CONSTITUENTS THAT AFFECT THE IMPLEMENTATION OF SUSTAINABLE PUBLIC PROCUREMENT IN KENYAN PUBLIC UNIVERSITIES: A CASE OF TECHNICAL UNIVERSITY OF KENYA

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CONSTITUENTS THAT AFFECT THE IMPLEMENTATION OF SUSTAINABLE PUBLIC PROCUREMENT IN KENYAN PUBLIC UNIVERSITIES: A CASE OF TECHNICAL UNIVERSITY OF KENYA

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ABSTRACT

Studies and empirical data that address the Constituents that affect the Implementation of sustainable public procurement in Kenyan Public Universities are scarce considering it is a fairly new subject. This study sought to assess the constituents that affect the implementation of sustainable public procurement in Kenyan public universities as the general objective. The specific objectives of the study were: To establish the effect of financial resources on the implementation of sustainable public procurement in Kenyan Public Universities; to assess the effect of government regulations and policies on the implementation of sustainable public procurement in Kenyan Public Universities; to examine the effect of the adequacy of technological infrastructure on the implementation of sustainable public procurement in Kenyan Public Universities and to determine the effects of training and development and how it affects the implementation of sustainable public procurement in Kenyan Public Universities. The study employed a descriptive research design. The target populations of the study were the 279 employees of various departments at Technical University of Kenya (TUK). Data was collected through stratified random sampling by the answering of questionnaires both quantitatively and qualitatively. The sample frame included the top and middle level managers with employees involved in planning and acquisition. The sample size was 83 employees drawn from various departments of the institution. Findings were analyzed using statistical package for social sciences (SPSS) and concluded that financial resources, government rules and regulations, adequacy of technological infrastructure and training and development are the main constituents that affect the implementation of sustainable public procurement in Kenyan public universities. The recommendations include increased and well allocated budgets; government to have procurement laws specific to public universities; more reliable and efficient technologies; and specific trainings of staff on emerging changes with regard to implementation of sustainable public procurement in Kenyan public universities .

Key words: Sustainable, Procurement

INTRODUCTION

Sustainable Procurement is whereby an organization meets their needs for goods, services, utilities and works not on a private cost-benefit analysis, but with a view to maximizing net benefits for themselves and the wider world. In doing so they must incorporate extrinsic cost considerations into decisions alongside the conventional procurement criteria of price and quality, although in practice the sustainable impacts of a potential supplier's approach are often assessed as a form of quality consideration. These considerations are typically divided thus: environmental, economic and social. Sustainable Public Procurement should consider the environmental, social and economic consequences of: Design; non-renewable material use; manufacture and production methods; logistics; service delivery; use; operation; maintenance; reuse; recycling options; disposal; and suppliers' capabilities to address these consequences throughout the supply chain. (Department for Environment, Food and Rural Affairs, 2006)

The United Kingdom (UK) Government's 2005 Sustainable Development Strategy set out the ambitious goal to make the United Kingdom a leader in the European Union in sustainable procurement by 2009. The strategy recognized that this was important in moving towards a more sustainable economy, firstly because the scale of the public sector spend on goods, services, works and utilities is thirteen percent (13%) of the Gross Domestic Product (GDP) and is capable of stimulating the market for more sustainable goods and services. Secondly, because only with government leadership can the consumption patterns of business and consumers be shifted onto a more sustainable path. (DEFR, 2006).

The Task Force's membership was drawn from business – both major suppliers to government and representatives of best private sector practice; non-governmental organisations; trade unions; professional bodies; major public sector procurers and the Sustainable Development Commission. Its remit was to focus on the social, economic and environmental dimensions of public procurement. It analysed evidence, drew on experience and best practice elsewhere and commissioned research to show how the UK could become a leader in sustainable procurement. It concluded that for the UK to reach this goal, a systematic effort to mainstream sustainable procurement was required. The Task Force concluded that there would be significant benefits from doing this: better stewardship of taxpayers' money; environmental and social benefits; public sector support for innovation and encouragement for more environment-friendly technologies. Risk could be better managed; concerns about upfront costs would be mitigated through less waste and there would be better information about purchasing patterns and improved supplier relationships and management. (DEFR, 2005)

While Sustainable Public Procurement is still a relatively new concept in South Africa, environmental criteria have, to a certain extent, started playing a role in public procurement decisions. For larger development projects, all state entities in South Africa already consider environmental criteria through environmental impact assessments that are required by national law. Beyond this, several provinces and municipalities are pursuing the development and/or implementation of a green procurement policy. The legislative framework in South Africa allows municipalities and provinces to pursue particular interests such as green public procurement as long as this is done so within the context of national frameworks mainly derived from the act towards green procurement policy, with the Green Paper on Public Sector Procurement Reform (1997) as the base of reference, change and amendments. (Stephen De la Harpe, 2008)

The Kenyan government, in June 2014, moved to ensure rules; regulations and policies that are based on sustainable public procurement have been implemented. These aim to reduce the adverse environmental, social and economic impacts of purchased products and services throughout their life as based on the vision 2030 on sustainable development and environmental sustainability whereby there is a bid to ensure the framework to reduce on expenditure, re-use on the products and ensure the public sectors and companies embrace recycling. Re-thinking on the procurement status as per the need of the entire field based on the level at which the country aims to meet the economic, social and political goals as per the vision 2030 pillars on development (Henry Rotich, 2013).

Statement of the Problem

Misappropriation of public funds has led to redundant developmental growth in Kenya albeit the fact that it is government policy funds budgeted and approved by parliament for the purpose of procurement are spent on the intended purposes. This applies both to development and recurrent expenditures. It is also government policy to allow open competition for procurement without discrimination in a transparent, fair and accountable manner to ensure achievement of value for money in all procurement. Government also expects public procurement to contribute to the national economic growth and poverty reduction in line with the national development goals. Public procurement plays an important role in the Kenyan economy. (Public Procurement and disposal Manual, 2009)

The Institute of economic affairs (IEA) (2014) reports that: there has been a 15% increase on the governments' spending of which does not reflect directly on development. Out of a total expenditure outlay of Ksh. 1.77 trillion in 2014/15, the national government budget is estimated at Ksh. 1.54 trillion. The sectors taking the lion's share of the national government budget are education sector, 20%, Energy, Infrastructure and ICT, 16.6%, Public Administration and International relations 12.6%. These sectors tallied together account for about a half of the National Government budget. As priority sectors, they constitute a source of fiscal pressure for the financial year and in the medium term.

