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Amwayi W. O., & Gitau, R.

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DRIVERS OF NATIONAL STANDARDIZATION PROJECTS AND THEIR UPTAKE IN THE MANUFACTURING SECTOR IN KENYA

Amwayi W. O.,[1*] & Gitau, R.[2]

[1*] Scholar, Master of Science in Project Management, Jomo Kenyatta University of Agriculture and Technology [JKUAT], Kenya

[2]Ph.D, Lecturer, Jomo Kenyatta University of Agriculture and Technology [JKUAT], Kenya

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ABSTRACT

This research aimed to establish the drivers that affect the uptake of Standards in the manufacturing sector in Kenya, with specific objectives being to find out how project portfolio management, stakeholders' management, organization process assets and enterprise environmental factors affect the uptake of Kenya Standards. The research was hinged on Complexity theory, organization theory, efficient frontier approach and Multi criteria utility theory. The target population for this study was 20, 671 where 5,983 of them were small manufacturers while 14, 688 of them were large manufacturers that were actively in production and were certified KEBS. The data was collected using structured questionnaires that were issued to the heads of production in various companies. The uptake of these Standards were determined then stratified into four main disciplines based on KEBS structure of technical sections i.e. Engineering, Food and Agriculture, Chemical and Services sections. From each stratum, entire number of the standards was considered for the purposes of this study, of which the data was collected from the respondents (Standards buyers) by the use of a semi structured questionnaire. The data obtained was analyzed using SPSS version 20 and results presented in form of tables and graphs. The study concluded that projects portfolio management, stakeholders' management, organization process assets and enterprise environmental factors all have an influence in the uptake of Standards in the manufacturing sector in Kenya. The study recommended that relevant departments in KEBS should adopt better project portfolio management, stakeholders' management, leverage on organization process assets and enterprise environmental factors to realize higher uptake of Standards in Kenya.

Key Words; *Project Portfolio Management, Stakeholders' Management, Organization Process Assets, Enterprise Environmental Factors, Uptake of Kenya's Standardization Projects*

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INTRODUCTION

In the current globalized economy, nations world over are inter-dependent. They not only depend on one another for imports and exports, but also for any international instruments that promote such interchange. There is a growing connection between a nation's economic wellbeing and its performance at the international market place and as a result, many governments across the globe are implementing policies and practices that ensure their industries compete successfully. One such mechanism to advance industrial competitiveness is through standardization. According to Foresight International Policy and Regulatory Advisers (FIPRA) (2010), standardization is basic co-operative human activity that ranges from exchange of goods and services to the use of common measures. De Vries (1997) describes standardization as the activity of creating a standard. National Standards bodies ascribe to the official definition laid out by International Organization for Standardization and International Electro-Technical Commission (ISO/IEC). It defines standardization as the process of establishing provisions and mechanisms for similar and continuous usage with the intention of achieving the highest possible level of order in a specific context. This process involves the formulation, issuance and implementation of standards. Standardization aids in improving the suitability of products, services and processes for their intended purposes thereby reducing the barriers to trade and easing technological cooperation (ISO, 2004).

Project Management Institute (PMI) (2008) defines a project as temporary endeavour undertaken to create a unique product or service and that a project has a defined beginning and end in time with defined scope and resources. Kerzner (2013) defines a project as any series of activities and tasks that have specific objectives to be completed within certain specifications, cut across different function lines, have specified amount of budget, have start and end dates, involve both human and non-human resources. For an activity to qualify as a project it should have following attributes; finite time span, results to something new, has some degree of uncertainty, possess a clear objective and involve utilization of resources (PMI, 2008).

A generic project has a cycle of four phases namely; initiation phase, planning phase, performing phase/execution phase and closing phase, with each of the four phases varying in terms of effort and time. Project life cycles vary in terms of time; it can range from a few days to weeks to several years depending on the content, complexity and magnitude of the project (Clements and Gido, 2014). Standards development is a typical project management process. Standards are developed at various levels; International level, Regional level, National level and at company level. They are developed in series of steps that can be put side by side to those of conventional projects. According to ISO procedures, international Standards are developed through the following process: proposal stage which is confirmation stage that confirms that a new Standard in the subject area is really needed; Preparatory stage which is the preparation of a working draft by the working group; Committee Stage which is usually an optional stage in the standard development process where the draft is shared by the parent committee ; Enquiry Stage where the draft international standard is circulated to all ISO members who are then given 3 months to vote and comment on it; approval stage and finally Publication stage (ISO, 2014).

At national level, Standards are developed through similar steps as those at international level with some more additional steps, De vries (1999) through the Dutch experience, notes that the Standard development process at national level undergoes ten steps mainly; request (based on a particular need), assignment to the relevant committee , drafting of the standard, public comment, review of comments from the relevant stakeholders, approval by the

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national Standards body, publishing, publicity, implementation, and evaluation. Cargill (2011) postulates that Standards development takes five stages, namely: pre conceptualization, conceptualization, discussion, writing and implementation of the Standards.

