Technological Cost and Regulatory Framework and Uptake of Standards by Micro Small and Medium Enterprises in Kenya: A Case Study of Selected Enterprises in Nairobi County

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Abstract:- The purpose of the study was to investigate the technological factors and uptake of KEBS standards by micro small and medium enterprises in Kenya with specific reference to Nairobi County in Kenya. The specific purpose of the study was to determine how the cost of technology, technological competencies technological automation, and regulatory framework affect the uptake of standards by micro small, and medium enterprises in Kenya. A descriptive study methodology was used, and a case study approach was employed in the study to collect extensive and unambiguous data. Nairobi County was used with a target population of 2956 micro, small, and medium business enterprises. These were selected from the Kenya Bureau of Standards Product Certification office for firms with standardization marks since 2019. stratified random sampling techniques were applied to pick a sample of 296 MSMEs operating in Nairobi County. The data was corrected by use of open and closed questionnaires which were analyzed both qualitatively and quantitatively, where quantitative data was presented using tables and graphs while qualitative data was presented using descriptive notes. The findings from the analyzed data show that respondents agreed that the cost of technology technological competencies, technological automation, and regulatory framework affects the uptake of standards by micro small, and medium enterprises in Kenya. The sturdy recommended reduction in the cost of technology by lowering the price of equipment software and machines. There is a need to increase government funding for MSMEs and policies to support local production of equipment to ensure they are affordable for small businesses. Also, startup incentives and packages promote the use of KEBS Standards and the utilization of technology in production. This would result in a higher uptake of KEBS standards which has a positive correlation to economic development. This accelerates the growth of the manufacturing sector, creating employment, and increasing the GDP of the country. Higher profit due to quality products and services that are competitive in the market resulting in the growth of local production by micro, small, and medium enterprises. This is a huge milestone in opening up the country for industrialization and the attainment of sustainable development with economic, environmental, and social pillars.

I. INTRODUCTION

Micro, Small, and Medium-sized Enterprises (MSMEs)constitute the backbone of Kenya's economy, generating economic growth, job creation, and innovation. These businesses operate in a wide range of industries, from agriculture to technology, and are especially beneficial in rural and urban areas. They not only contribute significantly to the country's GDP but also provide employment opportunities to a significant portion of the population, thereby contributing to poverty reduction and wealth creation. Micro, small, and medium enterprises (MSMEs) are major drivers of economic development (Obi et al, 2018), being critical to the majority of economies around the world, particularly in emerging and developing economies (Ndiaye et al, 2018). MSMEs not only constitute the majority of businesses worldwide, but they are also the most profitable and significant creator of job opportunities and the country's economic prosperity.MSMEs account for nearly 90% of enterprises and more than 50% of global job creation. Furthermore, properly recognized MSMEs account for 40% of GDP in emerging nations. When unauthorized firms are included, the statistics are thought to be substantially higher.

In many emerging economies, MSMEs account for a sizable proportion of total employment, job creation, and GDP. According to a World Bank report (2019), formal MSMEs account for around 60% of total employment, nearly 80% of new formal job growth, and up to 40% of gross domestic product (GDP) in developing countries, excluding informal firms. Across the world, the globalization of the marketplace and the rapid improvement in high-quality products and services have brought about high levels of market pressure (Pamuji & Fachrodji, 2022). To become efficient and competitive in today's business environment, the majority of firms are being encouraged not only to change their old operational habits but also to develop better ways to ensure that customers are satisfied with the quality of products and services (Prasetya, 2023). As such, many firms have discovered that the key to customer satisfaction and competitive success lies in

emphasizing and achieving product and service quality as a strategic weapon in performing business.

Due to increasing competition and customer demand, organizations cannot afford to ignore the standardization as best method to ensure the quality of their services and products to boost their competitive position. Considering this, firms need to develop or adopt effective standards that are associated with quality initiatives such as standardization (Rohitratana & Boon, 2001). There is a growing trend among firms to use standardization measures across several aspects, including people, procedures, and technological systems. Using such standardization at the core enables organizations to achieve cost savings, enhance customer satisfaction levels, and enhance competitiveness. Standardization is referred to as set activities that can be applied to all business sectors and sizes of companies. A business is viewed as a set of processes, identifying key areas that need to be addressed for effective quality management. Moreover, quality management systems are designed to provide the support and mechanisms for the effective accomplishment of quality-related activities in organizations (Klefsjo, Bergquist & Edgerman, 2006). In a broader sense, Goetsh and Davies (2005) indicated that standardization consists of all the organization's policies, procedures, plans, resources, processes, and delegation of responsibility and authority, deliberately organized, and aimed at achieving product or service quality levels consistent with customer satisfaction and organization's objectives. When these policies, procedures, and plans, are taken together, they define how the firm works, and how standards are met and managed.