The Kenyan Government has moved to implement the laws that will aid sustainable public procurement. All public entities must use the Procurement Manual 2009. It provides a way for the user to apply the Public Procurement and Disposal Act, 2005 and the Public Procurement and Disposal Regulations 2006 and facilitates the standardization of procurement practice across all Procuring Entities across Kenya. (PPOA, 2009)

It also serves as a reference tool for guiding the practice of public procurement in Kenya and ensuring full compliance with the requirements of the Public Procurement Law and Regulations. No public procurement should be carried out without first ensuring compliance with the requirements set out in this manual. (PPOA, 2009)

The government through the launch of e-procurement (IFMIS) has moved to analyze and monitor its expenditure, reducing waste processes; creating environmental awareness with the reduction of paper and the easy audit via the centralized system at the National Treasury. However, there are still cases reported at the PPOA with regard to procurement malpractices and lack of adherence to laid out guidelines, the effect of which result to misappropriation of funds and an increase in expenditure (PPOA, 2015). It is therefore against this background that the study goes out to explore the Constituents that affect the Implementation of Sustainable Public Procurement in Kenyan Public Universities.

Objectives of the study

The general objective of this study was: To assess the Constituents that affect the Implementation of Sustainable Public Procurement in Kenyan Public Universities. The key objectives were To establish the effect of financial resources, government regulations and policies, technological infrastructure and training and development on the implementation of sustainable public procurement in Kenyan Public Universities

Research Questions

i. How do financial resources affect the implementation of sustainable public procurement in Kenyan Public Universities?
ii. Which government policies and regulations affect the implementation of sustainable public procurement in Kenyan Public Universities?
iii. What is the effect of adequacy of technological infrastructure on the implementation of sustainable public procurement in Kenyan Public Universities?
iv. What is the effect of training and development on the implementation of sustainable public procurement in Kenyan Public Universities?

Scope of the Study

This study was conducted at the Technical University of Kenya (TUK), which is based within the Nairobi City centre, Nairobi County, Kenya. Data was collected from the top and middle level managers with employees involved in planning and acquisition of goods, services and works. The sampling frame for this study will therefore include:

The universities: Top management, executive deans, director of schools, directorates, procurement, audit, transport, finance, administration, legal, communication and schools (academia). The sample size were the 83 employees from the above sections mentioned of whom as already stratified were selected by simple random sampling.

The study established the effect of financial resources on the implementation of sustainable public procurement in Kenyan Public Universities. It also assessed the effect of government regulations and policies on the effect of implementation of sustainable public procurement in Kenyan Public Universities. Going forth, the same will examined the effect of the adequacy of technological infrastructure to the implementation of sustainable public procurement in Kenyan Public Universities. Notwithstanding, it determined the effects of training and development and how it affects the implementation of sustainable public procurement in Kenyan Public Universities. All above mentioned would have assessed the Implementation of Sustainable Public Procurement in Kenyan Public Universities.

THEORETICAL REVIEW

A government that is committed to sustainable public procurement wants to create a strong, healthy and just society, here and overseas, that endeavors to live within environmental limits and wants to move towards a more sustainable economy. If that government could harness the purchasing power of that business, imagine what an impact it could have on the average spend, the economy, the natural environment and way of life of its citizens. There are several theories that have been developed to try and understand the Constituents that affect the Implementation of Sustainable Public Procurement Rules in Kenyan Public Universities. In line with the specific objectives, below find some of the theories discussed:

a) Evolutionary Theory on Economic Change

According to Howard Aldrich (2008) Evolutionary economics deals with the study of processes that transform economy for firms, institutions, industries, employment, production, trade and growth within, through the actions of diverse agents from experience and interactions, using evolutionary methodology. Evolutionary economics analyses the unleashing of a process of technological and institutional innovation by generating and testing a diversity of ideas which discover and accumulate more survival value for the costs incurred than competing alternatives. The evidence suggests that it could be adaptive efficiency that defines economic efficiency. Karl Marx based his theory of economic development on the premise of evolving economic systems; specifically, over the course of history superior economic systems would replace inferior ones. Inferior systems were beset by internal contradictions and inefficiencies that make them impossible to survive over the long term.

In Marx's scheme, feudalism was replaced by capitalism, which would eventually be superseded by socialism. Mainstream economic reasoning begins with the postulates of scarcity and rational agents (that is, agents modeled as maximizing their individual welfare), with the "rational choice" for any agent being a straightforward exercise in mathematical optimization.

Geoffrey Hodgson (2003) dictates that there has been renewed interest in treating economic systems as evolutionary systems in the developing field of Complexity economics. Evolutionary economics does not take the characteristics of either the objects of choice or of the decision-maker as fixed. Rather its focus is on the non-equilibrium processes that transform the economy from within and their implications. The processes in turn emerge from actions of diverse agents with bounded rationality who may learn from experience and interactions and whose differences contribute to the change.

The Ministry of Planning and Devolution projected that the economy will grow by about 5.5 per cent in 2013 and a further to 6.3 per cent in 2014. Macro-economic stability should remain a top policy priority for the government as there are potential risks emanating from internal and external imbalances. These include: fiscal pressure arising from implementation of Medium Term Plan programmes, the 2010 Constitution, and demands for higher wages and salaries; a growing current account deficit; and investment-savings resource gap. The government should be ready to respond flexibly to the changing economic landscape in order to ensure exchange rate stability, and also ensure that inflation expectations are anchored within the policy target. Effective operationalization of the Public Finance Management (PFM) Act 2012 is critical in establishing a sound public financial management system to support management of public resources both at the national and county government level. (KIPPRA, 2013)

The evolutionary theory on economic change will illustrate and best explore the specific objective that is to establish the effect of financial resources to the implementation of sustainable public procurement in Kenyan Public Universities. This will show how the economic conditions will foster the adaptation of new policies and procedures; taking into account what input and benefits from and to would yields the overall costs benefits and negate adverse spending. This is in view to reduce the tax burden and move funds from adverse public procurement to other sustainable development agendas going hand in hand with to determine the effects of training and development and how it affects the implementation of sustainable public procurement in Kenyan Public Universities.

b) Theory of Change

According to Helena Clark and Dana Taplin (2012), Theory of Change is a specific type of methodology for planning, participation, and evaluation that is used in the philanthropy, non-profit and government sectors to promote social change. Theory of Change defines long-term goals and then maps backward to identify necessary preconditions. Theory of Change explains the process of change by outlining causal linkages in an initiative, that is, its shorter-term, intermediate, and longer-term outcomes. The identified changes are mapped – as the "outcomes pathway" – showing each outcome in logical relationship to all the others, as well as chronological flow. The links between outcomes are explained by "rationales" or statements of why one outcome is thought to be a prerequisite for another. The innovation of Theory of Change lies: in making the distinction between desired and actual outcomes, and in requiring stakeholders to model their desired outcomes before they decide on forms of intervention to achieve those outcomes.