Macroeconomic studies indicate that there is positive influence on Standards to economic growth, in that Standards contribute to the growth rate in each country equivalent to 0.9% in Germany, 0.8% in France and Australia, 0.3% in the United Kingdom and 0.2% in Canada (German Institute for Standardization, 2011). Development of Standards for products, systems and processes across the world has become a significant matter the countries all over the world are taking a very keen interest. The Organization for Economic Co-operation and Development (OECD) (2015) noted indicate that Standards conformity assessment affects more than 80% of world trade, right from conceptualization, production, supply to merchandizing of products and services. Standards will affect at least one point of the supply chain. According to the American National Standard institution (ANSI) (2011), the today's business climate is global in nature and scope and therefore any standardization system has to evolve rapidly to keep pace with the demands of the current market place.

Non-compliance with international standards deprives African farmers' access to key international markets, and may lead to a further reduction in global market share especially in agricultural products like horticulture and fisheries, and light manufactures like textiles. Without addressing market access and international standards compliance issues, African firms and farmers will be unable to take full advantage of recent market opening initiatives such as the United States African Growth and Opportunity Act and the European Union's Everything but Arms initiative (Cargill, 2011).

The development of Kenya Standards follows a series of steps stated in the Kenya Standard; *KS 01-1: 2010 , A standard for Standards*, the standard outlines; the preparation of the Kenya Standards, states concepts and principles behind the development of Kenya Standards, gives the acceptance criteria of Kenya Standards, the standard development stages, composition, roles and responsibilities of technical committees, the process of participating in developing international Standards which are relevant to Kenya, appeal process for the resolution of disputes arising from the standard development, the process for maintaining Kenya Standards, copyright policy and patent policy (GOK, 2005). Kenya Standards can be developed through several ways; justification of development of a standard through committee draft, through adoption of existing international Standards, adopting regional Standards, Development of publicly available specification, development of company Standards and development of national workshop agreements (KEBS, 2010).

Statement of the Problem

Standards development and by extension institutions given the mandate to do so is an essential element of the technological and economic infrastructure of a nation and by a greater extent influences competitive ability and strategies of companies (German Institute for Standardization, 2000). Standards development process in Kenya is funded by state, and since its establishment in 1974, KEBS has developed 7678 Standards and continues to develop more Standards, it is expected that these Standards are not only a manifest of market needs but also developed to solve specific matching problems. Before any standardization project is initiated, KEBS determines that there is need to undertake development of a particular standard and this is included in the national strategic plan for standardization (Cheruiyot, 2014). The Technical Committee (TC) secretary prepares a justification explaining; why the standard is needed

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including parameters like; the economic benefits, commercial/industrial need, safety, environmental, health, consumer protection, transfer of technology or other benefits of the proposed Standard, anticipated stakeholders to benefit from the standard i.e. who will be the main users of the standard and state any market failure the proposed standard aims to address.

It follows that with such a clear cut project screening and selection method stated in the *KS 01-1: 2010*, a standard that stipulates the frame work on how Kenya Standards shall developed, all the Standards developed by KEBS will be taken in by the relevant users, however that is not the case. Data from KEBS indicates that more money is spent on the development of standards than in the sale of standards. In the year 2015 – 2016 KSH 59 million was spent on the development of standards while only KSH 13 Million was received from the sale of standards (KEBS, 2017). As time progresses, more and more Standards are developed it is then anticipated that the uptake of these Standards will increase and by extension higher revenues by sale of Standards will be realized, however, the sale of Standards has plateaued for the last 10 years while the Standards development expenditure has increased almost six times over the same period, which preliminarily indicates a stagnation in the uptake of the Standards. This study therefore aimed at undertaking an exploratory study to seek key drivers of national standardization projects with an aim of giving key insights that can drive higher uptake of Standards.

Study Objectives

The general objective was to establish the drivers of the national Standardization projects and their uptake in Kenya. The specific objectives were:-

- To evaluate how the project portfolio management, affect the uptake of Kenya's Standardization projects.
- To establish how the stakeholders' management, affect the uptake of Kenya's Standardization projects.
- To assess how organization process assets, affect the uptake of Kenya's Standardization projects.
- To examine how enterprise environmental factors, affect uptake of Kenya's Standardization projects.

