya Association of Manufacturers, 2014)

Interestingly, the development of the steel manufacturing in Kenya started all the way back during the colonial time. Today, many steel processing plants have burgeoned due to increasing demand of steel products. According to (KNBS, 2015), the demand for steel stands at about 400,000 to 600,000 tonnes annually. This is attributed by high demand of steel in building and construction, roads, civil works, motor vehicle assembly, fabrication and general work.

The performance of steel manufacturing industries is evidenced by growing demand and supply of the products; this suffices on the return of a firm's use of their controlled resources towards the generation of revenues that is beyond the operational costs (Mills, 2008). According to Parrenas, (2005), performance measurement acts as a way of ensuring that resources available to the firm are used in the most efficient and effective way. The core purpose is to provide the firm with the maximum return on the capital employed and maximize shareholders wealth. The financial performance of a business firm is envisioned as one of the key vital factor for effective and efficient management plan (Richard, 2009). The essence of financial performance is to establish whether the organization is maximizing the return on the capital employed in the business. Firm financial performance can be articulated as one the key important aspect of efficient and effective management plan (Richard, 2009). Firm financial performance measurement is essential in allowing decision makers and owners to evaluate on the specific action to be taken in response to competition, internal actions as well as the firm's response to change over time by embracing on the available technology in the market. Surprisingly, financial performance of various firms is not a one- dimensional concept in approach and measurement with different magnitude of impact.

Firms that have invested heavily in assets may have a deficit return which in the real sense is a positive measure on the financial performance. This gives in different ways to measure financial performance, though all measures ought to be taken in aggregation. According to Farina, (2010), financial performance indicators can be justified on the grounds that reflects to what shareholders actually consider to be of financial meaning. Financial performance is determined by profit, total expenditure, sales revenue, fees or value added. Generally, according to (Richard, 2009), the Proxies for the financial performance of firms is pegged on; return on equity (ROE), return on asset (ROA) and Return on Investment (ROI). In addition, the financial performance is also influenced by non-

financial attributes like technology, competition, government policy, economic trends among others that impacts on the financial performance.

1.2 Statement of the Problem

Growth of steel sector in the country and around the globe is evidently an imminent breakthrough in building and construction sector producing quality and world class steel products. In recent past there has been several cases related to low quality steel products used in construction. For instance, the use of low quality steel products lead to collapse of some buildings in Nairobi. This led to loss of life and blame game among the stakeholders not wanting to take responsibility but to complain. This has also put the Kenya Bureau of Standards (KBS) on failure note to enforce their regulatory authority to the steel companies on compliance and consecutive accreditation of their products (NCA, 2015).

In 2015, 2 people died and 22 injured when a building collapsed in Huruma. In 2014, 7 people were killed when a Makongeni building collapsed and scores injured. Eleven people died on January and dozens seriously injured when a building collapsed in Nairobi down town. According to NCA, (2015), most construction developers are using low quality steel materials and unproportioned mix of ballast, sand and cement. This squarely has to be blamed to Kenya Bureau of Standards (KEBS) for allowing importation and manufacture of poor quality construction materials. However, various related studies have been conducted in relation to the regulatory policy framework in the industry. Jones (2014) did a study on the compliance level with occupational safety and health regulations in Nigeria's construction industry. The findings showed that key issues to compliance with occupational safety and health regulations in the Nigerian construction industry include: client's influence, inadequate enforcemen, lack of adequate regulations and unemployment.

In Kenya, Gacheru and Diang'a (2015) studied the regulation of building contractors in Kenya and challenges of enforcing the National Construction Authority mandate. Data was obtained from

building contractors by means of questionnaires on material used. Results showed that the major challenges to the effectiveness of the NCA in registering and regulating the practices of building contractors were corruption, poor sensitization, lack of proper organization of the NCA contractor training programs and centralization of the NCA services. Kuta and Nyaanga (2014) investigated the effect of competence of contractors on the construction of substandard buildings in Kenya. The study targeted contractors operating in Nairobi metropolitan. Results showed that competence and qualifications of contractors influenced construction of standard buildings. It was also revealed that there was bidding for works by contractors which many lack capacity to execute.

Little has been done on analyzing the effect of Kenya Bureau of Standard regulations on the performance of steel companies in Kenya. This study aimed at assessing how technological innovation requirements, standard conformity requirements and supervisory policies affect the organizational performance of steel companies in Kenya.

1.3 Objectives of the Study

1.3.1 General objective

The general objective of this study was to analyze the effect of Kenya Bureau of Standards regulations on organizational performance of steel companies in Kenya.

1.3.2 Specific objectives

The study was guided by the following specific objectives:

- i. To find out the effect of technological innovation requirements on organizational performance of steel companies in Kenya.
- ii. To assess the effect of standard conformity requirements on organizational performance of steel companies in Kenya.

- iii. To determine the effect of supervisory policies on organizational performance of steel companies in Kenya.

1.4 Research Questions

In order to attain the research objectives, this study sought to answer the following research questions:

- i. What is the impact of KEBS technological innovation on the performance of steel companies in Kenya?
- ii. What is the impact KEBS standard conformity on the performance of steel companies in Kenya?
- iii. What is the impact of KEBS supervisory policy on the performance of steel companies in Kenya?

1.5 Significance of the Study

The results of this study will be important to the following entities:

1.5.1 Academicians

Academicians (scholars and researchers) in the area regulations and manufacturing industries will find this study a useful contribution to the existing body literature and to theory and practice.

1.5.2 Investors and Entrepreneurs

Investors and Entrepreneurs in the steel industry will have an understanding on the steel industry.

1.5.3 Steel firms and financial institutions

Steel firms will have clear understanding on the role of government in the industry, financial institutions will have industry report on steel sectors and qualifications for them to finance such industries in the market.

1.5.4 Government bodies

This study will help policy makers learn how to improve on the regulatory and standardization and devise different means of detecting inferior products in the economy to curb crises related to substandard products.

1.6 Scope of the Study

The study aimed at analyzing the effect of Kenya Bureau of Standard regulations on the performance of steel companies. Data was collected from steel companies operating within Nairobi County. The study was conducted over the January 2016 to December 2016 duration.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter enumerates literature studies relevant to study objectives on effect of Kenya Bureau of Standard regulation on the performance of steel companies. The study scrutinizes some of the previous work studies in order to develop concrete background information upon which the research work was based. It also outline limitations of previous studies hence the essence of critical review. In the process, study gaps were identified and conclusions made for further research work. The chapter synthesized the grey areas which the research work of current study needs to find solution to and act as provision of future reference studies. The chapter discusses the theoretical review, empirical review, conceptual framework and the summary of the literature review.

2.2 Theoretical Review

The theoretical review demonstrates an understanding of theories and core concepts that are relevant to the topic of the research that relate it to the broader fields of knowledge in the field of standard regulation and business performance. A theoretical review is used to limit the scope of the relevant data by focusing on specific variables and defining the specific viewpoint (framework) that the researcher took in analyzing and interpreting the data gathered, understanding concepts and variables according to the given definitions, and building knowledge by validating or challenging theoretical assumptions.

2.2.1 Public Interest Theory

The public interest theory was proposed by Backer in 1986, the theory suggests that government regulation is a response to public demands for government to rectify situations of market failure

through imperfect competition, market disequilibria, missing markets (caused by hidden or asymmetric information, high transaction costs, externalities, public goods) or market outcomes that are undesirable for social reasons (Hertog, 2000). This of course assumes that the market outcome represents a failure of some sort, and the market is not capable of fixing the problem itself, that the government is capable of fixing that failure so that the optimal efficient outcome will be achieved (given constraints from institutions, technology and information) and finally that the benefits of doing so will outweigh the additional costs created by the intervention after taking into account administrative costs and any new allocative inefficiencies (Hertog, 2000).