Theory of Change can begin at any stage of an initiative, depending on the intended use. A theory developed at the outset is best at informing the planning of an initiative. Having worked out a change model, practitioners can make more informed decisions about strategy and tactics. As monitoring and evaluation data become available, stakeholders can periodically refine the Theory of Change as the evidence indicates. A Theory of Change can be developed retrospectively by reading program documents, talking to stakeholders and using monitoring and evaluation data. This is often done during evaluations reflecting what has worked or not in order to understand the past and plan for the future. A common error in describing Theory of Change is the belief that it is simply a methodology for planning and evaluation. Theory of Change is instead a form of critical theory that ensures a transparent distribution of power dynamics. Further, the process is necessarily inclusive of many perspectives and participants in achieving solutions (H Clark, *et al*, 2012)

Andrea Anderson (2005); states that A theory of change (TOC) is the product of a series of critical-thinking exercises that provides a comprehensive picture of the early- and intermediate-term changes in a given community that are needed to reach a long-term goal articulated by the community or the government. Government initiatives are sometimes planned without an explicit understanding of the early and intermediate steps required for long-term changes to occur; therefore, many assumptions about the change process need to be examined for program planning or evaluation planning to be most effective. A TOC creates an honest picture of the steps required to reach a goal. It provides an opportunity for stakeholders to assess what they can influence, what impact they can have, and whether it is realistic to expect to reach their goal with the time and resources they have available.

The increase in public expenditure with a growing size and structure of government procurement has led the government to seek alternatives and measures to reduce on the spending by enforcing changes and legislations that would reduce on the dependencies; re-use materials that are not optimally utilized; ensure firms and companies embrace recycling to reduce on reverting on environmental degradation and re-think basing on the need to buy basis. These are the fundamentals of sustainable procurement (KIPPRA, 2013)

The transparency in power dynamics distribution as achieving the implementation of sustainable procurement rules and regulations in public procurement as depicted by the Theory of Change will ensure the specific objectives of which the study will establish the effect of adequacy of technological infrastructure on the

implementation of sustainable public procurement in Kenyan Public Universities as in the case of changes brought about by e-procurement.. The theory will also necessitate the assessment the effect of government regulations and policies affect on the implementation of sustainable public procurement in Kenyan Public Universities as both objectives result in deviation from the norm with the evolving technologies essentially defining the direction in which the country should take as they can approve or reject changes while the government rules and regulatory policies have to be followed by the procuring entities taking into account the adaptation of the new processes as pertained to this study.

c) KirkPatricks' Learning and Training Evaluation Theory

According to Donald L. Kirkpatrick (2004), he developed a theory with an approach of the evaluation of training and learning in an organization with a framework of four 'levels' of criteria. Training evaluation models delineates four levels of training outcomes namely reaction, learning, behavior and results. Level one entails the assessment of the training participants' reaction to the program; discussing how well they liked the program.

Measures have changed and now most commonly directed to assessing the trainees' effective response to quality for example the relevance to their field, ability of the instructor on training. Level two are the learning measures of which are quantifiable indicators that learning has taken place during the course of the training. Level three on behavior indicates either which knowledge or skills have been gained results in exceptional job related performance and interactions. The final Level Four on results dwells on the outcomes that intended to provide a measure on impact that training has on the broader organizational goals and objectives, for example for many organizations dwell on financial measures (Kirkpatrick, 2004).

Education is held to be central to sustainability. Indeed, education and sustainability are inextricably linked, but the distinction between education as we know it and education for sustainability is enigmatic for many. For the training and development of professional on the adaptation of new policies and measure that will change their way of work, it would be prudent to show the results that would be critical as in our case to the success of the implementation of processes that aid sustainable procurement. (McKeown, Rosalyn and Charles A. Hopkins, 2008) This theory envisions the objective stated, to determine the effects of training and development and how it affects the implementation of sustainable public procurement in Kenyan Public Universities

Conceptual Framework

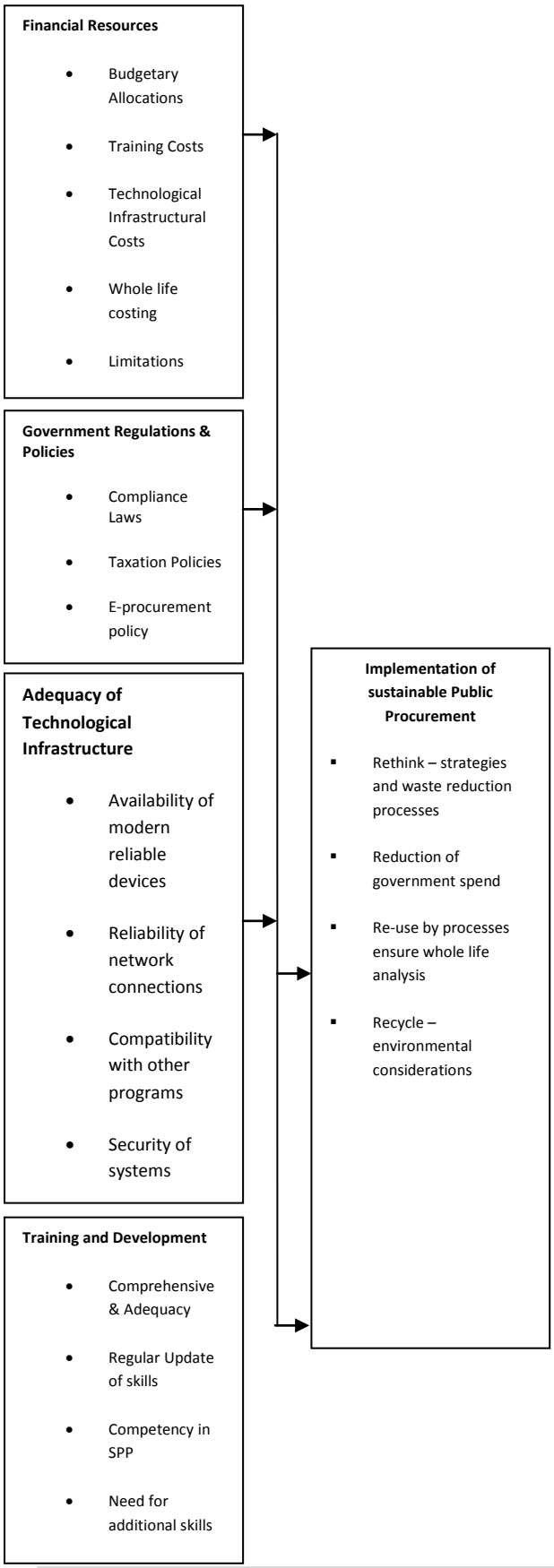

Figure 1: Conceptual Framework

Financial Resources

According to Sir Neville Simms, (2006) Governments acquire goods, services and capital, making a big difference, both to its ability to deliver sustainable development and to its credibility with those it seeks to influence. In business, this is as a core piece of risk and reputation management, as well as a way of implementing corporate strategy. The public sector needs to see it in that way too. The public sector needs to procure sustainably because that is the only way that we can be sure to offer real value for money over the longer term. A false choice is often posed between "value for money" or "efficiency" and sustainability. A number of examples of public sector decisions being made purely on the basis of upfront costs show the political class are reluctant to adhere to changes that come forth.