II. STATEMENT OF THE PROBLEM

Standards add to the broad "knowledge stock" of an economy, improving the efficiency of capital or labor (or both). Standards also have an impact on other outcomes that are directly tied to economic activity, such as international commerce and innovation. Kenya's MSME provides goods and services, promoting competition, stimulating innovation, providing employment, and, ultimately, alleviating poverty which is a development strategy that aims to transform Kenya into an industrialized middle-income country capable of providing a high-quality life for all of its residents. Kenya's Vision 2030. The MSMEs account for over 40% of the country's GDP, with the bulk operating in the informal sector. While Kenya has around 7.41 million MSMEs, only 1.56 million are licensed, leaving 5.85 million unlicensed. The MSME sector has been identified and prioritized as a key growth driver for achieving the Kenya development blueprint's objectives. (Kenya National Bureau of Statistics 2016).

Kenya Bureau of Standards a government Agency has developed ten thousand (10, 000) standards over the years to add to the knowledge stock of the country to spur economic development. (Esther Ngari MD KEBS 2023). Out of this huge achievement,less than one thousand (1,000) standards are in use. The National Standards Council (NSC) and the management of the Kenya Bureau of Standards have the responsibility to make sure standards are utilized fully by all

players in the economy which will result in an increase in productivity for both goods and services, this will increase the country's share of the regional and international market and boost economic development. (Peter Munyiri NSC Chairman 2023). This need has birthed this research on technological factors and the uptake of KEBS standards among MSMEs with a focus on Nairobi County.

III. OBJECTIVE OF THE STUDY

- To find out how the technological cost of technology affects the uptake of standards by micro, small, and medium enterprises in Kenya.
- To assess how the regulatory framework affects the uptake of standards by micro, small, and medium enterprises in Kenya.

IV. THEORETICAL FRAMEWORK

A. Schumpeter's Theory of Innovation

According to Schumpeter's Theory, business innovation is the primary cause of increasing investments and business volatility. According to Schumpeter, the cyclical process is virtually entirely the consequence of organizational, both industrial and commercial, innovation. He defines innovation as changes in manufacturing and transportation methods, the manufacture of a new product, a change in industrial structure, the opening of a new market, and so on. Innovation does not mean invention rather it refers to the commercial applications of new technology, new material, new methods, and new sources of energy. Schumpeter has developed a model in two stages, i.e., first approximation Schumpeter created a model in two stages, first approximation and second approximation.

The first approximation emphasizes the basic influence of new ideas, whereas the secondary approximation focuses on the outcomes of applying the innovations. Let's examine these phases in more detail: Initial Approximation The economy is in equilibrium at the start of this stage, with no involuntary unemployment, a firm's mc = mr (marginal cost equal to marginal revenue), and a price equal to the average cost (AC). If a company wants to deploy a new manufacturing method when the economy is in full swing, the project must be funded using bank credit. Because the economy is in balance, there is no surplus money available to support the new venture.

With the increased cash from the banking system, the corporation continues to bid higher prices for inputs to withdraw them from less important applications. As economic activity grows, the price begins to rise. This process is accelerated when other businesses strive to replicate the breakthrough and obtain further capital from the financial system. When an idea is broadly embraced, its output begins to flow into the market. This marks the beginning of wealth and expansion. However, once output levels go beyond a certain threshold, pricing, and profitability plummet. This marks the beginning of wealth and expansion. However, beyond a certain point, when output levels rise, the price and profitability fall. Because new ideas take time to develop, there will be no more demand for the currency. Instead, the companies that

borrowed money from the bank started returning it. This leads the money supply to contract, which causes prices to fall more.

A recession begins, continues, and lasts until the economy is restored to equilibrium. The waves generated by the first approximation are the subject of the second approximation. The key component of the second approximation is speculation. When the initial wave of expansion begins, the investor, particularly in the capital goods industry, believes that the upswing will persist indefinitely and hence borrows heavily. Even those who expect future price increases incur debt to purchase durable consumer goods. When prices begin to fall, this high level of debt proves disastrous. Due to the difficulty in fulfilling obligations, both investors and consumers experience panic, followed by sadness The following are some criticisms of Schumpeter's theory of innovation: Because its logic is more reliant on social than economic elements, Schumpeter's theory of the business cycle is difficult to objectively examine and thus unreliable. The primary difference between Schumpeter's theory and the overinvestment hypothesis is the rationale for variance in investment when the economy is in a stable equilibrium. This hypothesis omits additional elements that affect changes in economic activity, just as in other business cycle models. Innovation is just one of many elements that affect the economy; it is not the only one. Despite these limitations, Schumpeter's theory of innovation is largely accepted in the industry.