LITERATURE REVIEW

Efficient Frontier Theory

Efficient frontier approach draws concepts from Harry Markowitz, an American Economist who started working on a theory of portfolio choice. The theory is based on the notion that an inventor will has his investment decisions on the level of risk relative to their expected return Omisore et al., (2012)**.** Markowitz's Theory relates to project portfolio selection in that it assumes a trade-off between portfolio risk and portfolio return. The return is based on the risk appetite of the investor in that the higher the risk appetite, the higher the expected return on the investment. It follows that for a given amount of allowable risk, there is an optimal number of projects that yield highest return. Modern portfolio theory differentiates between efficient and inefficient portfolios and gives the efficient frontier i.e. the set of projects that yield best results with minimal risks (Omisore *et al.,* 2012)

Efficient frontier can be used to establish best combination of investment project given amount of capital resources. The efficient frontier curve represents the best optimal project portfolios for an investor given available capital resources.

The efficient frontier approach seeks to answer key project portfolio management questions which are relevant to national standardization projects are: for a given amount of capital resources, what set of standards a national standards body can undertake to realize maximum benefit? Whether the organization getting maximum benefits from the current set of

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standards, if the current set of standards are not performing well and what can be done in order to push the current standards to the efficient frontier, the organization can choose to delay, replace or kill some projects in the pipeline, whether the organization investing too much given the returns from the current projects and what are the possibilities of obtaining higher return from the standard projects even with lower capital resources (Enoch, 2014).

Multiple Criteria Utility Theory

National standards bodies face a challenging task of choosing standards projects which support national needs. This involves comparing several alternatives that have unique strengths and weaknesses. For a long time, financial aspect has been the major basis of selecting projects in organizations however with increasing complexity in project management; other parameters in evaluating projects have come up (Dyer *et a.l*, 1992). Developing Standards, with key aspects like how standards will assist the industry in market leadership, gaining competitive advantage, enabling future growth transfer of technology like how well standards respond to regulatory needs, market needs, safety, environmental, health, consumer protection and transfer of technology are being considered. hence an appraisal approach that combines most of the attributes becomes desirable.

Multi criteria decision approaches (which are based on Multiple criteria utility theory) are becoming the new normal due to their ability to incorporate various parameters in evaluating best fit projects to an organization (Greco *et a.l*, 2005). It follows a general in decision making process of: Identification of the goal; Selecting a Criterion, which should be in tandem with the decision being made, the criteria should be Independent of each other, Represented in same scale, Measurable and not Unrelated with the alternatives; the next step is evaluation of alternatives. The selected alternative must be feasible, comparable, real and not ideal, available; selection of weighting options which can be either compensatory or out-rank able; aggregation, which can be average, product or function and Decision making based on the results arrived after aggregation (Stewart, 1992).

Multi attribute utility theory is designed to aid in choosing trade-offs among multiple choices. It is based on the decision maker's preferences in the form of the utility function. Utility in this case is defined as the level of appeal from the decision makers point of view, it goes ahead to provide a measure to which there is ability to make a decision as to which is the best option (Silvius, 2008). There are a series of steps in which decision makers can use to evaluate projects in an organization characterized by multiple objectives. The first step is to establish and determine preferential and utility conditions, Grade the constants of the criteria establishing indifference points, compute single and multi-attribute utility functions, establish scaling constants, deducing the attitude of the decision maker vis a vis the overall scaling constant, then ranking options available to the decision maker based on utility values. The project with the highest utility is considered the best.

Organization Theory

Organization theory is the study of structures, designs, relationships, within an organization with the external environment and behaviour of employees within an organization (Fadare, 2013). It also proposes how an organization can cope with rapid changes resulting from the dynamic world. The current market place is global in nature and scope, and this dictates that national standardization system has to evolve rapidly in order to keep pace with the demands of the marketplace. National standards bodies must consider all standards and standards processes that influence national economic performance, for this purpose, they need to balance both external and internal demands within the standardization space (Ferdous, 2016). There are

several theoretical contributions that can be considered within a standardization body which are essential in the organization and its structure are; Classical organization theory, neoclassical theory and modern organization theory. These contributions are at times referred to as theoretical schools. Classical organization theory can be further divided into three approaches; Scientific Management approach, Weber's Bureaucratic approach and administrative theory. Modern organization theory has three approaches; systems approach, Socio-technical approach and contingency or Situational approach (Laegaard and Bindslev, 2006).

Neoclassical theory is based on the Hawthorne experiments which were conducted by Elton Mayo and Fritz Roethlisberger in the 1920's and 1930's with the workers at the Hawthorne plant, the neoclassical approach was centred on social relationships among the operators, researchers and supervisors (Mayo, 1949; Dickson and Roethlisberger, 2003). The situational approach postulates that organizational systems are affected by the environments in which they are set in; therefore, different environments require different organizational approaches and relationships for effective working (Mayo, 1949).

Systems approach was pioneered by Ludwig von Bertalanffy in 1951, he compared open system to anatomy that is composed of skeleton, muscles and the circulatory system. The systems approach portrays an organization as a system composed of a set of inter-related and inter connected web (Kerzerner, 2013). Skyttner (1996) as cited by Enoch (2014) notes that a system is comprised of elements that are part of an integrated piece that is envisioned to function, thus displays some level of order, pattern and purpose.