These demonstrated false economy, in direct contrast to existing rules and results in an economic burden borne by taxpayers and the private sector. In effect, Government is wasting taxpayers' money if it fails in this duty. Unsustainable procurement is not good stewardship of taxpayers' money as it results to a spiral effect leading to inflation and higher taxation policies. (Simms, 2006).

In Kenya, Overall spending is estimated to nominally increase by 8% from Kshs 1.64 trillion in 2013/14 to Ksh 1.77 trillion in 2014/15. 76% is proposed to be spent to the 10 MTEF sectors and in turn, the respective Ministries, Departments and Agencies (MDAs)out of Ksh 1.54 trillion national government budget. The big spenders are the education sector, 20%, Energy, Infrastructure and ICT, 16.6%, Public Administration and International relations 12.6%. Education, health and the infrastructure

sectors together account for over 40% of the national budget; and hence a source of fiscal pressure in the medium term. There is need to emphasize on the scope for improving quality of spending for better outcomes. (IEA, 2014)

In Kenya, the Political class over the past few years have gone ahead to implement sections from the promulgated new constitution that have changed the face of public procurement. All legislation has to go through the act of parliament and procedures and policies that govern procurement are no different. According to the Public Procurement Oversight Authority (2014), the need to regulate government spending has led to relative regulations which include the Public Procurement and Disposal Act 2005 that led to the setting up of Public Procurement Oversight Authority (PPOA) to audit government institutions with regard to expenditure.

The Public Procurement Advisory Board (PPAB) and continuance of the Public Procurement Complaints, Review and Appeals Board (PPCRAB) of which both are autonomous bodies and their enactment was supported overwhelmingly from members across the political divide (PPOA, 2015). The will to reduce ministries and redundant parastatals through legislation so as to reduce on expenses has also shown maturity in the political class. Sustainable procurement has also been boosted by the move by the government to procure technological enhancement like IFMIS that would control government expenditure with close monitoring. (PPOA, 2014)

Government Regulations and Policies

Government regulations and policies are laws enacted to reduce the waste of resources and the overutilization of natural resources. This goes forward to assess the monetary implications that factor mainly to the economic conditions of a country. One way is through strict legislation that would dwell on waste reduction of which would be aligned to the national waste management policy. (Grodzinska-Jurczak, 2001)

This would be by having active tax policies that would encourage implementation of sustainable measures by supplying companies to the government with tax incentives to the companies. These regulations would activate systems of sustainable development. (Grodzinska-Jurczak, 2001)

The Kenyan Government has moved to implement the enacted laws. All public entities must use the Procurement Manual 2009 and provides a way for the user to apply the Public Procurement and Disposal Act, 2005 and the Public Procurement and Disposal Regulations 2006. It serves as a reference tool for guiding the practice of public procurement in Kenya and ensuring full compliance with the requirements of the Public Procurement Law and Regulations. No public procurement should be carried out without first ensuring compliance with the requirements set out in this manual. (PPOA, 2015)

The Public Procurement and Disposal Act (PPDA) 2005 and Regulation 2006 which is an act of Parliament to establish procedures for efficient public procurement and for the disposal of unserviceable, obsolete or surplus stores, assets and equipment by public entities and to provide for other related matters. The Public Private Partners (PPP) 2013 is an Act of Parliament to provide for the participation of the private sector in the financing, construction, development, operation, or maintenance of infrastructure or development projects of the Government through concession or other contractual arrangements; the establishment of the institutions to regulate, monitor and supervise the implementation of project agreements on infrastructure or development projects and for connected purposes. The Preference and Reservations Regulations 2011 amended 2013 that gives priority and 30% of all government procurement to the Youth, women and persons with disability. (KLR, 2015)

Technological Infrastructure

Networked organizations and governments were one of the strategic objectives of the 6th framework programme of the European Union. This underlines the importance of progress in integrating inter-organizational business processes between enterprises and administrations. Having already put considerable effort into the area of government-to citizen services, the public administrations now increasingly recognize the importance of developing the government-to-business sector. In this area, most of the benefits in terms of cost reduction and process efficiency will rely on more than information provision and document exchange and will require the coordination and integration of back-office processes as well. A typical example of such government-to-business interactions is e-Procurement. Available application interoperation architectures have limitations in terms of language and platform independence, as well as in terms of complexity of implementation and use. The technology that promises to provide an easy and inexpensive way to share interspersed and/or disparate applications on the Internet and make them available for interoperation is offered by Web Services. (Volker, *et al,* 2003)

The sectors taking the lion's share of the national government budget are education sector, 20%, Energy, Infrastructure and ICT, 16.6%, Public Administration and International relations 12.6%. These sectors tallied together account for about a half of the National Government budget. As priority sectors, they constitute a source of fiscal pressure for the financial year and in the medium term. Similarly, there is substantial attention given towards the contextual challenges of governance and insecurity through considerable allocations to the GJLOS, 8.4% and the National Security at 5.9%. (IEA, 2014)

Described would be a fundamental component as the government forges forward to ensure waste in procuring has been reduced, if all the entities prescribe to the theory of sustainable procurement; as would be the highlight of our objective effect of the adequacy of technological infrastructure on the implementation of sustainable public procurement in Kenyan Public Universities.

Training and development

The purpose of training and development programs is to improve employees and organizational capabilities. When the organization invests in improving the knowledge and skills of the employees, the investment is returned in the form of more productive and effective employees. Training and development programs should be based on training of and management needs identified by a training need analysis so that the time and money invested in training and management development is linked to the core business or goals of the organization. (Watad & Ospina, 2009).

In Kenya, the government should forge forward to ensure that implementation of the procedures and measures are in place. The lack of Training and development on matters relating to the new concept of sustainable public procurement can prove to be quite discouraging. This can be an impediment as the background would be a great resource to the study. The Kenyan government has made leeway as it has trained its procurement officers through all the changes in policies and regulations.

Empirical Review

Financial Resources

According to the Organisation for Economic Cooperation and Development (OECD), (2009) as the world economy begins to recover, the world's political and financial leaders have begun to emphasize the importance of fiscal consolidations in promoting sustainable global

growth. Record debt levels have already impacted the borrowing costs of several countries, including some G20 countries. Gross government debt for advanced economies is projected to rise from 75% to 115% of GDP between 2008 and 2014 with most of that increase up front. By 2014, debt ratios will be close to or exceed 90% in all G7 countries except Canada. The fiscal outlook is better for emerging economies, but it is unlikely that they would be shielded from a loss of confidence in public sector sustainability in the developed economies; as the recent crisis has amply demonstrated, crises in confidence easily spill across borders. It is thus critical to avoid a surge in interest rates that concerns about high debt ratios might prompt. High deficits and debt can all too easily trigger such a surge if markets perceive a more relaxed attitude toward fiscal solvency. Thus an exit strategy to plan the transition from the current levels of fiscal imbalances to more sustainable levels is clearly needed.