According to this theory, the regulation of firms or other economic actors contributes to the promotion of the public interest. This public interest can further be described as the best possible allocation of scarce resources for individual and collective goods and services in society. In a broad spectrum and more so to developed nations, the allocation of scarce resources is to a significant extent coordinated by the market mechanism. In theory, it can even be demonstrated that, under certain circumstances, the allocation of resources by means of the market mechanism is optimal (Arrow, 1991). Because these conditions do frequently not apply in practice, the allocation of resources is not optimal from a theoretical perspective and a quest for methods of improving the resource allocation arises (Bator, 2008). This situation is described as a market failure. Evidently, market failure arises when scarce resources are not put to their highest valued uses. In a market setting, these values are reflected in the prices of goods and services.

A market failure thus implies a discrepancy between the price or value of an additional unit of a particular good or service and its marginal cost or resource cost. Ideally in a market, the production by steel firms should expand until a situation arises where the marginal resource cost of an additional unit equals its marginal benefit or price. Equalization of prices and marginal costs characterizes an

equilibrium in a competitive market. If costs are lower than the given market price, a firm will profit from a further expansion of production. If costs are higher than price, a firm will increase its profits by curtailing production until price again equals marginal cost. A market equilibrium, and more generally an equilibrium of all markets is thus a situation of an optimal allocation of scarce resources. In this situation supply equals demand and under the given circumstances can market players do no better. A great number of conditions have to be satisfied for an optimal allocation in a competitive market economy to exist (Bruce, 2004).

In summary, public interest theory is said to assume that the regulatory regime with aim to achieve economic efficiency based on three assumptions: the prevalence of a market failure, the assumption of a 'benevolent regulator' or, alternatively, an efficient political process and the choice of efficient regulatory institutions. Starting from the allocation of scarce resources by a competitive market mechanism, four types of market failures can be distinguished (Bator, 2008). Discrepancies between values and resource costs can arise as a result of imperfect competition, unstable markets, missing markets or undesirable market results in the steel sector. Imperfect competition will cause prices to deviate from marginal resource cost. Unstable markets are characterized by dynamic inefficiencies with respect to the speed at which these markets clear or stabilize.

These instabilities waste scarce resources. Missing markets imply the demand for socially valuable goods and services for which total value exceeds total cost but where prices or markets do not arise. And finally, even if the competitive market mechanism allocates scarce resources efficiently, the outcomes of the market processes might still considered to be unjust or undesirable from other social perspectives. Public interest theory also fails to predict how the public interest is translated through political institutions into a decision, who will be regulated and who will receive the benefits or bear

the costs, or the form of the regulation (Hertog, 2000). However, assuming in first instance that the government acts as an omniscient, omnipotent and benevolent regulator (Dixit, 1996).

The relevance of this theory to the study gives a practical reflection that market outcome represents a failure of some sort such as collapse of buildings, low quality steel products, incompetence professionals in the industry and the market is not capable of fixing the problem itself due to scarce resources and lack of accountability. This exemplifies on key reasons why KEBS exist and is mandated to set market standards of products quality. Business environment in a state is run by the government to represent the interest of public equally and it is capable of fixing any failure that is beyond the control of other organizations so that the optimal efficient outcome is achieved, given constraints from regulatory institutions, technology and information. The merit of doing so in complying to standards outweighs the additional costs created by the intervention in case loss occurs as a result of negligence from set standards.

2. 2.2 Economic Theory of Regulation

The economic theory of regulation was proposed by George Stigler in 1971, the theory emphasizes on the situations where regulations come to serve the interests of those regulated, the economic theory of regulation serves as a response to interest group demands (Posner, 1974). According to (Pearce 2007) notes that the theory of economic regulation is rooted in perception that government must step in to regulate markets in instances when markets are unable to regulate themselves. These so-called "market failures" occur where the price mechanism that regulates supply and demand breaks down, forcing government to take action. Natural monopolies and external costs (externalities) are the most prominent types of market failure. Natural monopolies occur when the fixed costs of supplying a commodity are so great that it makes sense for only one firm to supply that commodity.

The industry regulation occurs where, due to industry control of information more so in the steel sectors, the effects of repeated interactions and career opportunities, the regulator which is KEBS comes to serve the interests of the regulated referred in as the Steel companies (Posner, 1974). This can be implemented through direct subsidies from the government of Kenya to steel manufacturer by lowering or eliminating tax on imported raw materials, entry restrictions or tariffs of imported steel products, controls on substitutes, or price fixing (Stigler, 1971). Issues include why the industry cannot prevent the creation of the regulator in the first place, why regulation imposes burdens on industry in favour of others, or why costly regulation is accepted even though this could be to shield against more effective regulation (Morgan & Yeung, 2007).

An extension of this approach, the economic theory of regulation suggests that a regulatory regime may itself be acquired by the industry and is designed and operated primarily for its benefit (Viscusi, 2005). Regulation is sought through the supply of votes and resources to politicians with the cost reflecting factors such as the cost of the proposed regulation and the geographic concentration of benefits or costs at large in the steel manufacturing industries.

In Kenya, economic theory of regulation may be applied and captured in standards of quality that are set by KEBS through conducting certification regulation for quality reasons and this is enforced or regulated by the same profession to achieve benefits for incumbents steel industries through restriction of certain products that do not meet the test standards in the market. The reason behind regulation is to limit the access of such material by local manufactures who may consider quantity and low price rather than quality and premium price. This is one example of regulation as a means of taxation or standard levy of one group on behalf of others that lack capacity. Such regulation which can go as far as explicit reduction of some property rights in favour of rights held by others, sometimes referred to as government takings Guerin, (2002). This can also be described as taxation

by regulation and used to explain regulated services or products provided below cost through internal subsidies from other profitable products. It can be argued that this is a deliberate choice by the state to ensure provision of the service without direct fiscal impact, effectively substituting a specific narrowly based tax for funding from general taxation revenue with reduced scrutiny and less pressure to balance against competing uses of the funding for regulators. Such approaches can also reflect a coalition of regulated firms and those of their customers who receive services below cost as a consequence of regulation. It can be argued that there is an optimum size for effectiveness of such for a state to seek gains through regulation, as beyond that size the interest of each party in the industry environment becomes too small and in case of losses such as collapse of a building, the costs becomes too high.

Large scale industry or organizations are somehow difficult to manage given the range of issues arising from their operations Peltzman, (1999). Their capacity and costs can be argued to limit both the size of operation and its gains in the market. This could sometimes lead to a dichotomy where consumers lobby for regulation of monopolistic industries while firms lobby for regulation of competitive industries with direction from KEBS. Also the number of individuals or firms involved may influence the choice between private cartelization and seeking regulation through political channels; ie, it may be cheaper for large-number industries to obtain public regulation than to cartelize privately. Such a view is consistent with a rent seeking interpretation of political behaviour, with rent seekers wasting resources to obtain regulatory rents, and politicians and bureaucrats capturing a share of the efficiency losses of regulation. It also supports a marginal approach to political allocation of regulatory benefits where more than one group receives those benefits (Peltzman, 1999). The economic theory of regulation still, however, does not address the mechanism by which regulation is achieved, or how this mechanism itself influences the outcome (Hertog, 2000).

2.2.3 Capture Theory

Capture theory was developed by Posner in 1974 with emphasis on that in the course of time, regulation will come to serve the interest of socio political affiliates and the interests of the industry involved. The capture theory was developed mainly by political scientists with agency that if abuse of a dominant position is detected then political magnate comes into play. In the course of time, other political priorities arrive on the agenda and the monitoring of the regulatory agency by legislators is relaxed. The capture theory tends to avoid conflicts with the regulated company because it is dependent on this company for its information. It often also does not have unlimited resources which makes it aware of the costly effects of litigation of its decisions. Furthermore, there are career opportunities for the regulators in the regulated companies like KEBS top management who are appointed by the head of the state. This leads in time to the regulatory agency coming to represent the interests of the branch involved in the country. For an overview of the various KEBS branches that are spread within the big cities to promote the interest of regulating on the quality and political appointees. They are meant to serve the interest of the public. This brings about strategies available to be applied by agencies and regulated companies in the market (Owen & Braeutigam, 1978).