In the current standardization space, national standards bodies face numerous challenges, hence they require new responses or approaches to the problems they face. Organization theory (the study of structures, designs, relationships, within an organization with the external environment and behaviour of employees within an organization) is necessary when looking for solutions that affect these organizations. It assists in the broader understanding of different situations they face, and enhances better management and decision-making process thereby resulting in more effective organizations

Complexity Theory

Complexity theory can be defined as the study of how chaotic and complicated system is transformed to an orderly, structured system and on the other hand how complex behaviour and structure arises from simple underlying rules (Cooke-Davis *et al.*, 2007). Complexity theory has its basis founded on theories of evolution, chaos and self-organization. A project is said to be complex when inputs are transformed to outputs and in the process affects many other projects that have a high level of structural complexity which due to nature and stability do not have dynamic interaction capability (Ajani, 2013). According to Whitty and Maylor (2007), complexity in the project environment is occasioned by the individual structural elements and their interactions, effects arising from these interactions cause further changes in other parts of the system.

There are four types of project complexity as identified by Remington and Pollack (2007) which are relevant to standards development; Structural complexity; this arises from numerous individual structural elements within a standards body, national standards organizations tend to move toward higher levels of complexity when they get involved in other activities like conformity assessment, metrology, testing and training. Technical complexity emanates from the type of project product an organization undertakes, it ranges from the product or system design, which the standard has to cover, availability of technical personnel to handle complex product specification of which the standard has to be developed on (Saynisch, 2010). Directional complexity

could arise from unclear goals, different strategies which the standards body pursues. Temporal complexity could arise from unpredictability of the project environment like, changes in legal requirements, technological divide (Remington and Pollack, 2007).

Complexity theory is more important now than ever to national standards bodies in developing world, because they operate in a fragile and highly unpredictable environment, different organizational arrangements meet different stakeholder's demands, as circumstances change, so do the demands placed on the standards process. It is important therefore that right decisions are made while initiating and managing standardization projects.

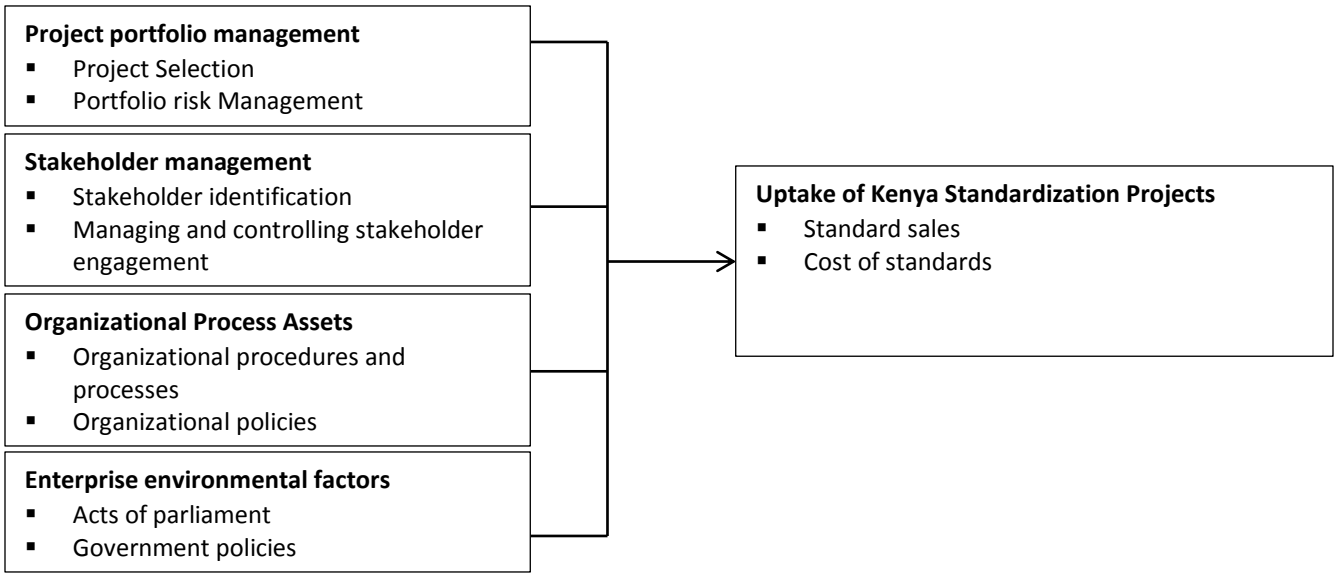

Figure 1: Conceptual Framework

Empirical Review

Organizations carry out a number of projects in order to fulfil organizational objectives. These projects compete for limited resources like time, finances, expertise available within the organization. These groups of projects are termed as project portfolio and the selection of these projects is defined as project portfolio selection (PMI, 2008). Oktavera and Saraswati (2012) defined Project portfolio as selection proposal of projects either for a new project or a project that is underway in order to achieve the organization's objective without exceeding available resources or violating other constraints. It involves aligning projects with organizational strategy, prioritizing these projects and communicating the prioritized projects. The process of project selection addresses the issues of resource availability, both tangible and intangible benefits of the selected projects.