In 2011 the United Nations Environmental program selected case studies were conducted, from developed and developing countries, demonstrated the tangible and measurable impacts of sustainable public procurement, and its support towards the achievement of economic, social and environmental goals. The intention was also to dispel certain misconceptions about SPP. Policy makers and procurers assume for instance that sustainable goods will usually be more expensive than 'traditional' items. Yet SPP does not need to cost more, particularly when total costs are calculated over the lifetime of products and services. (United Nations Environmental Programme (UNEP), 2011)

Government Regulations and Policies

According to Favre (2004), the adaptation and compliance to relevant public procurement laws that have been well researched and fully implemented can result to savings of above forty percent. Many organizations would hit a snag in their processes if the agreed nationally approved systems are not placed may be effected with sanctions that can result to related conclusions. This can be in a bid to ensure the public and public limited companies have adhered to the set standards. This will go a long way in the support of any given government and in this instance Kenya as it will lead all government factions to adhere to the processes and in turn the private sector will follow suit in a bid to comply.

The objective of regulatory policy is to ensure that regulations are in the public interest. It addresses the permanent need to ensure that regulations and regulatory frameworks are justified, of good quality and "fit for purpose". An integral part of effective public governance, regulatory policy helps to shape the relationship between the state, citizens and businesses. An effective regulatory policy supports economic development and the rule of law, helping policy makers to reach informed decisions about what to regulate, whom to regulate, and how to regulate. Evaluation of regulatory outcomes informs policy makers of successes, failures and the need for change or adjustment to regulation so that it continues to offer effective support for public policy goals. Regulatory policy can be viewed, strategically alongside fiscal and monetary policy as one of the three core levers at the disposal of governments for managing the economy and society, implementing policy and influencing behaviour. Regulatory managers on the ground may consider this to be too conceptual, but it does no more than draw attention to a powerful reality, underlining the importance of regulatory policy, and the need for it to be at the centre of government attention. (OECD, 2009)

Technological Infrastructure

The implementation of Government-to-Business, (G2B) services, such as public e-Procurement, takes time and is expensive, since

it entails complex, laborious and expensive interoperation of interspersed and/or disparate applications, such as ERP systems, ordering, invoicing, billing systems, etc, at both national and international level. Therefore, reduction of development costs and time is a vital prerequisite for the realization of public e-Procurement services. A second problem is the complexity that results from the strict regulatory and legal framework that developers of such services should respect. Development of efficient, effective and lawful sustainable public Procurement services should be based on recognised best practices and EC policies and directives, so that they guarantee non-discriminatory and transparent awarding processes that comply with regulations. (Volker, *et al,* 2003)

Available application interoperation architectures have limitations in terms of language and platform independence, as well as in terms of complexity of implementation and use. The technology that promises to provide an easy and inexpensive way to share interspersed and/or disparate applications on the Internet and make them available for interoperation is offered by Web Services. By means of Web Service-based Procurement services, public administrations will be able to 'expose' any involved public Procurement function, process and sub-process to any other entity, such as another business function, an organisation, a particular community, or an end-user. As Web Service-based public e-Procurement processes can be assembled quickly, they can be tailored to the needs of individual recipients with a degree of granularity not previously possible or economically viable. (Volker, *et al,* 2003)

Training and Development

The Education for Sustainable Development Toolkit is based on the idea that communities and educational systems within communities need to dovetail their sustainability efforts. As communities develop sustainability goals, local educational systems can modify existing curriculums to reinforce those goals. It became apparent that many communities have not developed sustainability goals or action plans on which to base educational change. As a result, we include some exercises to help communities develop such goals. We also include a few exercises to explain the concept of sustainable development (Hoskins C , *et al, 2002*)

Education is held to be central to sustainability. Indeed, education and sustainability are inextricably linked, but the distinction between education as we know it and education for sustainability is enigmatic for many. The following section describes the components of education for sustainability. ESD carries with it the inherent idea of implementing programs that are locally relevant and culturally appropriate. All sustainable development programs including ESD must take into consideration the local environmental, economic, and societal conditions. As a result, ESD will take many forms around the world. Simply increasing basic literacy, as it is currently taught in most countries, will not advance sustainable societies. Indeed, if communities and nations hope to identify sustainability goals and work toward them, they must focus on skills, values, and perspectives that encourage and support public participation and community decision making. To achieve this, basic education must be reoriented to address sustainability and expanded to include critical-thinking skills, skills to organize and interpret data and information, skills to formulate questions, and the ability to analyze issues that confront communities. (McKeown Rosalyn, 2008)

Another common misconception is that SPP revolves mainly around environmental concerns. This study will demonstrate that socio-economic goals such as the promotion of local industries, the creation of jobs, and the support to micro, small and medium-sized

businesses are objectives that can be achieved through sustainable public procurement. This leads to better economic conditions as the tax burden on the population is reduced. This highlights the need of training and development that would ensure the enactment and embracement of sustainable procurement in the public sector upon which the alternate and redundant views and practices would be separated and the economic benefits embraced. (UNEP, 2011).

Implementation of Sustainable Public Procurement

According to De La Harpe. S (2008), Sustainable procurement as a broad concept first emerged following the Rio Earth Summit in 1992. During the 1990s, environmental procurement policies started appearing at the European and international levels and some grew into sustainable procurement policies. Many governments, both overseas and domestic, have now implemented policies promoting sustainable procurement principles. Implementation of sustainable public procurement rules and regulations aims to reduce the adverse environmental, social and economic impacts of purchased products and services throughout their life. These include inputs of natural resources, energy and water in the manufacture, use and disposal of goods; pollution produced from the manufacture, use and disposal of goods; costs of operation and maintenance over the life of the goods; labour conditions in the manufacture, use and disposal of goods or delivery of services and loss of flora and fauna resulting from the removal or alteration of natural resources.

Critiques of Existing Literature

Grodzinska-Jurczak (2001), states that one way is through strict legislation that would dwell on waste reduction of which would be aligned to the national waste management policy. However, he failed to take note that the promise and issuance of incentives tosectors that comply will impose a burden on the national budget of which going against the fact that increase in public expenditure with a growing size and structure of government procurement has led the government to seek alternatives and measures to reduce on the spending by enforcing changes and legislations that would reduce on the dependencies; re-use materials that are not optimally utilized; ensure firms and companies embrace recycling to reduce on reverting on environmental degradation and re-think basing on the need to buy basis. These are the fundamentals of sustainable procurement.

UNEP (2011), Policy makers and procurers assume for instance that sustainable goods will usually be more expensive than 'traditional' items. Yet SPP does not need to cost more, particularly when total costs are calculated over the lifetime of products and services. This can be true but however, the initial costs of the projects is normally too high, mainly in Enterprise Resource Program Systems like the governments Integrated Financial Management Systems not to mention the cost of their upgrades over technological changes.