Innovational actions are now widespread, and they do not require a specific agent, such as an innovator, to carry them out. As a result, Schumpeter exaggerated the role of the creator in his model. Schumpeter presented the dubious claim that bank credit is used to fund inventions. Banks typically provide short-term loans. He assumes that borrowing from credit-creating institutions is how innovations are funded. His arguments are compelling, but not fully convincing. According to this theory, the rational behaviour of the intellectual class and inventors is what makes capitalism successful. According to Schumpeter, the major driver of economic growth is innovation. This notion, however, is far from reality because a country's economic success is dependent not only on inventions but also on a variety of economic and social factors.

B. Resource-Based Theory

MSEs' access to resources, according to the resource-based theory of entrepreneurship, is a significant indicator of opportunity-based entrepreneurship and the creation of new MSMEs (Alvarez & Busenitz, 2001). According to this theory, youth-owned MSMEs need financial, social, and human resources to support them (Aldrich, 1999). As a result, having access to resources allows MSMEs to notice and capitalize on new opportunities. It is also important to mention that resource-based entrepreneurship theories, which are critical in determining MSMEs' expansion, constitute three types of theories under the headings of financial, social, and human capital.

According to Nkansah (2011), This idea discusses how entrepreneurs build their businesses with resources they already have or are willing to acquire to gain a long-term competitive advantage and growth opportunities. According to the resource-based approach, selecting the correct firm to start and the industry to enter does not ensure successful business growth. According to the hypothesis, the nature of resources, and thus their quality, might influence an entrepreneur's ability to succeed in the long run. The resource-based approach recognizes six basic categories of resources: financial, physical, human, technological, reputational, and organizational.

The six resource categories include all assets, capacities, organizational processes, company characteristics, information, and knowledge (Nkansah, 2011). The notion goes on to highlight that tangible assets are items that can be physically seen and judged. Plant and machinery, real estate, stocks, and financial assets are all examples of assets. (Debtors, creditors, take advantage of hand, and at the bank) are among them. Intangible assets, according to the article, are anything that cannot be seen or measured. For instance, organizational routines and procedures desire to structure and coordinate reputational resources like as networks, individual and group talents, interactions, brands, and goodwill in addition to trademarks, patents, and organizational goodwill.

The concept also mentions how contacts with, and knowledge gained from suppliers, consumers, competitors, and organizations like universities are crucial external resources for the development of business businesses (Simpeh, 2011). The following are some of the most common critiques levelled towards the resource-based viewpoint: The resource-based viewpoint is self-evident. Different resource arrangements can produce the same value for enterprises and so provide no competitive advantage. In the argument, the function of product marketplaces is underdeveloped. Resource-based theory also highlights the sustainability of competitive advantages derived from unique resources. Since competitors find it challenging to replicate these resources, they are more likely to endure over time, contributing to long-term success. Moreover, the theory acknowledges the necessity of dynamic capabilities—ongoing adaptability and the ability to evolve resources—to maintain competitiveness in a changing environment.However, Resource-Based Theory has faced criticism. Some contend that the theory assumes a level of resource heterogeneity that may not be universally applicable. In some industries or sectors, resources may be relatively homogeneous, reducing their potential as sources of competitive advantage.

V. EMPIRICAL REVIEW

A. Technological cost

To name a few obvious life-changing technologies, consider jet flight, climate control, the internet, FaceTime, Zoom, streaming video, search engines, and electric automobiles. Most individuals could not have envisioned the conveniences we have today a century ago. The way we live in the developed world of the twenty-first century appears to

be a dream. Technology has revolutionized economic life; an increasing proportion of people work in the service sector rather than manufacturing food, clothing, or shelter, which traditionally dominated economic life. We have moved away from manual labor and toward a brain-based economy. Some service industry workers, such as health care professionals, educators, and others who provide and care for others, interact with customers and clients. Technologies also cause harm due to their misuse or because they tend to expose people to risk. For example, for many years, automobile accidents were the leading cause of childhood deaths in the United States. Recently auto-related deaths were replaced by gun-related deaths as the leading cause of childhood death. As Dustin Jones reported last April on NPR's website: They deliver food, but an increasing number do support, creative, analytic, or administrative jobs that may be performed well at home or virtually anywhere. That was a significant takeaway from the COVID-19 pandemic. Work can now be separated from the office thanks to advancements in internet, cloud, and cell phone technologies, as well as low-cost information and processing technology. When a worker is responsible for caring for family members, this provides the benefits of flexibility. It has the advantage of reducing commuting expenses and time. However, it incurs costs in organizational management and in dividing work and family life. You never leave work when you work from home, and work never leaves you.