However, the process of project portfolio selection has its challenges, these challenges emanate from several factors as discussed by Ghasemzadeh and Archer (1998); multiple conflicting criteria and how to handle trade-offs in cases where there are two or more objectives that support business case i.e. between economic objectives, environmental sustainability objectives which ones are more important and to what extent is more important; some objectives can be qualitative rather than quantitative thereby integrating qualitative and quantitative objective can be challenging; some of the project selection approaches do not give accurate state of affairs with respect to viability of particular

projects, net present value for a product under development can be uncertain; difficulty in addressing mutually exclusive projects; certain projects do not get completed because of resource constraints, therefore developing a selection criteria that incorporates resource limitations will be key; establishing a project portfolio selection criteria that ensure various portfolio balance like time to completion versus quality.

According to the procedures of developing Kenya standards (CPR 183) a justification for new work item is done by the technical committee secretary who will provide for; title of the standard, the scope, purpose and application and explain why the standard is needed i.e. the economic benefit, commercial/industrial benefit, safety, environmental, health, consumer protection, transfer of technology or other benefits of the proposal, main stakeholders to benefit from the standard i.e. who will be the main users of the standard, mention any relevant problems in the industry or technology (ISO, 2014). An assessment of whether this methodology has been effective as set out as per CPR 183 need to be done as opposed to conventional methods like analytical hierarchical process, payback period and internal rate of return.

De vries *et al.,* (2003) postulate different ways of identifying stakeholders in the Standards development process; Producers; this relates to companies whose products are affected by the standards that are being developed. They use standards for market access purposes. When affected companies declare that the products which they produce meet particular Standards, they give an assurance to customers that that those products are not only safe but also of good quality. Users; they are referred to as those that buy products that are affected by standards or use standards for their production processes. The use of standards assists the users not to reinvent the wheel; standards offer solutions that have already been agreed upon by the users. Standardized methods and parts ensure that the users benefit from efficient production processes (De vries *et al.*, 2003).

Governments are stakeholders in standardization because world over, standards affect trade, play a role in stimulating businesses, form a basis of developing technical regulation, and in some cases governments themselves develop standards and therefore the process of standards development must be done with interests of its citizens. Research and consultancy firms are stakeholders too, Standards have effect technological innovations and, on the other hand, the standardization agenda is greatly influenced by innovations. Consultants offer their services to companies by assisting them to implement standards (De vries, 1999).

Júnior and Carvalho (2015) propose generic strategies that can consider before engaging stakeholders in projects; these strategies are; monitoring stakeholders through the entire cycle of the project in order to verify any changes. Collaborating with stakeholders to avoid potential threats and get support for the project, involving all the stakeholders in key decision making process and defending any potential negative effects arising from stakeholder engagement. Standards are developed through a consensus process. It is envisaged that development process does not favour the interests of any party and that each party shall have equal rights and opportunities in the development of the standards. In order to ensure consensus and balanced participation, a choice on any of the generic strategies will be key, however the choice among these strategies will depend on the organizations' relationship with the stakeholders (Cheruiyot, 2014).

Managing and controlling stakeholder engagement involves engaging stakeholders with a view of addressing their needs and expectation as they occur and at the same time monitoring the relationships between the different stakeholders adjusting strategies and plans to maintain engagement

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(Beringer *et al.,* 2013). Technical committees in the Standards development process comprises of various stakeholders and full stakeholder participation may make the process to be complex and time-consuming in pursuit of consensus; determination of stakeholder positions regarding the standardization process is therefore paramount. De vries *et al*., (2003) extrapolated Mitchell et al., (1997) Stakeholder typology and presented eight different types of stakeholders in standards development process and appropriate level of influence they have in the standardization process, they propose different approaches of maintaining the engagement.

Most National Standards bodies have developed a number of processes and procedures to assist the management of the projects, these include guidelines, standards, templates and methodologies. They too have acquired knowledge over the years of developing standards in the form of lessons learned and the organization's knowledge base that can be very useful. KS 01-1: 2010 (a Kenya Standard) and the procedure for developing Kenya Standard (CPR 183) are the principle guiding documents in developing Kenya Standard (KEBS, 2010). Effectiveness of these documents in terms of delivering the much needed market oriented standards has never been evaluated. They set up ground rules of Standard development in terms of the selection criteria and the process steps.

Standards development takes time, from New work item (first proposal) to final publication of the standard, usually takes about 3 years. This period could be long enough for a standard to miss market opportunity or to be by passed by technological advancement in the market. Therefore, processes within the standard development process taking into account the current market conditions directly affect the uptake of standards.