According to Forti (2012), theory of change must clarify what results governments will hold itself accountable for achieving; in other words, what results must it deliver to be successful. Defining results in this way will force your organization to get real about the impact you are signing up to create, not just what you hope will happen. While dreaming big and setting lofty goals, such as ending world hunger, can inspire your stakeholders, these are better left for your mission statement rather than your theory of change.

Research Gaps

According to Kiage (2013), he contends that an efficient public procurement system is vital to the advancement of African countries and is a

concrete expression of their national commitments to making the best possible use of public resources. He argues that the public procurement entities are faced with the problems from lack of information, its inputs, outputs, resource consumption and results, and are therefore unable to determine their efficiency and effectiveness. This implies that such a problem requires establishment of clear procurement procedures and performance standards. The unbiased and objective training regarding the improvement of the procurement function should improve organizational sustainability of which further research needs to be pursued on.

Kakwezi and Nyeko (2010) argue that procurement performance is not usually measured in most public entities as compared with the human resource and finance functions. They conclude in their findings that failure to establish performance of the procurement function can lead to irregular and biased decisions that have costly consequences to any public procuring entity. They argue that further studies need to be conducted to investigate the various factors that affect procurement entities in the public sector.

To address these gaps and shed new and important light on these issues, the research went ahead and assessed the Constituents that affect the Implementation of sustainable public procurement in Kenyan Public Universities as considering studies and empirical data that address this study are scarce; considering it's a rather new subject in the light of public sourcing and disposal, with the aim of giving remedial measures to the elements so as to improve performance and the government / public to realize their goals.

RESEARCH METHODOLOGY

Research Design

The study employed a descriptive research design because it is an excellent way of finalizing results and proving or disproving a hypothesis. The structure has not changed for centuries, so it is standard across many scientific fields and disciplines. After statistical analysis of the results, a comprehensive answer is reached, and the results can be legitimately discussed and published. The study also used qualitative research design. This is because it is not as dependent upon sample sizes as quantitative methods; a case study, for example, can generate meaningful results with a small sample group, (Shuttleworth, 2008).

Target Population

The target population was 279 employees of Technical University of Kenya (TUK) drawn from different levels of the organisation. All with their offices located within Nairobi city, County.

Sample frame and Sampling procedures

The sampling frame for this study hence included: top management, executive deans, director of schools, directorates, procurement, audit, transport, finance, administration, legal, communication and schools.

The study used simple random sampling and the selection of participants was done through stratified random sampling technique.

The study collected data from various departmental entities as tabulated below of which provided relevance on financial resources; the effects of government rules and regulations to the implementation of new sustainable processes; the adequacy of technological infrastructure without failing to answer the relevance of training and development to implementation of sustainable public procurement in the country and their respective departments. The sample size was therefore 83 employees.

Table 1: Target population and sample size

CATEGORY/ENTITIES	POPULATION	SAMPLE SIZE	PERCENTAGE %
Top Management	11	3	3.6
Executive Deans	3	1	1.2
Directors of Schools	18	5	6.02
Directorate	36	11	13.3
Procurement	5	2	2.4
Audit	6	2	2.4
Transport	26	8	9.6
Finance	11	3	3.6
Administration	17	5	6.02
Legal	4	1	1.2
Communication	4	1	1.2
Schools	138	41	49.4
Total	**279**	**83**	**100%**

Data Collection Method

This research applied both primary and secondary data. According to Kothari (2004), primary data refers to data collected afresh and for the first time, and happen to be in its original character. This includes collection of data through a population study by the use of qualitative and quantitative techniques during the study. This can be by questionnaires, surveys, face to face interviews and direct observations. Secondary data refers to the information that has already been published that is from the internet, books, journals, magazines, published articles, organizational records.

The main tool applied for data collection to conduct this study was a questionnaire. According to Mugenda and Mugenda (2003), A Questionnaire is a research tool that has a predesigned list of questions used for communication with the respondents. The respondents read the questions and answer themselves.

The Questions were structured in a simple way that the respondents understood for quick and accurate response. Respondents were made aware of the purpose of the research wherever possible, and were told how and when they would receive feedback on the findings. Each questionnaire was developed to address specific objectives, research questions and/or hypothesis of the study.

Data Analysis and Presentation

The data collected from the study was analyzed and made more meaningful so as to be understood by a common individual. This included the summary of the essential features and relationship of data in order to generalize and determine patterns of behavior and particular outcomes. This was established by the use of descriptive and inferential statistical methods of analysis. Descriptive statistics are used to describe the basic features of the data in a study. They provide simple summaries about the sample and the measures. Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data they use tables, charts, pies. With inferential statistics, the study was trying to reach conclusions that extend beyond the immediate data alone.

The descriptive analysis such as mean, frequencies and percentages was used to analyze the data. Inferential statistics such as correlation and regression was used to analyze the data. Correlation was used to generate results on the relationship of the variables while regression was used to generate results in the effects of variables on the dependent variables.

The organized data was interpreted on account of concurrence to objectives using data analysis tools like the Statistical Package for Social Sciences (SPSS) and Microsoft office to communicate research findings. Data presentation will form the basis of virtually every quantitative analysis of data by the use of tables, charts and pies.

ANOVA was used to measure the level of regression. The regression model was as follows:

$$Y = \alpha + \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Implementation of sustainable public procurement = $\alpha + \beta_1$ (Financial resources) + β_2 (Government regulations and policies) + β_3 (Adequacy of technological infrastructure) $+ \beta_4$ (Training and development) $+ \varepsilon$.

SUMMARY OF THE FINDINGS

Response Rate

The study achieved a response rate of 83.1% with 69 respondents reached, out of the 83 sample size. 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.

Reliability

A pilot study was carried out in order to determine reliability of the questionnaires. Reliability of the questionnaires was then evaluated through Cronbach's Alpha which measures the internal consistency. The Alpha measures internal consistency by establishing if certain item measures the same construct. Nunnally (1978) established the Alpha value threshold at 0.7 as the minimum for Cronbachs alpha test which the study benchmarked against. Cronbach Alpha was established for every objective in order to determine if each scale (objective) would produce consistent results should the research be done later on.

Table 2 shows that all the scales were significant, having an alpha above the prescribed threshold of 0.7. Training and Development had the highest reliability (α=0.833) followed by Adequacy of Technological Infrastructure (α=0.819), then Financial Resources (α=0.778), while Government Regulations and Policies had the lowest (α=0.711). The study thus found that the analysis was reliable and could be used for further analysis.