"Auto accidents have been the leading cause of death among children for decades, but researchers say guns will be the leading cause in 2020." According to a research letter published in the New England Journal of Medicine, overall firearm-related mortality increased 13.5% between 2019 and 2020, whereas such deaths for those aged 1 to 19 surged over 30%. Researchers examined statistics from the Centers for Disease Control and Prevention, which revealed that there were a record 45,222 firearm-related deaths in the United States in 2020. According to Patrick Carter, one of the research letter's writers and co-director of the University of Michigan's Institute for Firearm Injury Prevention, nearly 10% of those killed — 4,357 in total — were children... Vehicle accidents were the primary cause of child deaths for more than 60 years. But over time, cars have become safer and driver education has improved."

New technologies have advantages in social, cultural, and economic life, but they can have drawbacks. These expenses must be handled carefully and comprehended. As a result of air travel and the emergence of a global economy, COVID-19 had an impact on the world. We are delighted to reap the benefits of new technologies, but we criticize scientists who seek to comprehend and manage the costs. New technologies have the potential to both safeguard and devastate the planet's ecosystems and resources. Power plants harm the air; however, stack scrubbers can help to reduce pollution. Catalytic converters reduce the number of pollutants produced by internal combustion engines. Electric vehicles do not require catalytic converters, and solar cells do not require stack scrubbers; as technology advances, it presents new benefits and expenses. A Kenyan Standard is a document created by consensus and then it is approved by the Kenya Bureau of Standards (KEBS) to achieve the highest level of order. It includes rules, norms, or qualities for goods and services, as well as related procedures or manufacturing techniques. It may also include or be limited to language, symbols, packaging, marking, and labelling specifications as they pertain to a certain commodity, operation, or manufacturing technique. Therefore, standards aid in ensuring that goods and services are appropriate for their intended use, comparable, and compatible.

Standardization Mark is a mandatory product certification procedure for domestically manufactured items, according to Section 10 of the Standards Act, Cap. 496, Laws of Kenya. Manufactured goods must adhere to quality standards outlined in the different Kenya/Approved Standards to receive the mark. A company is granted permission to use a Standardization Mark to certify that a specific product complies with a Standard's standards. KEBS Strategic plan, 2023/2027. Quality Import Standardization Mark. Mark ISM Since August 1st, 2015, KEBS has created and implemented secure Quality Marks/stickers that include Software for tracking and tracing. The project's purpose was to address widespread counterfeiting of KEBS Quality Marks by developing a platform that would allow KEBS to evaluate and verify products wearing its Quality Marks in real-time while they were in use. The technology will also give customers access to an internet platform where they Before making a purchase, can immediately verify the accuracy of the certification of goods. The initial phase of the project focuses on all imported items meant for local market sales.

B. Regulatory Framework

The Micro and Small Enterprise (MSE) sector has been highlighted as the backbone of Kenyan economic development, accounting for 24% of the country's GDP, over 90% of private sector firms, and 93% of the entire workforce. Among the MSE Policies that have been developed over the years are: The Sessional Paper No. 10 of 1965 on African Socialism and its Application to Planning in Kenya was envisaged in 1965 as a long-term planning tool for socioeconomic development and poverty, ignorance, and disease eradication. Following this, the Kenya Industrial Estates (KIE) was formed in 1967 as a subsidiary of the Industrial and Commercial Development Corporation (ICDC), with a primary role in supporting indigenous businesses. Financing and developing small-scale and micro-enterprises benefits and costs. Through Sessional Paper No. 02 of 1996 on Industrial Transformation to the Year 2020, the Government set out to establish the groundwork for industrialization in 1996. This Sessional Paper outlined the national policies and strategies needed for Kenya to join the League of Newly Industrialized Countries by 2020. The Government established a comprehensive reform plan in 2003, as outlined in the Economic Recovery Strategy for Wealth and Employment Creation (ERS) 2003-2007. Priorities included lower regulatory compliance costs, formalization, access to workplace and quality infrastructure, domestic and international market access, and collaboration with medium and big firms.