The development of Kenya Standards is governed the Standards Act chapter 496 of the Kenyan Laws. It provides for a framework on the development of the Kenyan Standards through the establishment of the Kenya Bureau of Standards. The Act gives KEBS the mandate of; promoting Standardization in the Kenyan industry, developing, amending specifications and codes of practices, undertaking educational work in the area of Standardization, assisting any public body or an individual in preparing specifications or codes of practices, to provide a framework for cooperation between the government and other bodies with a view to securing the adoption and practical application of standards, providing testing and calibration services, carrying out product certification (KEBS, 2010).

ISO developed a web based platform known as ISOlutions that allows ISO members in terms of developing, promoting and selling standards at the national level. It has the capability of Creating, updating, deletion of projects, it contains a Simple workflow to modify the stages of a project, and one can search on projects with criteria (ISO, 2014). The platform allows members to offer for sale both ISO standards and National standards. ISO standards can be sold in local currency and with local pricing. This platform makes it easier for customers to buy Standards this, in turn, helps making standards more accessible (ISO, 2014). Kenya Bureau of Standards uses the same platform to manage several Standardization projects, the key question is whether the platform has been used maximally to ensure high uptake of the standards.

METHODOLOGY

This study aimed at establishing drivers that affect the uptake of Standardization projects in Kenya, this study then looked at the relevant data during that period and administering a questionnaire to the industry that utilized these Standards therefore, the research adopted a longitudinal study design. The study targeted the head of quality assurance or Head of production for the large manufacturers and the managing directors for the small manufactures or head of quality assurance where every organization was only given one chance of participation.

The study only took one person per company to participate in the study where only heads of quality assurance were given that chance while for the small manufacturing companies; the chance of participation was given to directors or any other responsible person who has full details of the company's mode of operation. The sampling formula adopted for the study is Yamane (1967).

$$n = \frac{\mathrm{Z} * \mathrm{ZpqN}}{e * e(N-1) + Z * Zpq}$$

The study used primary data which was collected using a semi-structured questionnaire

The statistics generated included descriptive statistics and inferential statistics. The qualitative data generated from open ended questions was categorized in themes in accordance with research objectives and reported in narrative form along with quantitative presentation. A multiple linear regression model was used to test the significance of the influence of the independent variables on the dependent variable.

FINDINGS

The study targeted a sample size of 377 respondents from which 310 (participants) responded which constituted 82.23% of the participants. This response rate was satisfactory to make conclusions for the study. The response rate was representative. According to Mugenda and Mugenda (2003), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. Based on the assertion, the response rate was considered to be excellent.

Extent Project Portfolio Management Affect the Uptake of Kenya Standards Project

The study sought to determine the extent project portfolio management affect the uptake of Kenya standards project. Findings showed that; majority 50% (n=155) agreed that they use Standards to solve matching problems followed by those who strongly agreed 24% (n=74); 45% (n=140) of respondents agreed that they use standards to improve production efficiency, 40% (n=124) agreed that Kenyan standards are easily accessible, 48% (n=150) said that Kenya Standards are relevant to the industry, a number of respondents also agreed that; they use standards as principal guiding documents in manufacturing/teaching/research process 55% (n=171) followed by those who strongly agreed 34% (n=105); they use standards to gain competitive advantage over peers in the industry 45% (n=149) followed by those who strongly agreed 30% (n=93); they acquire standards because it is a requirement for certification (standardization mark/and or diamond mark) 43% (n=134) followed by those who strongly agreed 34% (n=105). On the other hand, majority of the respondents disagree that Kenya Standards are complex for one to understand 44% (n=136) followed by those who strongly disagree 11% (n=34).

Table 1: Extent Project Portfolio Management Affect the Uptake of Kenya Standardization Project

Statement Where (**1** = strongly disagree, **2** = disagree, **3** = not sure, **4** = agree and **5** = strongly agree)		**1**	**2**	**3**	**4**	**5**	**Totals**
Kenya Standards are relevant to the industry	**n**	3	6	15	150	136	**310**
	%	1	2	5	48	44	**100**
I am aware of the National Standardization Plan	**n**	12	40	81	121	56	**310**
	%	4	13	26	39	18	**100**
We use Standards to solve matching problems	**n**	6	25	50	155	74	**310**
	%	2	8	16	50	24	**100**
Kenya Standards are complex for one to understand	**n**	34	136	68	46	26	**310**
	%	11	44	22	15	8	**100**

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Extent Stakeholder Management Affect the Uptake of Kenya Standardization Project

The study sought to establish the extent stakeholder management affect the uptake of Kenya standards project. Majority of the respondents 45% (n=140) agreed that KEBS identifies relevant stakeholders in all technical committees that develops Standards followed by those who strongly agreed 31% (n=96). A number of respondents 40% (n=123) agreed that the process of developing standards is all –inclusive followed by those who strongly agreed 20% (n=62). Most of the respondents 38% (n=118) also agreed that KEBS has a clear management strategy on how to engage with stakeholders all through the life cycle of the standardization projects followed by 26% (n=80) who strongly agreed.