Table 2: Reliability Coefficients

Scale	Cronbach's Alpha	Number of Items
Financial Resources	0.711	6
Government Regulations and Policies	0.778	4
Adequacy of Technological Infrastructure	0.819	5
Training and Development	0.833	5

Length of service

With some level of working experience necessary in establishing the study objectives, the study found it necessary to establish the length of service of the respondents, in years, serving at the institution. It was established that a majority of respondents, 53.4% have worked in the study area for between 6 and 10 years. This was followed by those having worked for less than 5 years, as indicated by 25.3% of the respondents. Only 14.9% and 6.4% of respondents were found to have worked at the study area for between 11 and 15 years and above 15 years respectively.

Highest education level

Respondents were also asked to indicate their highest level of education. This would serve to show the academic qualification among respondents in their respective positions, as well as a general overview of education levels in the study area. Findings are as shown in figure 4.2.

From the findings it indicates that, a majority, 61.7% of respondents indicated having attained a postgraduate level, followed by 28.4% having attained either a degree level. A further 15.3% indicated having attained a diploma or higher national diploma level. Overall, the study area can be said to comprise staff from relatively high levels of education.

Respondents' Departments

The study further sought to establish the different departments respondents worked in,

in order to ascertain diversity in perspectives and for representability purposes for further data reliability. The findings revealed that a majority, 47.6% of the respondents, specialize in the schools department. This is distantly followed by 12.9% belonging to Directorate department, then 8.9% in the transport department while 6.0% come from administration. Procurement and Audit departments had a representation of 4.4% and 3.4% of respondents respectively, while the top management recorded a 2.9% representation. It can be deduced therefore, that the study reached respondents across various areas of specialization in the study area, hence diverse perspectives in responses as informed by activities in the respective departments.

Study Variables

Financial Resources

The study sought to establish the effect of financial resources on the implementation of sustainable public procurement in Kenyan Public Universities. To this end, respondents were asked to respond to pertinent statements posed in this regard. Responses were given in the form of both 'yes' and 'no' and on a five-point likert scale (where 5 = Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree; 1= Strongly Disagree). Tables 3 and 4 present the findings. Table 3: Financial resources and implementation of sustainable public procurement

Statement	Yes		No	
	F	(%)	F	(%)
The amount budgeted is sufficient to aid implementation of sustainable public procurement in the university	28	40.6	40	59.4
Training costs are adequate to the enforcing of sustainable public procurement	31	44.9	38	55.1
The technological infrastructure costs are adequate for the implementation of sustainable public procurement	25	36.2	44	63.8
Limitations for funds allocated by the government on areas of spend would restrict the implementation of sustainable policies	39	56.5	30	43.5
The whole life costing (shelf life) of products would restrict sustainable purchasing	42	60.9	27	39.1

As tabulated in tabulated in table 4, a majority of respondents do not agree with the view that the amount budgeted is sufficient to aid implementation of sustainable public procurement in the university (59.4%); training costs are inadequate to the enforcing of sustainable public procurement (55.1%); and that technological infrastructure costs are not adequate for the implementation of sustainable public procurement (63.8%). A majority however agree that limitations for funds allocated by the government on areas of spend would restrict the implementation of sustainable policies (56.5); and that the whole life costing (shelf life) of products would restrict sustainable purchasing (60.9%).

Respondents were further asked to indicate in their opinion, their levels of agreement to pertinent statement posed on the constructs of financial resources that affect the implementation of sustainable public procurement in Kenyan Public Universities. This

was on a five (5) point likert scale (where 5 = Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree; 1= Strongly Disagree). The scores of 'strongly disagree' and 'disagree' were taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of 'Neutral' has been taken to represent a statement agreed upon moderately, equivalent to a mean score of 2.6 to 3.4. The score of 'agree' and 'strongly agree' have been taken to represent a statement highly agreed upon equivalent to a mean score of 3.5 to 5.4. Table 4.4 present the findings.

Table 4: Effect of financial resources on the implementation of sustainable public procurement in Kenyan Public Universities

Statement	Mean	Standard Deviation
Technological infrastructure and maintenance costs are high	4.301	0.9431
Internet and connectivity charges are quite affordable to the institution	3.813	0.5423
Training costs on global changes on sustainable public procurement can be maintained	3.276	0.8612
The allocations by the central government to the university is too small	3.913	1.0617

As presented in table 4, majority of respondents highly agree that: technological infrastructure and maintenance costs are high (4.301); allocations by the central government to the university is too small (3.913); and that internet and connectivity charges are quite affordable to the institution (3.813). A majority are however neutral on the view that training costs on global changes on sustainable public procurement can be maintained (3.276). As such, it can be deduced that financial resources present a key constituent in the implementation of sustainable public procurement in Kenyan Public Universities.

Whereas fund allocation by the government and sustainable purchasing also constitute major hindrances to sustainable public procurement in the said institutions, most notably hindrances to the same include insufficient budgeting, inadequate training costs and inadequate technological infrastructure costs.

Respondents were further asked to briefly provide their input if in their opinion the university should engage the government on increased allocation. A myriad of responses were established in this regard, most notably, that the government ought to increase financial resource allocation to institutions of higher learning in order to fund various academic and development projects thereof especially for public universities who traditionally rely extensively on government funding. A majority further cited the need for increased funding in research and development as well as technological infrastructure in higher institutions as centres for technological advancements and research.

Government Regulations and Policies

The study also sought to assess the effect of government regulations and policies on the implementation of sustainable public procurement in Kenyan Public Universities. Respondents were thus asked to indicate whether or not they agreed with pertinent statements posed in this respect, responding with either 'yes' or 'no'. Tables 6 present the findings.

Table 5: Government Regulations and Policies and implementation of sustainable public procurement

Statement	Yes		No	
	F	(%)	F	(%)
The organization has enforced government regulations and policies with regard to sustainable public procurement	44	63.8	25	36.2
Laws and regulations that govern sustainable public procurement in Kenya are specific to public universities	29	41.2	40	57.9
The organization has enforced the e-procurement (IFMIS) guidelines	38	55.1	31	44.9

Findings as presented in table 6 above reveal that to a majority of respondents, the organization has enforced government regulations and policies with regard to sustainable public procurement (63.8%). A majority however disagrees with the view that laws and regulations that govern sustainable public procurement in Kenya are specific to public universities (57.9%). A majority further agrees that the organization has enforced the e-procurement (IFMIS) guidelines (55.1%).

The study further sought to establish respondents' levels of agreement with key statement posed with a view to assess how government regulations and policies affect the implementation of sustainable public procurement in Kenyan Public Universities. This was also on a five (5) point Likert scale (where 5 = Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree; 1= Strongly Disagree). Findings are as tabulated in table 7 below.