The following policy paper on MSE development was Session Paper No. 2 of 2005 on the Development of Micro and Small Enterprises for Wealth. This Sessional Paper provided a policy framework for supporting R&D to increase MSEs' access to appropriate technologies, encourage innovation, and promote product design, development, and quality control, allowing MSEs to increase their share of both export and domestic markets through increased linkages with large enterprises. The Small Business Act resulted in the passage of the Micro and Small Enterprise Act by Parliament in 2012 and the establishment of the Micro and Small Enterprises Authority (MSEA) in March 2013 to coordinate, facilitate, and implement the integration of various public and private sector initiatives for the promotion, development, and regulation of Micro and Small Enterprises in Kenya for them to become key industries. The Micro and Small Enterprises Authority, in collaboration with the Ministry of Industrialization, Trade, and Enterprise Development, has made significant progress toward the realization of the objectives stated in the Micro and Small Enterprises Act No. 55 of 2012 (the 'Act'), particularly the development and implementation of policies to foster the development of Kenya's MSE sector.The Authority is also nearing completion of the registration procedure on the E-Citizen platform. This is intended to streamline the process and bring services closer to MSEs, particularly disadvantaged populations.Infrastructure for Micro and Small Enterprises (Section 47 of the Act). The Authority is tasked with facilitating the construction of MSE infrastructure, such as work sites, social amenities, business information centres, model centres of excellence, and common usage facilities. Through this duty, the Authority has developed/renovated roughly 158 micro and small enterprise infrastructure sites. Forty of these sites have been outfitted with typical user equipment.

MSEA also created the Kariobangi Centre of Excellence, a model business information centre for micro and small businesses. To increase the value of agricultural output and safeguard farmers from post-harvest losses, the Authority is establishing cold storage and processing facilities in three agricultural counties: Nyandarua, Meru, and Kisii, all of which are focused on potato farming. The Authority has drafted the Micro and Small Enterprises (Infrastructure) Regulations, 2019 and the Micro and Small Enterprises (Registration) Regulations, 2019 to improve the administration of infrastructure facilities.The framework includes ten important objectives for creating an integrated enabling environment for the establishment and development of competitive MSEs. The devolved governance structure, which has decentralized public services and roles in the development of infrastructure, entrepreneurship, and commerce, is one of the growing challenges that have been mainstreamed in MSE policy. It also contains new regional and global sector policies such as the EAC Vision 2050, the AU Agenda 2063, and the Sustainable Development Goals. As a result, policy interventions are matched with the goals of improving MSEs' competitiveness, productivity, and sustainability in supporting the economy through the provision of goods and services, decent jobs, income, and wealth development. More information on the Policy can be found here.

The functions of KEBS as mandated by the Standards Act, Chapter 496 of the Laws of Kenya are inter alia: To promote standardization in industry and commerce. To make arrangements or provide facilities for the testing and calibration of precision instruments, gauges, and scientific apparatus, for the determination of their degree of accuracy by comparison with standards approved by the Minister on the recommendation of the Council, and for the issue of certificates in regard thereto; To make arrangements or provide facilities for the examination and testing of commodities and any material or substance from or with which and the manner in which they may be manufactured, produced, processed or treated; To control, in accordance with the provisions of this Act, the use of standardization marks and distinctive mark; To prepare, frame, modify, or amend specifications and codes of practice; To encourage or undertake educational work in connection with standardization; To assist the Government or any local authority or other public body or any other person in the preparation and framing of any specifications or codes of practice; To provide for co-operation with the Government or the representatives of any industry or with any local authority or other public body or any other person, with a view to securing the adoption and practical application of standards; To provide for the testing at the request of the Minister, and on behalf of the Government, of locally manufactured and imported commodities with a view to determining whether such commodities comply with the provisions of this Act or any other law dealing with standards of quality or description.

Therefore, the key role of the Kenya Bureau of Standards is the Provision of the country's Quality Infrastructure for the facilitation of trade: In the present era of Trade Globalization, market entry requires compliance to international standards and evidence of such compliance through internationally recognized Standards, Measurement Systems (Metrology), Conformity Assessment and Accreditation. Support of Kenya Industries: A functioning quality infrastructure helps to increase productivity in manufacturing and service delivery. This helps to create jobs, encourages investment, and promotes the careful use of natural resources.