Table 2: Extent Stakeholder Management Affect the Uptake of Kenya Standardization Project

Statement Where **(1** = strongly disagree, **2** = disagree, **3** = not sure, **4** = agree and **5** = strongly agree)		**1**	**2**	**3**	**4**	**5**	**Totals**
KEBS identifies relevant stakeholders in all technical committees that develops Standards	**n**	19	43	12	140	96	**310**
	%	6	14	4	45	31	**100**
KEBS has a clear management strategy on how to engage with stakeholders all through the life cycle of the standardization projects	**n**	19	50	43	118	80	**310**
	%	6	16	14	38	26	**100**
The process of developing standards is all -inclusive	**n**	50	53	22	123	62	**310**
	%	16	17	7	40	20	**100**

Extent enterprise environmental factors affect the uptake of Kenya Standardization Project

The study sought to establish the extent enterprise environmental factors affect the uptake of Kenya standards project. The findings showed that; majority of the respondents agreed that Kenya Standards were affordable 40% (n=124) followed by those who strongly agreed 33% (n=102); 39% (n=121) agreed that Price is a determining factor on whether to acquire the Kenyan Standards followed by those who strongly agree 35% (n=108); 36% (n=112) agreed that they buy standards to assist in market access followed by those who strongly agree 21% (n=65); 35% (n=108) who agreed that they acquired Standards because it was a requirement for certification (Standardization mark/and or Diamond Mark) followed by those who strongly agreed 23% (n=71); 30% (93) agreed that they buy standards to assist in market access East African Community market followed by those who strongly agreed 25% (n=77).

Table 3: Extent enterprise environmental factors affect the uptake of Kenya standardization Project

Statement Where **(1** = strongly disagree, **2** = disagree, **3** = not sure, **4** = agree and **5** = strongly agree)		**1**	**2**	**3**	**4**	**5**	**Totals**
We acquire Standards because it is a requirement for certification (Standardization mark/and or Diamond Mark)	**n**	56	59	15	108	71	**310**
	%	18	19	5	35	23	**100**
We buy standards to assist in market access Kenyan market	**n**	56	68	40	112	65	**310**
	%	18	12	13	36	21	**100**
We buy standards to assist in market access East African Community market	**n**	46	62	31	93	77	**310**
	%	15	20	10	30	25	**100**
We buy/use Kenya Standards in order to comply with appropriate government requirements	**n**	46	50	56	93	65	**310**
	%	15	16	18	30	21	**100**

Kenya standards are easily accessible	**n**	40	43	50	102	74	**310**
	%	13	14	16	33	24	**100**
Kenya Standards are affordable	**n**	31	37	15	124	102	**310**
	%	10	12	5	40	33	**100**
Price is a determining factor on whether to acquire the Kenyan Standards	**n**	25	28	28	121	108	**310**
	%	8	9	9	39	35	**100**
The cost of compliance with the Kenyan Standards increases the production costs	**n**	31	34	62	93	90	**310**
	%	10	11	20	30	29	**100**

Extent organizational process assets affect the uptake of Kenya Standardization Project

The study sought to determine the extent organizational process assets affect the uptake of Kenya standards project. The findings showed that; majority of the respondents agreed that they used standards as principal guiding documents in manufacturing/teaching/research process 34% (n=105) followed by those who strongly agreed 31% (n=96); 33% (n=102) of the respondents agreed that Kenya Standards assisted in product/process innovation, followed by those who strongly agreed 21% (n=65); 30% (n=93) of the respondents agreed that they used Standards to gain competitive advantage over peers in the industry followed by those who strongly agreed 26% (n=81). Other respondents 31% (n=96) also agreed that they use Standards to improve production efficiency followed by those who strongly agreed 23% (n=71).

Table 4: Extent organizational process assets affect the uptake of Kenya Standardization Project

Statement Where **(1** = strongly disagree, **2** = disagree, **3** = not sure, **4** = agree and **5** = strongly agree)		**1**	**2**	**3**	**4**	**5**	**Totals**
We use standards as principal guiding documents in manufacturing/teaching/research process	**n**	31	37	41	105	96	**310**
	%	10	12	13	34	31	**100**
Kenya Standards assist in product/process innovation	**n**	43	74	25	102	65	**310**
	%	14	24	8	33	21	**100**
We use Standards to gain competitive advantage over peers in the industry	**n**	53	56	28	93	81	**310**
	%	17	18	9	30	26	**100**
We use Standards to improve production efficiency	**n**	50	53	40	96	71	**310**
	%	16	17	13	31	23	**100**

Regression Analysis

The regression model used in the study used the following regression model:

$Y = X_1\beta_1 + X_2\beta_2 + X_3\beta_3 + X_4\beta_4 + €$

The study findings indicated that the independent variable in the study explained a significant proportion of variance in manufacturing sector, R^2= .752 which implied that 75.2% of the proportion in drivers of national standardization projects can be explained by the independent variable while other variables not covered by this study contributed to 24.8% of the variance.