2.3 Empirical Review

Empirical literature review is a directed search of published works, including periodicals and books, that discusses theory and presents empirical results that are relevant to the topic at hand (Zikmund, 2010). Literature review is a comprehensive survey of previous inquiries related to a research question (Kaifeng and Miller, 2008). It allows a researcher to place his or her research into an intellectual and historical context. The empirical review is based on the following objectives of the study.

2.3.1 Technological Innovation Requirements and Organizational Performance of Steel Companies

The promotion of innovation in Kenya and developing nations in steel manufacturing and in other firms has recently appeared on the agenda of policy makers and international development agencies. Many agree that innovation is crucial in these countries, because it is fundamental for growth in order to catch up with middle and high income economies (Chaminade, 2010). Current research, theory development and policy formulation to promote innovation, however, have mainly focused on innovation in the more advanced economies, whilst investigation of these issues in low income countries to date has been limited.

According to Tata Steel (2014), continuous emphasis on improving processes, efficiencies, and quality and leads to achievement of better performance benchmarks in all areas of operations in steelmaking. Chaminade (2010) notes that in modern steelmaking, there is an increased tendency of steel firms to identify and implement projects aimed at increasing the yield of high quality raw materials while effecting reductions in energy use and emissions. Derrick (2013) particularly points out that coal leaching technology, a major innovation in steelmaking, as having been able to lead to a 8% reduction in cost of energy used in steel production.

Al-Jabri (2012) studied technology in manufacturing and banking adoption by looking at the application of diffusion of innovation theory. This study sought to investigate a set of technical attributes and how they influence user adoption in a developing nation, like Saudi Arabia. The study used diffusion of innovation as a base-line theory to investigate factors that may influence computerized manufacturing processes and use. More specifically, the objective of this research was to examine the potential facilitators and inhibitors of process. According to the responses received, some of the manufacturers in heavily industrialized plants such as steel are using management

information systems; however, these systems do not cover all the business processes that take place in the system; therefore, completeness is missing. Certain functions are also processed manually causing an increase in the risk, as there is a higher probability of error. In addition, the current systems that they use provide required results but it is time consuming as compared to analytical technology. Thus steel companies that have technology in place have best chances of growing and bringing new innovative products in the market that promotes on their growth.

2.3.2 Standard Conformity Requirements and Organizational Performance of Steel Companies

The globalization of the steel industry and the increase in the number of domestic suppliers and processors has created the potential for the supply of construction steels of unconfirmed origin and quality (Hogan, 2012). In most countries, the national standards organizations e.g. KEBS issue standards in steelmaking to ensure that variance in product specification is kept minimal. This ensures that different steel vendors can source various steel products from manufacturers that has similar quality and characteristics for the products.

In a recent survey by the Australian Industry Group (AiG, 2014) found that 95% of companies that use steel products reported non-complying products (NCP) in their market. According to Willox (2010), steel fabricators as well as steel building products manufacturers are the hardest hit by non-conforming products, due to a conformance framework that is overly reliant on first party certification and an increasing exposure to nonconforming structures and products.

The AiG survey found 43% of respondents had not lodged a complaint when encountering a NCP. Willox said it was clear that building certification arrangements needed to be reviewed with a focus on clarifying the role of building certifiers and assessing the adequacy of existing arrangements in preventing the installation of non-conforming products.

Though in Kenya, the conformity level hasn't been on notary given that steel consumption has also grown tremendously. As it is, the country imports steel which are later distributed by Kenyan dealers who include Athi River Steel Ltd, Brollo Kenya Ltd, Devki Steel Mills Ltd, Accurate Steel Mills Ltd, Elgo Steel Fabricators Ltd, Iron Africa Ltd and Simba Products Ltd. Steel imports have grown more than 100 percent in the past five years from US \$263 million to US \$538 million (Kenya Bureau of Statistics, 2013).

Al-Jabri (2012) notes that lack of standard conformity to size and quality in appropriate weight proportion and use of poor quality steel materials in civil work and construction sector results in poor quality structures and may cause structures to fail leading to injuries, deaths and loss of investment for developers.

Ayuba, Olagunju and Akande (2011) assert that non-conformity in mix with steel and the high percentage of clay and silt content in sand used in concrete production, the lower the compressive strength of the hardened concrete. Although many studies mentioned above have shown that use of poor quality steel materials is one of the major contributing factors to collapse of buildings, testing these materials has not been carried out to examine the impact of conformity of steel composition and units in building to the overall performance of concrete and strength of the structure. In addition, where tests have been carried out, testing of both steel, silts and organic impurities has not been carried out to determine their combined effect on the concrete strength. To prevent buildings failure, careful selection of construction materials including building steels is paramount to ensure they meet the set construction standards and conformity. Adhering to standard conformity is said to have a positive relationship to performance of the steel manufactures.

2.3.3 Supervisory Policies and Organizational Performance of Steel Companies

The role of policy framework laid by any institution is to have a singular characteristics in elements, given that KEBS plays a supervisory role in ensuring consistent compliant to set standards of steel products by all manufacturers locally or imported.

According to Narayan, (2003) stated that lack of supervisory and maintenance policy in the construction sector is one of the root cause of low quality building materials used. The management considers price and not quality of steel material used that leads to severe collapse of buildings. This is when the standard regulators are up in arms to supervisor why and how. Supervisory personnel or operator's skill is an essential factor that influences the performance of steel companies in the market (Pascal, 2008). Poor operating and supervision practices often lead to human error and consequently the occurrence of poor quality of maintenance outcomes. The poor maintenance outcome is then increasing the failure rate, which leads to the avoidable failures or further implications and subsequent repairs or additional maintenance works that are required in order to ensure the steel performance standard.

The steel sector is directly linked to construction regulations that are statutory instruments setting out the minimum legal requirements for construction works and relate primarily to the health, safety and welfare of the workforce which must be taken into account when planning construction operations and during the actual construction period to be supervised (Chudley & Greeno, 2006). According to Mohammed (2010), supervisory regulations must incorporate provision that the contractor who plans to perform any project that involves use of steel products more so in the construction shall before carrying the work notify in writing the competent authority for construction planning and supervision program. Traditionally, cost, quality and time have constituted the parameters within which projects have been managed. However, increasing awareness relative to the role of Health and Safety (H&S) in overall project performance and

the inclusion of H&S as a project performance measure by, inter alia, petro-chemical organizations, has engendered focus on H&S by a range of stakeholders. The number of large-scale construction accidents in Kenya in the recent past has further raised the level of awareness and the essence of supervision in bettering performance of steel companies.