C. Conceptual Framework

A conceptual framework is a diagrammatic representation showing the hypothesized association between variables of study. In this study, it illustrates the interaction between the Cost of Technology, andRegulatory frameworkas independent variables and the Uptake of Standards by micro, small, and medium enterprises as the dependent variable as shown in Figure 1.
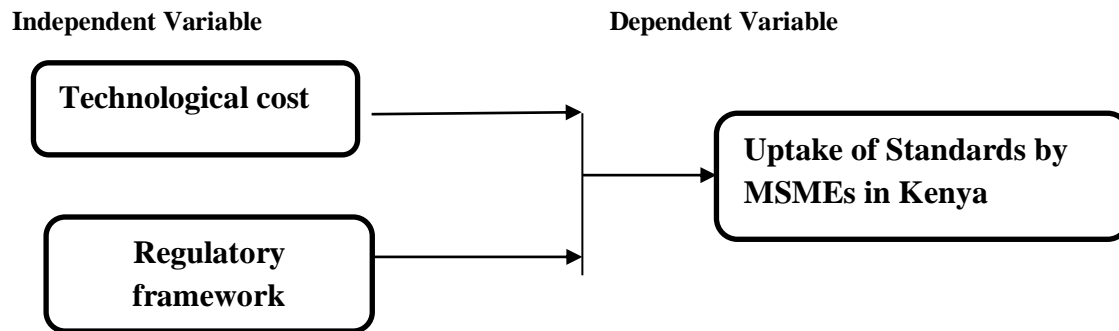
Independent Variable

Dependent Variable

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┌─────────────────────────┐
│   Technological cost    │ ──────┐
└─────────────────────────┘       │
                                  ▼
                          ┌─────────────────────┐
                          │  Uptake of Standards by │
                          │  MSMEs in Kenya         │
┌─────────────────────────┐       ▲
│      Regulatory         │ ──────┘
│      framework          │
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Fig. 1: Conceptual Framework

VI. METHODOLOGY

Research design, according to Jope (2012), is the systematic plan or framework that determines the form and nature of a study. For this examination, a descriptive study methodology was used, which included a scientific approach to data collection by seeing and documenting the subject's behaviour without interfering with it (Shuttleworth, 2008). A case study approach was employed in the study to collect extensive and unambiguous data. The case study method enables the researcher to concentrate on a specific issue for in-depth analysis, resulting in a one-of-a-kind research design. The researcher was able to conduct a more full and exhaustive analysis by focusing the study on the Pioneer Network project as a case study. The target population is defined by Kombo and Tromp (2006) as a separate cohort of individuals, things, or objects. that serves as the basis for selecting a sample to perform a measurement or research. Nairobi County is the target population of 2956 micro, small, and medium business enterprises. These are the firms that were issued with a standardization mark (S-mark) whether valid or expired from the year 2019 to date (KEBS S-mark data 2023).

According to Kothari (2011), sampling is the selection of a subset of the population to represent the entire population. A representative sample is thought to reflect at least 10% of the entire population and is suitable for data collection. The number of respondents chosen using a sampling approach is referred to as a sample. As stated in the table below, the sample size for this study is 10%. Table 4 displays the sample size. A questionnaire was the primary data-gathering instrument in this study. The questions were purposefully crafted to correspond with the research aims. Subsequently, the essential information was dispatched to the participants. The questionnaires included two distinct parts. The initial stage of this research was gathering demographic information from participants. Additionally, it included an examination of the particular factors under investigation and, the cost of technology. Technological competence, technological automation, and regulatory framework. The questionnaire used a Likert scale which was beneficial because it allows qualitative responses to be converted into quantitative values. This includes the alternatives of highly agreeing, agreeing, neutral, disagreeing, or strongly disagreeing.

To ensure the accuracy and consistency of the collected data, the researcher performed preprocessing by editing and correcting any errors or omissions in the completed questionnaires. The collected data was then classified based on common attributes and organized into statistical tables for further analysis. The study used descriptive statistics, including frequencies, percentages, and means, to provide a comprehensive representation of the data. The research used inferential statistical methods, such as Pearson correlation and multivariate regression analysis, to examine the relationships between variables. Statistical analysis was performed on the carefully structured dataset using SPSS Version 27.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

Where, Y=uptake of KEBS standards
β_0= Constant
β_1, β_2, = Coefficients of X_1 and X_2 respectively
X_1 = cost of technology
X_2 = Regulatory framework
ε = Error term