Table 5: Model Summary for All the Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.867[a]	.752	.714	1.743

a. Independent variables: (Constant), project portfolio management, stakeholders' management, organization process assets and enterprise environmental factors.

Table 6: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34.616	4	8.654	23.7096	.000[b]
	Residual	111.325	305	0.365		
	Total	145.941	309			

a. Dependent Variable: drivers of national standardization projects

b. Independent variables : (Constant), project portfolio management, stakeholders' management, organization process assets and enterprise environmental factors

The findings 6 indicated that the significance value in testing the reliability of the model for the relationship between independent variable and the dependent variable was $F(4, 305) = 23.7096$, $p = 0.00$; therefore, the model is statistically significant in predicting the relationship between the independent and the dependent variables.

Table 7: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.704	0.249		6.843	0.002
Project portfolio management	0.721	0.132	0.69	5.462	0.002
Stakeholders' management	0.671	0.128	0.652	5.242	0.003
Organization process assets	0.657	0.132	0.626	4.977	0.004
Enterprise environmental factors	0.532	0.126	0.502	4.222	0.014

a. Dependent Variable: drivers of national standardization projects

Testing at 5% significant level, the regression analysis is significant since all the p-values are less than 0.05 (Sig. $p<0.05$) significance level.

The findings indicated that project portfolio management has the highest influence on the uptake of the standardization project at 72.1%.

Stakeholder management is one of the key success factors within project portfolio management. According to PMI (2013), stakeholder management in projects includes all the processes required in identifying the people, groups or organizations that may have an impact on or be impacted by the project, analyzing their expectations and their impact on the design, and developing appropriate management strategies for their engagement.

Stakeholders can affect the outcome of a project to varying degrees, they can literary make or break the project by either supporting or interfering with it. This study established that, stakeholder management affects 67.1% in the uptake of national standardization projects, while 65.7% change in organization process assets and 53.2% change in enterprise environmental factors together will cause a unit change in drivers of national standardization process. These formulae can now be used to predict the uptake of drivers of national standardization projects in the manufacturing sector in Kenya.

CONCLUSIONS

The study found that project portfolio management helps in solving matching problems, improving production efficiency which are all easily available and also helps use standards as principal guiding documents in manufacturing/teaching/research process in manufacturing sector. The study concludes that though project portfolio management, companies can improve on their production efficiency

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by using guiding documents in manufacturing. The study therefore concludes that protect portfolio management has an effect on standardization projects in Kenya.

The findings showed that stakeholder's management is achieved through making standards all-inclusive and by Kenya Bureau of Standards involving all stakeholders committees in decision making for improved standards. The study also found out that KEBS has a clear management strategy on how to engage with stakeholders all through the life cycle of the standardization. The study therefore concludes that stakeholder's management involvement in standardization projects will improve the manufacturing sectors in Kenya.

The findings showed that principal guiding documents in manufacturing/teaching/research process as organizational process assets which go hand in hand in assisting product and process innovation.

The study indicated that organization process is crucial for product innovation, Process innovation and it facilitates business model innovation. Therefore, the study concludes that organizations process assets have an influence in implementation of standardization projects in Kenya.

The study findings showed price is a determining factor on whether to acquire the Kenyan Standards since the manufacturing firms buy standards to assist in market access in Kenya where 29% (n=5,983) of them are small manufacturers while 71% (n=14, 688) are large manufacturers. The study therefore concludes that enterprise environmental factors have an influence in implementation of standardization projects in Kenya.

RECOMMENDATIONS

The study recommended that KEBS as a major Standard setting institution should adopt a robust Project portfolio management with clear project selection and project risk management framework in order to realize higher uptake of Standards in Kenya.

The study findings indicated that KEBS has a clear management strategy on how to engage with stakeholders all through the life cycle of the standardization and that Kenya Bureau of Standards involving all stakeholders' committees in decision making for improves standards. The study recommends that all the relevant authorities in the manufacturing sector should be involved in the Standards development process.

The findings showed that the use of Standards as principal guiding documents in manufacturing/teaching/research process as part of organizational process assets go hand in hand in assisting product and process innovation. The study therefore recommends that Manufacturers in Kenya should be encouraged to use Standards as the benefits on innovation are clear.

Areas of Further research

The study recommended further research on how Standards would assist in delivering the African Continental Free Trade Area.

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