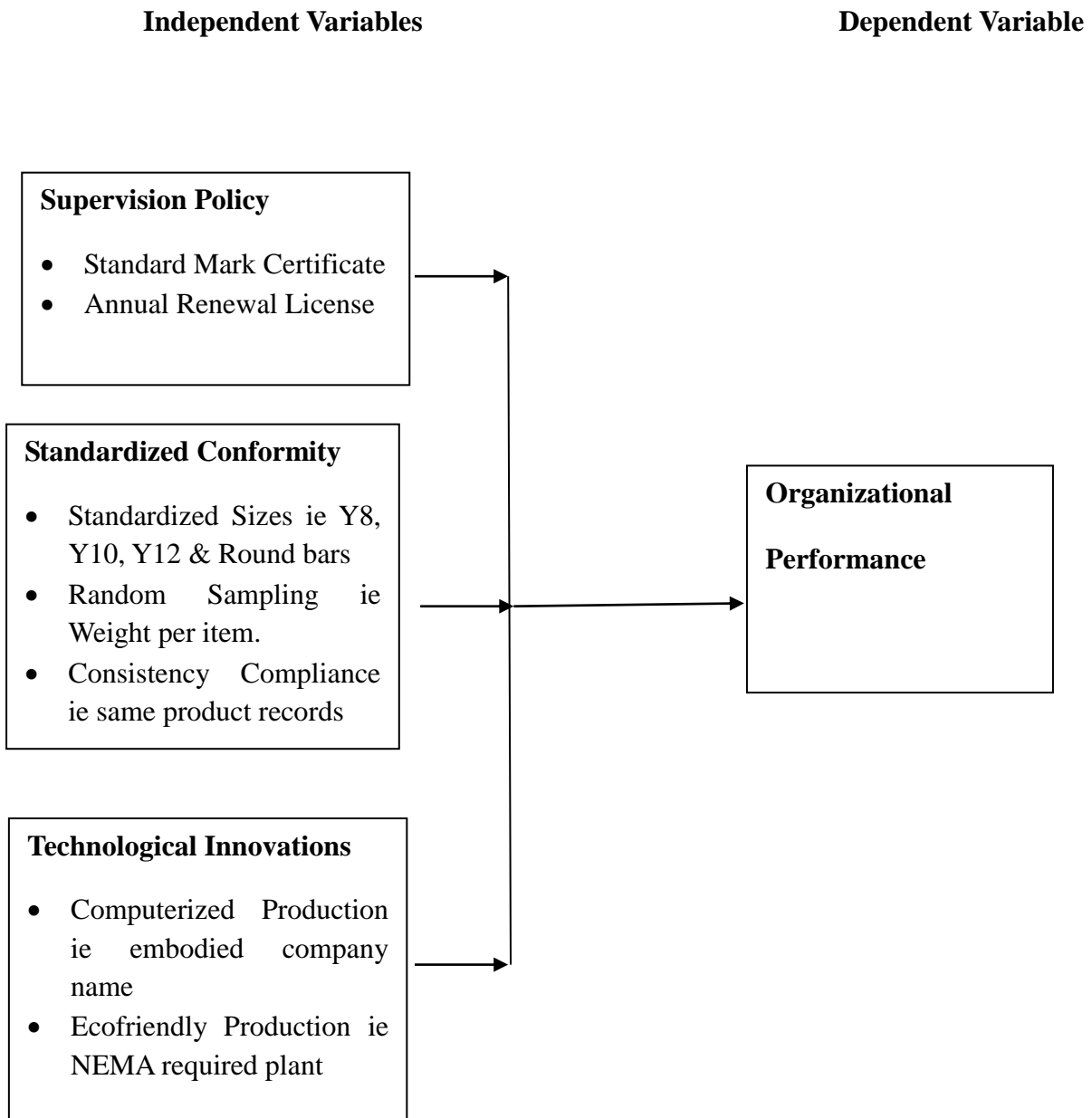
2.4 Knowledge Gap

From the foregoing review of relevant literature, it is evident that research in the area of KEBS regulations and their effect on the performance of steel companies has been done but not in a comprehensive approach. All the literature reviewed indicates that previous researchers concentrated on a few variables of regulation performance while this study covers additional important variables that were omitted by previous studies like, supervisory policies, standard conformity and technological innovation. From the analysis of relevant literature, it has been found that there are few studies specific to steel manufacturing industries in Nairobi. The study therefore intends to fill the knowledge gap in literature by studying the effect of Kenya Bureau of Standard regulations on the organizational performance of steel companies in Kenya.

2.5 Conceptual Framework

A conceptual framework is a logical illustration of the interrelationships between the study variables as envisaged by the research. The conceptual framework for this study is elucidated in figure 2.1 below.

Figure 2.1 Conceptual Framework



Source: Author (2017)

2.6 Operationalization of Variables

The study variables were operationalized as shown in table 2.1 below.

Table 2.1 Operationalization of Variables

Variable	Type	Measure	Indicators
Technological Innovation Requirements	Independent	Ordinal	<ul style="list-style-type: none"> • Computerization of the production system • The energy efficiency requirements • The integrated enterprise resource planning (ERP) platform requirement • Eco-friendly system of steel production requirement
Standard Conformity Requirements	Independent	Ordinal	<ul style="list-style-type: none"> • Standardization of the length, weight, cross sectional area, and shape of steel products • Standardization of raw material ratios for various steel products. • Standardization of production systems of steel firms • Standardization in terms of contour design of steel products
Supervisory Policies	Independent	Ordinal	<ul style="list-style-type: none"> • KEBS supervisory visits • Responsibility of Departmental managers • KEBS Standard certification mark. • Annual requirement to renew our quality assurance license
Organizational Performance	Dependent	Ordinal	<ul style="list-style-type: none"> • Perceived effect of abiding by technological innovation requirements on organizational performance. • Perceived improvement in organizational performance after conformance with KEBS' standard conformity requirements. • Perceived effect of consistent supervision and guidance by KEBS on organizational performance.

2.7 Hypotheses of the Study

In order to evaluate the study objectives, the researcher tested the following null hypotheses:

H₀₁: KEBS technological innovation requirements have no significant effect on organizational performance of steel companies in Kenya.

H₀₂: KEBS standard conformity requirements have no significant effect on organizational performance of steel companies in Kenya.

H₀₃: KEBS supervisory policies have no significant effect on organizational performance of steel companies in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents in details the methodology that was adopted in carrying out the study. It consisted of the following aspects: research design, target population, sample size and sampling techniques, instrumentation, data collection, validity and reliability as well as data analysis and presentation.

3.2 Research Design

According to Adams, Khan, Raeside and White (2007), research design is the blueprint for fulfilling research objectives and answering research questions. It is a master plan specifying the methods and procedures for collecting and analyzing the needed information. The study adopted a descriptive research design. The choice of the research design was based on the fact that descriptive research is concerned with description of the state of affairs as it exists at present. It describes the characteristics of a particular individual, or of a group. In descriptive research, the researcher has no control over the variables; the researcher can only report what had happened or is happening (Kothari, 2004). According to Mugenda and Mugenda (2003), the major purpose of descriptive research is to determine the relationship between an independent variable and a dependent or outcome variable in a population, establishing the associations and causality between variables. Descriptive research design was used in this study to describe on the performance of steel companies in Kenya.

3.3 Target Population

According to Kothari (2006), a population is a well-defined set of people, services, elements, events or group of things or households that are being investigated. Mugenda (2003) defines target population as that population which a researcher wants to generalize the results of the study. The target population was senior level managers of steel manufacturing firms operational in Kenya as at 30th June, 2017. Senior level managers, for the purpose of this research, were managers who are in charge of a functional department at their organization. Such managers also had to have not more than two seniors in their reporting line before getting to the CEO. The main reason for choosing senior managers is because they are responsible for operational performance of their respective companies. They are also responsible for managing performance of their units through the departmental budgets and action plans, and have a deep understanding of how KEBS requirements impact organizational performance. Table 3.1 below shows that 20 steel firms that were operational in Kenya as at 30th June, 2017 (Kenya Association of Manufacturers, 2017).