VII. FINDINGS AND DISCUSSION

The study targeted a sample of 296 respondents that involved operators and owners of MSMEs operating within Nairobi County from different sectors. However, out of the 296 targeted respondents, 218 filled out the questionnaire, contributing to a response rate of 74%. This response rate was deemed sufficient for data analysis. According to Mugenda and Mugenda (2003), a response rate of 50% is adequate for analysis and reporting, 60% is good, and a response rate of 70% or higher is excellent. Twenty-six (26%) of the questionnaires were not returned despite numerous calls and follow-ups, with most of the respondents citing that they could not manage to respond to the questionnaire. Some of the respondents were reluctant to fill out the questionnaire for fear that their business may be targeted by the government due to failure of complying to a given policy of regulation unknown to them.

The findings display the gender of the participants. Based on the provided data, it can be seen clearly that a notable number of participants (53%) were identified as male, whereas the remaining respondents (47%) were female. This finding illustrates a disparity in gender representation within the realm of MSMEs, with a greater number of males being actively involved in small businesses as compared to female counterparts. The majority of

respondents (39%) had attained a secondary certificate as their highest qualification, 28% had attained a primary education level 19% had attained a diploma or a certificate as their education highest level, 10% were undergraduate and 4% were postgraduate. This shows that most of the MSME owners and operators held secondary certificates as their highest education level.

A. Descriptive Statistics

Table 1: Technological cost

	Mean	STDev
The high cost of technology connection and lack of know-how to use the technology for business purposes play a key role in the uptake of standards by MSMs in Kenya.	3.98	1.120
Technology infrastructures are costly and hinder the uptake of standards by MEMEs in Kenya.	3.63	1.216
The cost of a monthly broadband subscription influences the uptake ofstandards by MSMEs in Kenya.	3.65	1.214
The cost of technology installation is very high and influences the uptake of standards by MSMEs in Kenya.	3.70	1.153
The maintenance cost of technology influences the uptake of standards by MSMEs in Kenya.	3.62	1.240
Average	3.71	1.188

The results obtained are summarized in Table 1. Respondents were presented with five statements on cost technology-related aspects. According to the findings, it was established that respondents agreed that the high cost of technology connection, andpoor knowhow for the use the technology forbusiness purposes plays a key role in the uptake of standards by MSMEs in Kenya (M-3.98), respondents also agreed the cost of technology installation quite high and influence uptake of KEBS standards (M-3.70). Likewise, respondents agreed that the cost of a monthly broadband subscription influences the uptake of KEBS standards (M-3.65). Respondents agreed that technology infrastructure is costly and influences the uptake of KEBS standards and that the maintenance cost of technology influences the uptake of KEBS standards (M-3.63 and M-3.62), respectively. Also,the average mean score (3.71) and the standard deviation (1.188) indicated that respondents agreed with the aspects related to the cost of technology on the uptake of KEBS standards. The mean ranges between 3.62 and 3.98, showing that the respondents agreed that the cost of technology influences the uptake of standards by MSMEs in Kenya.In addition to this, the standard deviation ranges within 1.120 and 1.240 boundaries, which is above 0.5, which means the study data are homogeneous.

Table 2: Regulatory Framework

	Mean	STDev
The government have developed favourable policies to help MSMEs in the uptake of KEBS standards	1.67	0.692
There is strict government funding in place to support MSMEs in the uptake of KEBS standards	2.70	1.411
Training curricula on KEBS standards are favourable to MSEs	2.94	1.411
Requirements set for MSMEs to meet for it to be considered for KEBs standards are attainable.	2.98	1.427
Incentive policies set for MSMEs are accommodative thus enhancing the uptake of KEBS standards	2.74	1.493
Average	**2.61**	**1.287**

The results obtained are displayed in Table 2 shown above. According to the findings of the respondents they strongly agreed that the government supports MSMEs in the uptake of KEBS standards through developing favourable policies as expressed by the mean score of 1.67. Respondents agreed that there is strict government funding which is in place to support MSMEs in the uptake of KEBS standards (M-2.70). Incentives policies set for MSMEs are accommodative thus enhancing uptake of KEBs standards, Requirements set for MSEs to meet for it to be considered for KEBs standards are attainable, and that Training curriculum on KEBS standards is favourable to MSMEs (2.94, 2.98 and 2.74) respectively. The average mean score (2.61) and standard deviation (1.278) imply that the respondents strongly agreed regulatory framework influences the uptake of KEBS standards among MSMEs. The mean ranges between 1.67 and 2.98, implying a strong relationship between aspects covered in the study on uptake of KEBS standards. In addition, the standard deviation ranges between 0.692 and 0.493 and is beyond 0.5, which implies that the data.is homogeneous in this study.