Table 3.1: Steel Companies in Kenya in Kenya as at 30th June, 2017

	Steel Companies in Kenya
1	Accurate Steel Mills Ltd
2	Apex Steel Ltd kenya
3	Associated Steel Ltd
4	Athi River Steel Ltd
5	Blue Nile Rolling Mills
6	Brollo Kenya Ltd
7	Devki Steel Mills Ltd
8	Doshi Enterprises Ltd.
9	Emco Steel Mills
10	Imara Steel Mills Ltd
11	Iron Africa Ltd
12	Kenya United Steel Company
13	King Steel Limited
14	Mabati Rolling Mills Ltd
15	Prime Steel Mills Ltd
16	Sabharwal Steel Mills Ltd
17	Steel Makers Limited
18	Tarmal Wire Products Ltd
19	Tononoka Rolling Mills Ltd
20	Top Steel Kenya Ltd

Source: Kenya Association of Manufacturers (2017)

According to statistics from HRM of these 20 organizations, there were a total of 185 employees holding the senior level manager rank.

Table 3.2: Target Population

Steel Firm	No. of Senior Level Managers
Accurate Steel Mills Ltd	10
Apex Steel Ltd kenya	15
Associated Steel Ltd	4
Athi River Steel Ltd	8
Blue Nile Rolling Mills	6
Brollo Kenya Ltd	14
Devki Steel Mills Ltd	12
Doshi Enterprises Ltd.	13
Emco Steel Mills	5
Imara Steel Mills Ltd	10
Iron Africa Ltd	6
Kenya United Steel Company	12
King Steel Limited	8
Mabati Rolling Mills Ltd	14
Prime Steel Mills Ltd	7
Sabharwal Steel Mills Ltd	11
Steel Makers Limited	9
Tarmal Wire Products Ltd	11
Tononoka Rolling Mills Ltd	5
Top Steel Kenya Ltd	5
Total	185

Source: Kenya Association of Manufacturers (2017)

3.4 Sample and Sampling Procedure

Lavrakas (2008) describes a sample in a survey research context as a subset of elements drawn from a larger population. Kothari (2004) also describe a sample as a collection of units chosen from the universe to represent it. The study used a census sampling procedure to end up with the final study sample. According to Mugenda (2009), a census approach should be used when the target population isn't very large and data could be collected from all the subjects in it.

3.5 Instrumentation & Data Collection

The study employed a questionnaire to collect primary data. A five-scale Likert measurement was used to assess the respondents' perceptions on the effect Kenya Bureau of Standards regulations on organizational performance of steel companies in Kenya.

The questionnaires had 5 sections. The first section was used to collect demographic information of the respondents. The second section collected information on the technological innovation requirements, the third section was on standard conformity requirements, the fourth focused on supervisory policies while the fifth was on operational performance. The drop and pick later approach was used in data collection. Questionnaires were distributed to the respondents and then picked within one week.

The questionnaire was chosen as an instrument for the study due to its practicability and applicability to the research problem and the size of the population. It is also cost effective and gives adequate time to the respondent to fill in and return to the researcher (Mugenda and Mugenda, 2003).

3.6 Validity of the Instrument

To ensure validity of the research instrument, the researcher took into account the opinions of expert raters and his research supervisor. Validity is the degree to which a test measures what it purports to measure (Borg and Gall 2003). Validity was further assured by the fact that the research variables were chosen in such a manner that the explanatory variables which were deemed to have the largest impact on the response variable are the ones which were investigated.

3.7 Reliability of the Instrument

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials Mugenda and Mugenda (2003). To test the reliability of the research instrument, the researcher conducted a pilot study amongst senior managers at Kenya Aluminum Works Limited. This firm was chosen because of its similarity to steel firms: it deals with metallic products (aluminum) and it's also subject to KEBS regulations. The pilot study had twenty subjects. The pilot study data was analyzed, interpreted and the instrument reviewed in readiness to the main data collection study. The Cronbach's alpha was used to assure reliability in this study. Generally, when the value of the Cronbach's alpha coefficient exceeds 0.7, the instrument is deemed reliable.

3.8 Data analysis

Data collected was analyzed using descriptive and inferential statistics. The descriptive statistical tools such as frequencies, percentages, mean and standard deviation helped to describe the data. In addition advanced statistical techniques were also utilized. The primary data obtained from the questionnaires was checked for completeness, legibility, and consistency before being coded for analysis. The responses by managers were then coded to enable them to be processed by a computer. SPSS was used to analyze the data to show the relationships between the variables.

Descriptive statistics of the dataset were computed at first. The demographic attributes of the sampled respondents were then elucidated. Next, the responses to the likert-scale questions were discussed in detail. Finally, a multiple linear regression equation was used to evaluate the relationship between the independent variable and dependent variables. The researcher will perform the following diagnostic tests on the regression model; the Cronbach's test, the F Test and coefficient of determination. A one way ANOVA F test was used to test the significance of the overall regression model. The findings were presented using tables, frequencies and percentages. The empirical model that was used in this study in the multiple linear regression model is specified below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e_i \dots \dots \dots (i)$$

Where:

Y = Organizational Performance

X₁ = Technological Innovation Requirements

X₂ = Standard Conformity Requirements

X₃ = Supervisory Policies

β₀ = Y Intercept

β₁, β₂, and β₃, = Coefficients of X₁, X₂, and X₃ respectively.

e_i = Error Term

CHAPTER FOUR

DATA ANALYSIS PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the methodology applied in the study in terms of research design, population, sampling technique, research instruments, data collection and data analysis.

4.2 Response Rate

The study targeted a sample of 185 respondents from steel firms in Kenya. Out of 185 questionnaires distributed, 162 respondents completely filled in and returned the questionnaires; this represented a response rate of 88%, which is deemed an acceptable response rate for data analysis. Mugenda and Mugenda (2003) points out that a response rate of 50% is adequate for analysis and reporting, 60% is good and a response rate of 70% and over is excellent. Table 4.1 below shows the response rate for this research.

Table 4.1 Response Rate

Response	Frequency	Percentage (%)
Filled in questionnaires	162	88
Un returned questionnaires	23	12
Total	185	100

4.3 Demographic Information

4.3.1 Organization worked for

From table 4.2 below, it is evident that most of the respondents were senior managers of Mabati Rolling Mills Limited (8.64%). These were followed closely by those from Apex Steel Limited and Brollo Kenya Limited (8.02% for both). Next were senior managers of Doshi Enterprises Limited (7.41%) and Kenya United Steel Company and Sabharwal Steel Mills Limited (6.17% for both). At only 1.85% of total respondents, respondents from Top Steel Kenya Limited were the least.

Table 4.2 Organization worked for

Organization	Frequency	Percentage
Accurate Steel Mills Ltd	8	4.94%
Apex Steel Ltd kenya	13	8.02%
Associated Steel Ltd	4	2.47%
Athi River Steel Ltd	7	4.32%
Blue Nile Rolling Mills	4	2.47%
Brollo Kenya Ltd	13	8.02%
Devki Steel Mills Ltd	9	5.56%
Doshi Enterprises Ltd.	12	7.41%
Emco Steel Mills	5	3.09%
Imara Steel Mills Ltd	9	5.56%
Iron Africa Ltd	6	3.70%
Kenya United Steel Company	10	6.17%
King Steel Limited	8	4.94%

Mabati Rolling Mills Ltd	14	8.64%
Prime Steel Mills Ltd	5	3.09%
Sabharwal Steel Mills Ltd	10	6.17%
Steel Makers Limited	9	5.56%
Tarmal Wire Products Ltd	8	4.94%
Tononoka Rolling Mills Ltd	5	3.09%
Top Steel Kenya Ltd	3	1.85%
Total	162	100.00%

4.3.2 Respondents' Department

The study aimed to investigate department in which the respondents worked within their respective organizations. From the findings, most respondents (30.2%) worked in production. 21% of the respondents worked in supply chain management while 16.7% worked in finance. 10.5% of the respondents listed their department as “others”, i.e. departments which were not specified in the research instrument. This is shown in table 4.3 below

Table 4.3 Respondents' Department

	Frequency	Percent
Finance	27	16.7
Information Technology	21	13.0
Production	49	30.2
Supply Chain Management	34	21.0
Human Resources	14	8.6
Others	17	10.5
Total	162	100.0

4.3.3 Gender of the Respondents

The study requested respondents to indicate their gender. From the findings, the study established that majority (67.3%) of the respondents were male while the rest (32.7%) of the respondents were females.

Table 4.4 Gender of the Respondents

	Frequency	Percent
Female	53	32.7
Male	109	67.3
Total	162	100.0

4.3.4 Age of Respondents

According to table 4.5 below, majority of the respondents were over forty five years old. This result is not surprising given the fact that most firms tend to appoint senior level managers primarily by years of service and level of experience. However, its notable that three respondents were quite young, i.e. less than 35 years old.

Table 4.5: Age of Respondents

	Frequency	Percent
At most 35 years	3	1.9
36-45 years	28	17.3
46-55 Years	99	61.1
At least 56 years	32	19.8
Total	162	100.0

4.3.5 Years of Service

The research sought to know the number of years each respondent had spent at their respective employer. It is quite evident that most of the respondents had already worked for their organization for more than 10 years. These were closely followed by those who had clocked in 6 to 10 years of service. A surprising result is that only 11.1% of the respondents had spent more than 15 years of experience. The years of service for the respondents are summarized in table 4.6 below.

Table 4.6: Respondents' Years of Service

	Frequency	Percent
5-10 years	74	45.7
At most 5 years	24	14.8
11-15 years	46	28.4
At least 15 years	18	11.1
Total	162	100.0

4.3.6: Highest Level of Education

The education levels of the respondents, as shown in table 4.7 below were quite impressive. Out of the hundred and sixty two respondents, only 9 didn't have a university degree, but had a tertiary level diploma. The other 153 respondents had at least one university degree. Out of these respondents, 78 who had at least a masters degree.

Table 4.7: Highest Level of Education

	Frequency	Percent
Diploma	9	5.6
Undergraduate	75	46.3
Masters and Above	78	48.1
Total	162	100

4.4 Responses to Study Variables

In this section, the data collected on study variables is discussed in detail. The researcher used a five point likert scale (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree) to collect information pertinent to constructs of each variable.

4.4.1 Technological Innovation Requirements and Organizational Performance of Steel Companies

Table 4.8 below illustrates the finding of the study on the extent to which aspects of technological innovation affects the organizational performance of steel companies in Kenya.

From the findings, most of the respondent agreed that computerization of the production system as per KEBS requirements had improved their organization performance. With a mean response of 3.78,

they cited it very strongly as a factor in the enhancement of the operational performance status of their firms.

The respondents also agreed that energy efficiency requirements of KEBS guidelines had impacted their operations positively (mean response: 3.74), moreover, they had consensus that the requirement the all steel manufacturers should run on an integrated enterprise resource planning (ERP) platform had enhanced their organizational performance (mean response: 3.59), and that there are positive gains of implementing an eco-friendly system of steel production, in line with KEBS requirements (mean response: 3.51).

Table 4.8 Technological Innovation Requirements and Organizational Performance

	Mean	Std. Dev
Computerization of the production system as per KEBS requirements has improved our organization performance	3.78	1.014
The energy efficiency requirements of KEBS guidelines have a positive effect on our operations	3.74	1.112
The requirement the all steel manufacturers should run on an integrated enterprise resource planning (ERP) platform has enhanced our organizational performance	3.59	1.049
There are positive gains of implementing an eco-friendly system of steel production, in line with KEBS requirements	3.51	1.093

4.4.2 Standard Conformity Requirements and Organizational Performance of Steel Companies

The researcher requested the respondents to indicate the extent to which they think that the standardization of the length, weight, cross sectional area, and shape of steel products has helped in streamlining our operations. There was a strong agreement that standardization of product specifications had been instrumental in streamlining of corporate operations (Mean: 4.03). The respondents also agreed with the statement that there are positive gains of the specifications of raw

material ratios for various steel products (Mean response was 3.95). Moreover, there was strong consensus with the notion that uniformity of production systems for steel products across the entire industry had enhanced organizational performance (mean response was 3.98) and that standardization in terms of contour design of steel products had been beneficial to their respective firms (mean response of 4.12). This is shown in table 4.9 below.

Table 4.9 Standard Conformity Requirements and Organizational Performance

	Mean	Std. Dev
Standardization of the length, weight, cross sectional area, and shape of steel products has helped in streamlining our operations.	4.03	1.042
There are positive gains of the specifications of raw material ratios for various steel products.	3.95	.889
The requirement that production systems of steel products across the entire industry must be uniform has enhanced our organizational performance.	3.98	.867
Standardization in terms of contour design of steel products has been beneficial to our firm.	4.12	.855

4.4.3 Supervisory Policies and Organizational Performance of Steel Companies

Table 4.10 below shows the mean responses of the statements posed pertaining the relationship between supervisory policies and organizational performance of steel companies in Kenya. From the findings, it can be seen that the respondents agreed that KEBS supervisory visits had made them improve their firm operations (mean response of 4.26).

With a mean response of 4.04, the respondents also agreed that departmental managers in their firms were more keenly interested in meeting KEBS standards thereby enhancing performance. Moreover, they agreed that all steel products of their firms have KEBS Standard certification mark, and this had

led to better sales. Finally, the respondents concurred that annual requirement to renew their quality assurance licenses had made them keener on product quality (mean response: 3.95)

Table 4.10 Supervisory Policies and Organizational Performance

	Mean	Std. Dev
KEBS supervisory visits have made us improve our operations	4.26	1.168
Departmental managers are more keenly interested in meeting KEBS standards thereby enhancing performance	4.04	.826
All steel products of our firm have KEBS Standard certification mark. This has improved our sales	4.03	1.042
Annual requirement to renew our quality assurance license has made us more keen on our product quality	3.95	.889

4.4.4 Organizational Performance of Steel Companies

This was the response variable of this research. The responses on the constructs about Organizational Performance are summarized in table 4.11 below.

The respondents generally agreed that abiding by KEBS' technological innovation requirements had affected the organizational performance of their firm positively. The statements that firm organizational performance had improved after conformance with KEBS' standard conformity requirements also received affirmation. Finally, there was consensus that consistent supervision and guidance by KEBS had impacted their respective employers in a good way. This is indicated in table 4.11 below.

Table 4.11 Organizational Performance

	Mean	Std. Dev
Abiding by technological innovation requirements has affected the organizational performance of our firm positively.	3.98	.867
The organizational performance of our company has improved after conformance with KEBS' standard conformity requirements	3.82	.855
Consistent supervision and guidance by KEBS has impacted our organization in a good way.	3.58	.703

4.5 Validity and Reliability Analysis

Construct validity can be inferred from the fact that all regressors were significant and the overall regression model, as indicated in the ANOVA table, was also significant. To measure the reliability of the data collection instruments an internal consistency technique, the Cronbach's alpha, was computed using SPSS. Table 4.12 below indicates that the research instrument was reliable since data obtained from all independent variables had a Cronbach's alpha of greater than 0.7. This means that the research data had relatively high internal consistency.

Table 4.12 Reliability Analysis

Variable	Cronbach's Alpha	Comments
Technological innovation requirements	0.901	Acceptable
Standard conformity requirements	0.745	Acceptable
Supervisory policies	0.776	Acceptable

4.6 Inferential Analysis

To compute the strength between dependent variable and the independent variables the researcher conducted several forms of inferential analysis. In particular, he calculated the study's coefficient of determination, conducted an Analysis of Variance (ANOVA), and conducted a multiple regression analysis.