B. Multiple Regression Analysis

Table 3: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.296a	.087	.079	.47561
a. . Predictors: (Constant), regulatory framework, cost of technology				

According to the results that are displayed in Table 16, the value of R2 is 0.505, which demonstrates that the investigated four independent variables for this study contribute to 50.5% of the uptake of KEBS standards among MSMEs. This suggests that the remaining 49.5% of the uptake of KEBS standards among MSMEs is attributable to other factors that were not investigated in this study.

Table 4: ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.663	2	2.331	10.306	.000b
	Residual	48.634	215	.226		
	Total	53.296	217			
a. Dependent Variable: ST						
b. Predictors: (Constant), regulatory framework, cost of technology						

An analysis of variance (ANOVA) was also computed to establish whether the model was significant in explaining the relationship between dependent and independent variables in the study. According to Table 10, p is less than 0.05 (0.000) indicates that there is sufficient evidence that the model is useful in explaining the technological factors influencing the uptake of KEBS standards. Likewise, the F calculated (54.280) is greater than the mean square (6.927), an indication that the model is statistically significant in predicting the technological factors influencing the uptake of KEBS standards among MSMEs in Nairobi County.

Table 1: Regression Coefficients

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.531	.115		22.030	.000
	Cost of technology	.501	.044	.236	2.365	.000
	Regulatory framework	-.014	.038	-.023	-.359	.720
a. Dependent Variable: Uptake						

Significant regression weights were observed for four independent variables. Unstandardized coefficients were included in the regression model because they were easy to perceive and comprehend and because their use in calculations and analyses was preferred (Siegel et al., 2016). Cost of technology had a coefficient of 0.501 and $p < 0.05$ (0.001), while regulatory framework had a coefficient value of 0.014 and $p < 0.05$ (0.000). The study also found that all p-values for the cost of technology were less than 0.05, an indication that the cost of technology determines the uptake of KEBS standards whereas for regulatory framework as is currently has little contribution to the uptake of standards.

Therefore, the regression equation is.
$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

Where:
Y is the dependent variable – uptake of KEBS standards,
B0 is the regression coefficient/constant/Y-intercept,
β_1, β_2, are the slopes of the regression equation,
X_1 is the cost of technology,
X_2 is the regulatory framework,
ε is an error term
Therefore, the regression equation was.
$$Y = 1.902 + 0.501 X_1 + 0.014 X_2 + \varepsilon$$

VIII. CONCLUSION AND RECOMMENDATION

The sturdy established technological factors and uptake of Standard by micro small and medium enterprises in Kenya. These findings suggest that uptake of KEBS standards among MSMEs is influenced by technological factors of which two are discussed by this study, that is, cost of technology and regulatory framework. This study contributes to 57.2% of the uptake of KEBS standards among MSMEs. The analysis was statistically significant in predicting the technological factors influencing the uptake of KEBS standards among MSMEs in Nairobi County. There was also an indication from the regression coefficient that the cost of technology, and regulatory framework determine the uptake of KEBS standards. The study concludes that there is a positive correlation between the cost of technology and the uptake of KEBS standards among MSMEs in Nairobi County. However, the high cost of technology connection and lack of business knowledge were key factors in the uptake of KEBS standards. Other factors such as installation, infrastructure, and monthly broadband subscription also influenced the adoption of KEBS standards among MSMEs. These findings highlight the importance of understanding and addressing technology costs in promoting business adoption and increasing the production of quality goods and provision of better services.

The study also noted there is a low positive correlation between the regulatory framework and the adoption of KEBS standards. The government supported MSMEs by developing. favourable policies and strict funding. The study also revealed that incentive policies are achievable. requirements for KEBS standards and favourable training curricula on KEBS standards were effective in enhancing the uptake of KEBS standards among MSMEs. Most of the respondents did not agree with the sturdy questions.

The cost of technology should be reduced to a greater extent, and the price of equipment tools, and machines should be reduced or subsidized. This is both hardware and software. There is a need to support local production of equipment to ensure they are affordable for the small business and startups.Government incentives and packages to promote the use of KEBS Standards and the utilization of technology in production should be encouraged. The government should come up with deliberate policies geared to influence the entire population to use standards for both products and services to boost economic development. The issue of standards should be entrenched in school curricula and registration to be done to support local production through standards.

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