4.6.1 Coefficient of Determination

The coefficient of determination was computed to measure how well the study's data was suited for the statistical model that was used for main analysis. Table 4.13 below shows that the coefficient of determination (R^2) was 0.697. This R^2 suggests a relatively goodness of fit of the study data to the OLS regression model. 69.7% of variability in the level of organizational performance can be explained by variations in technological innovation requirements, standard conformity requirements, and supervisory policies. The remaining 30.3% of variability can be attributed to other factors which were not included in the model.

Table 4.13: Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.835 ^a	.697	.691	.19538
a. Predictors: (Constant), Technological Innovation Requirements, Standard Conformity Requirements, Supervisory Policies				

4.6.2 Analysis of Variance

In testing the significance of the overall model, the study used the ANOVA F - Test. From table 4.14, we can see that the ANOVA F – Test has a p-value of 0.000. This implies that the model is statistically significant in estimating the effect of technological innovation requirements, standard conformity requirements, and supervisory policies on organizational performance of steel manufacturers.

Table 4.14 Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	13.844	3	4.615	120.884	.000 ^a
	Residual	6.031	158	.038		
	Total	19.875	161			
a. Predictors: (Constant), Technological Innovation Requirements, Standard Conformity Requirements, Supervisory Policies						
b. Dependent Variable: Organizational Performance						

4.6.3 Regression Analysis

Multiple regression analysis was conducted to determine the relationship between organizational performance and the three independent variables. The results are presented in table 4.15 below.

Table 4.15 Regression Analysis

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.828	.191		4.346	.000
Technological Innovation Requirements	.321	.035	.468	9.167	.000
Standard Conformity Requirements	.216	.046	.244	4.687	.000
Supervisory Policies	.462	.071	.332	6.473	.000
a. Dependent Variable: Organizational Performance					

The regression coefficients table above has established that taking all independent variables (technological innovation requirements, standard conformity requirements, supervisory policies) to be constant, the level of absorption of operational performance will be 0.828. The findings also show that a unit improvement in technological innovation requirements will lead to a 0.321 increase in organizational performance; a unit improvement in standard conformity requirements will lead to a 0.216 increase in organizational performance; and a unit improvement in supervisory policies will lead to a 0.462 increase in organizational performance. This posits that supervisory policies have the highest influence of organizational performance. These are followed by technological innovation requirements, while the standard conformity requirements have the least impact on organizational performance.

According to the regression analysis, all regressors had a positive impact on organizational performance. Additionally, all p values were less than 5%, thereby indicating that the relationship between the dependent variable and each regressor was statistically significant. The general regression equation can therefore be re-written as:

$$Y = 0.828 + 0.321X_1 + 0.216X_2 + 0.462X_3 \dots\dots\dots(ii)$$

Where:

Y= organizational performance

0.828 = Level of Organizational Performance in the absence of explanatory factors.

X₁ = Technological Innovation Requirements

0.321= Coefficient of X₁

X₂= Standard Conformity Requirements

0.216= Coefficient of X₂

X₃= Supervisory Policies

0.492 = Coefficient of X₃

4.7 Hypothesis testing

The hypotheses of this study were framed in the null as follows:

H₀₁: KEBS technological innovation requirements have no significant effect on organizational performance of steel companies in Kenya.

H₀₂: KEBS standard conformity requirements have no significant effect on organizational performance of steel companies in Kenya.

H₀₃: KEBS supervisory policies have no significant effect on organizational performance of steel companies in Kenya.

Going by the values and levels of significance of the regression coefficients, we reject the three null hypotheses and conclude that KEBS technological innovation requirements have a significant effect on organizational performance, KEBS supervisory policies have a significant effect on organizational performance, and KEBS supervisory policies have a significant effect on organizational performance.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter depicts the discussions of the data findings and recommendations on the effect of KEBS regulations on organizational performance of steel firms in Kenya.

5.2 Summary of the Findings

The main objective of the current study was to analyze the effect of Kenya Bureau of Standards regulation on the organizational performance of steel firms in Kenya. Study sample was drawn from 20 steel companies operating in Nairobi. Although both empirical review and theoretical review revealed that standards fostered positive firm performance there was limited documented evidence among companies which were operating in the steel sector in Nairobi a gap which the current sought to bridge. Specifically the study sought to examine the effect of technological innovation on organizational performance of steel firms in Kenya, standard conformity on organizational performance of steel firms in Kenya and supervisory policy organizational performance of steel firms in Kenya. The study adopted descriptive research design. Simple random sampling was used to draw 162 respondents from 20 steel companies. The main for data collection was a questionnaire.

5.2.1 Technological Innovation and Organization Performance

The first objective of the study sought to find out the effect of KEBS technological innovation on performance of steel companies in Kenya. Although descriptive analysis revealed that majority agreed that technology and innovation had influence on performance of steel companies in Kenya, correlation and regression analysis revealed that there was a positive and significant relationship between KEBS technological innovation and organization performance of steel companies in Kenya. it was found that computerization of the production system as per KEBS requirements has improved

organization performance had a highest mean of 3.78 and Std. Dev of 1.014 while there being a positive gains on implementing an eco-friendly system of steel production, in line with KEBS requirements had a least mean of 3.51 and Std. Dev of 1.093. The findings of the study analysis indicates that technological innovation has a positive and significant impact on performance steel companies given that the mean value was above 3.0.

The regression analysis revealed that there was a positive and significant relationship between KEBS technology and innovation and performance of steel companies in Kenya by 0.321 units to impact of firm performance.

5.2.2 Standard Conformity and Organization Performance

The second objective of the study assessed the effect of KEBS standard conformity on organization performance of steel companies in Kenya. Descriptive analysis showed that standard and conformity had a significant influence on firm performance. The respondents result indicated that most of the respondents were to the support that standardization in terms of contour design of steel products has been beneficial to the firm had a highest mean of 4.12 while there being positive gains of the specifications of raw material ratios for various steel products had a least mean of 3.95.

Descriptive analysis showed that standard and conformity had a significant influence on firm performance. The regression analysis revealed that there was a positive and significant relationship between standard conformity and firm performance. More so a unit change in standard conformity increased steel production performance by 0.216 units.

5.2.2 Supervisory Policy and Organization Performance

The third objective of the study determined the effect of KEBS supervisory policy on performance of steel companies in Kenya. Based on the organizational performance of Steel companies in Kenya,

abiding by technological innovation requirements has affected the organizational performance of the firm positively had a mean of 3.98 and a deviation of 0.867 while consistent supervision and guidance by KEBS has impacted the organization in a good way had the least mean of 3.58 and Std. Dev of 0.703.

The reliability of the independent variables should be above 0.7, from the analysis using the Cronbach's alpha. All the variables were acceptable and had the following values. Technological innovation 0.901, Standard conformity 0.745 and Supervisory policies of 0.776

Descriptive analysis showed that majority agreed that supervisory policy had effect on performance of steel companies in Kenya. The regression analysis revealed a positive and signify. A unit change in supervisory policy increased steel production performance by 0.492units cant relationship between supervisory policy and firm performance.

5.2 Summary of Findings

The respondents had consensus with the statement that computerization of the production system is beneficial to their respective organizations. They also added that all other requirements by KEBS on technological advancements had impacted their organizational performance positively as well. On regression analysis, a unit increase in technological innovation requirements was found to lead to an increase in organizational performance by 32.1%.

On standard conformity, the respondents reported that standardization of product qualities had impacted their respective employers and the entire industry positively. Moreover, there was strong consensus with the notion that uniformity of production systems for steel products across the entire industry had enhanced organizational performance that standardization in terms of contour design of steel products had been beneficial to their respective firms. Regression analysis indicated that a unit improvement in standard conformity would increase organizational performance by 21.6%.

Finally, the research found that supervisory policies of KEBS also had a positively effect on organizational performance. From the analysis, there was consensus that KEBS supervisory visits had been instrumental in ensuring that they improve their firm operations. Moreover, the respondents also agreed that departmental managers in their firms were more keenly interested in meeting KEBS standards thereby enhancing performance. Also, they agreed that all steel products of their firms have KEBS Standard certification mark, and this had led to better sales. On regression analysis, there was an increase in organizational performance by 46.2% in response to a unit increment in supervisory policies.

5.3 Conclusion

This study showed that there exists a link between adherence to KEBS guidelines for manufacturing firms and performance of the steel companies. All the independent variables were found to have a positive and significant relationship with organizational performance. Supervisory policies were found to have the largest effect on organizational performance, followed by technological innovation requirements. Finally standard conformity requirements had the least effect on performance.

5.4 Recommendations

Based on the objectives of the study, the following recommendations were reached:

The study recommends that organizations should embrace technological innovations as they enhance performance to a great extent, reduce costs of production and help in environment protection due to lower emissions.

The study also recommends that there should be conformance with standardization requirements since these are beneficial to organizations and the manufacturing industry as a whole.

Finally, supervision by regulatory authorities e.g. KEBS should be enhanced due to the positive impact that it has on organizational performance.

5.5 Research Limitations.

Even though the research was successful, there was reluctance among few respondents due to confidentiality issues when giving information about their steel firms. This was managed by assuring the respondents that the information gathered was to be treated with confidence and that their names would not appear on the research tools. Some of the respondents in the departments were also very busy, thus they had to file their questions while working.

5.6 Recommendations for Further study

The study suggests that further research to be done on other regulatory factors that could affect the organizational performance of steel manufacturers, apart from the three ones that are covered in this dissertation.

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APPENDICES

LETTER OF INTRODUCTION

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TO THE RESPONDENTS

RE: RESEARCH ASSISTANCE.

I am a final year student at KCA University pursuing my Masters of Business Administration in Corporate Management and am carrying out a research study on **Effect of Kenya Bureau of Standard Regulation on the Performance of Steel companies (A Survey of Steel Manufacturing Industries in Nairobi County)**.

I kindly request for your generous participation in filling the attached questionnaires. The information obtained will be strictly used for purpose of academic research. The respondents are guaranteed that the information provided will be treated private and confidential.

Yours faithfully

Solomon Ngechu.

Sign.....

RESEARCH QUESTIONNAIRES

This research is intended to find out the effect of Kenya Bureau of Standard (KEBS) regulation on the performance of steel companies, a survey of steel manufacturing industries in Nairobi County. The results are expected to assist the government, policy makers, industry stakeholders and academicians in understanding deeply about KEBS regulation and its impact on performance of steel companies. This questionnaire consists of six sections (Sections A to E). Kindly respond to all questions by putting a tick (✓) in the box matching your answer or write your answer in the space provided if it is not included in the choices. The information given here will only be used for purposes of academic study and will be treated with utmost confidentiality. Your cooperation will be highly appreciated.

SECTION A: BACKGROUND INFORMATION

Questionnaire No.....

Date.....

1. Respondents name: (optional)

2. Please indicate your gender

Male Female

3. Level of education

Secondary Certificate College Diploma & Professional

University Degree Masters and Others

4. How many years have you been working in the steel industry?

0 - 10 years 11 - 20 years

21- 30 years Over 31 years

6. Which of the following age groups do you belong to

- | | | | |
|--------------------|--------------------------|---------------|--------------------------|
| Less than 25 years | <input type="checkbox"/> | 26-45 years | <input type="checkbox"/> |
| 46-60 years | <input type="checkbox"/> | Over 61 years | <input type="checkbox"/> |

7. To what extent does your organization promotes Kenya Bureau of Standard (KEBS) compliance?

- | | | | |
|-------------------|--------------------------|---------------|--------------------------|
| Very great extent | <input type="checkbox"/> | Great extent | <input type="checkbox"/> |
| Moderate extent | <input type="checkbox"/> | Little extent | <input type="checkbox"/> |
| Not at all | <input type="checkbox"/> | | |

8. In your views how would you rate the effect of Kenya Bureau of Standard (KEBS) regulation on the performance of steel companies?

- | | | | |
|----------------------|--------------------------|-----------------|--------------------------|
| Very effective | <input type="checkbox"/> | Most effective | <input type="checkbox"/> |
| Moderately effective | <input type="checkbox"/> | Least effective | <input type="checkbox"/> |
| Not effective at all | <input type="checkbox"/> | | |

SECTION B: TECHNOLOGY & INNOVATIONS.

To what extent do you agree with the following statements with regard to Technology & Innovations as a Kenya Bureau of Standard (KEBS) regulation factor that affects the performance of steel companies?

Use the following Likert scale: Strongly Disagree (1); Disagree (2); Neither Agree nor Disagree (3); Agree (4); strongly agree (5).

Please tick (✓) the numeric value corresponding to your personal opinion for each statement.

Statement relating to Technology & Innovations and its effect on performance of steel companies.	1	2	3	4	5
KEBS recommends a computerized production system of steel products.					
Customer are likely to ask for new and innovated quality steel products.					
Continuous product innovation maintains customer purchase loyalty to the certain products.					
KEBS demands an ecofriendly system of steel production.					

SECTION C: STANDARDIZED CONFORMITY.

10 To what extent do the following factors relating to Standardized Conformity affect the performance of steel companies?

Rate on a scale of 1 to 5 where 1= no extent, 2= little extent, 3= moderate extent, 4= large extent and 5 is to a very large extent.

Standardized Conformity	1	2	3	4	5
Same measurement in sizes and weight i.e. Y8,Y10					
Right material composition for steel products					
Uniform production system of steel products					

Indicate your level of agreement with the following statements relating to Standardized Conformity as a performance of steel companies?

Use the following scale: Strongly Disagree (1); Disagree (2); Neither Agree nor Disagree (3); Agree (4); Strongly agree (5)

Statements relating to Standardized Conformity	1	2	3	4	5
KEBS regulation requires continuous compliance to set standards.					
Steel companies are the hardest hit by non-conforming products in the market.					
Lack of standard conformity to size, colour, quality and appropriate weight proportion are key challenges to poor steel quality.					
Our steel products have been tested for conformity standards set by KEBS.					

SECTION D: SUPERVISORY

Indicate your level of agreement with the following statements relating to Standardized Conformity as a performance of steel companies? Use the following scale: Strongly Disagree (1); Disagree (2); Neither Agree nor Disagree (3); Agree (4); Strongly agree (5)

Statements relating to supervisory Policy	1	2	3	4	5
KEBS supervises productions operations oftenly					
Departmental managers are tasked to supervise productions					
All manufactured steel have Standard Mark Certificate issued by KEBS					
Supervisory and maintenance policy in the steel sector is one of the root cause of low quality materials used					

Annual renewal of license by the company enhances compliance					
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Section F: Firm Performance.

The following statements seek to get information on your firm performance during the last five years. Kindly tick in each category the number estimating to the best of your knowledge how your company compares to its close competitors in the industry over the last five years.

Financial performance

Statements	Lowest 20%	Lower 20%	Middle 20%	Next 20%	Top 20%
Gross profit (Kshs.)					
Return on investment					
Growth in market share					

LIST OF STEEL COMPANIES

Accurate Steel Mills Ltd
Apex Steel Ltd kenya
Associated Steel Ltd
Athi River Steel Ltd
Blue Nile Rolling Mills
Brollo Kenya Ltd
Devki Steel Mills Ltd
Doshi Enterprises Ltd.
Emco Steel Mills
Imara Steel Mills Ltd
Iron Africa Ltd
Kenya United Steel Company
King Steel Limited
Mabati Rolling Mills Ltd
Prime Steel Mills Ltd
Sabharwal Steel Mills Ltd
Steel Makers Limited
Tarmal Wire Products Ltd
Tononoka Rolling Mills Ltd
Top Steel Kenya Ltd