Table 7: Effect of government regulations and policies on the implementation of sustainable public procurement in Kenyan Public Universities

Statement	Mean	Standard deviation
Government regulations encompass the entire scope on implementation of sustainable public procurement in public universities	2.143	.5360
Adequate consultations were made with regard to implementation of sustainable public procurement in public universities	2.015	.5137
Amendments of existing laws and policies need to be made to support sustainable public procurement in public universities	3.913	.4976
The university has fully complied to laws and regulations on the implementation of the sustainable public procurement	3.672	.5587
E-procurement (IFMIS) has been fully implemented in bid to ensure sustainable public procurement	2.691	.5645

As presented in table 7, a majority of respondents highly agree that amendments of existing laws and policies need to be made to support sustainable public procurement in public universities (3.913); and that the university has fully complied with laws and regulations on the implementation of the sustainable public procurement (3.672). A majority was however neutral on the view that E-procurement (IFMIS) has been fully implemented in bid to ensure sustainable public procurement (2.691). A majority further disagrees that the government regulations encompass the entire scope on implementation of sustainable public procurement in public universities (2.143); and that adequate consultation was made with regard to implementation of sustainable public procurement in public universities (2.015). From

the findings, it can deduced that whereas government regulations and policies form a key constituent to the implementation of sustainable public procurement in Kenyan Public Universities, vital loopholes exist on existing laws and policies with respect to their applicability in and support of sustainable public procurement in public universities. Organizational factors also play a key role in sustainable public procurement in Kenyan Public Universities as regards full compliance with laws and regulations on the implementation of the sustainable public procurement including the implementation of e-procurement (IFMIS) in bid to ensure sustainable public procurement in Kenyan Public Universities.

Technological Infrastructure

The study further examined the effect of the adequacy of technological infrastructure on the implementation of sustainable public procurement in Kenyan Public Universities. In this regard, respondents were asked to state whether or not they agreed a set of statements posed to capture how adequacy of technological infrastructure affect the implementation of sustainable public procurement in Kenyan Public Universities. Table 8 presents the findings.

Table 8: Adequacy of Technological Infrastructure and implementation of sustainable public procurement

Statement	Yes		No	
	F	(%)	F	(%)
The university has modern reliable devices that would aid the implementation of sustainable public procurement	22	31.9	47	68.1
The university is connected to a reliable intranet and internet service network	32	46.4	37	53.6
Systems installed are compatible with other diverse programs	31	44.9	38	55.1
The university is operating within a secure network that can protect information from outsiders	30	43.5	39	56.5

A majority of respondents were found to disagree with the views that the university has modern reliable devices that would aid the implementation of sustainable public procurement (68.1%); systems installed are compatible with other diverse programs (55.1%); and that the university is operating within a secure network that can protect information from outsiders (56.5%) and that the university is connected to a reliable intranet and internet service network (53.6%).

Respondents were further asked to indicate their levels of agreement with constructs pertinent to the effects of adequacy of technological infrastructure to the implementation of sustainable public procurement in Kenyan public universities. Responses were further given on a five (5) point Likert scale as analyzed in table 9.

Table 9: Effects of adequacy of technological infrastructure to the implementation of sustainable public procurement in Kenyan public universities

Statement	Mean	Standard deviation
The intranet and internet are highly reliable	3.114	.5765
The systems can accommodate and process massive data at once	2.423	.4812
The staff are well trained in the existing IT services provided	2.261	.5408
Additional investments should be made on existing infrastructure	3.855	.5312
The existing IT infrastructure can lead to attainment of sustainable public procurement	3.052	.5317

Low levels of agreement were noted in this particular finding, with a majority of respondents only highly agreeing that additional investments should be made on existing

infrastructure (3.855). A majority however was neutral on whether the intranet and internet are highly reliable (3.114); and that the existing IT infrastructure can lead to attainment of sustainable public procurement (3.052). A majority was however found to disagree that the systems can accommodate and process massive data at once (2.423); and that staff are well trained in the existing IT services provided (2.261). The study thus deduces that there are low satisfaction levels in the university, as regards the adequacy of technological infrastructure.

As a key constituent to the implementation of sustainable public procurement in Kenyan public universities, notable inadequacies in technological infrastructure stem from among others, inadequate investments, weak IT infrastructure and a lack of training in the usage of existing IT infrastructure among practitioners in the public universities.

Respondents were further asked to briefly discuss other factors or policies on adequacy of technological infrastructure that would support the implementation of sustainable public procurement rules and regulations. A range of responses were established in this regard, broadly themed around organizational factors, management support, technical factors as well as environmental factors. More particularly, a majority of respondents cited access to internet knowledge, supplier knowledge gaps with respect to the e-procurement technologies, lack of a critical mass of suppliers accessible through the organization's e-procurement system as well as lack business models that support e-procurement technologies. Other factors raised included leadership failures, poor coordination, workplace and organizational inflexibility, poor technical design, incompatible IT standards, inappropriate design of tendering systems, and inadequate legal framework.

Training and Development

Finally, the study sought to determine the effect of training and development on the implementation of sustainable public procurement in Kenyan Public Universities. To this end, respondents were further asked to indicate whether or not they agreed with a range of statements asked with a view to determine how training and development as a constituent affects the implementation of sustainable public procurement in Kenyan Public Universities. Table 10 below presents the findings.

Table 10: Training and Development and implementation of sustainable public procurement in Kenyan Public Universities

Statement	Yes		No	
	F	(%)	F	(%)
University staffs have been trained on the concept of sustainable procurement	30	43.5	39	56.5
University staffs are comprehensively and adequately trained on sustainable public procurement	27	39.1	42	60.9
The university has the capacity to enhance further training (regular update of skills) on sustainable public procurement	47	68.1	20	31.9
There is need for additional skills and competency of sustainable public procurement	38	55.1	31	44.9

As indicated in table 10, a majority of respondents disagrees with the view that university staffs have been trained on the concept of sustainable procurement (56.5%); and that university staffs are comprehensively and adequately trained on sustainable public procurement (60.9%). A majority of respondents however agrees that the university has the capacity to enhance further training (regular update of skills) on sustainable public procurement (68.1%); and that there is need for

additional skills and competency of sustainable public procurement (55.1%).

Respondents were further asked to indicate their levels of agreement with various constructs aimed at determining the effects of Training and Development to the implementation of sustainable public procurement in Kenyan Public Universities. Responses in this regard were further given on a five (5) point Likert scale (where 5 = Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree; 1= Strongly Disagree). Findings are as presented in table 11.

Table 11: Effects of Training and Development to the implementation of sustainable public procurement in Kenyan Public Universities

Statement	Mean	Standard deviation
The workforce needs external guidance with regard to sustainable public procurement	3.601	.5078
The staff have the skills to enforce sustainable public procurement	3.342	.6745
The government has initiated and developed programs specifically for public universities to develop knowledge on implementation of sustainable public procurement	2.074	.6734
Training in sustainable public procurement will reduce wastage within the procurement processes	4.228	.5080
Training on sustainable procurement should also involve all user departments and suppliers	4.124	.5292

A majority of respondents were found to highly agree that training in sustainable public procurement will reduce wastage within the procurement processes (4.228); training on sustainable procurement should also involve all user departments and suppliers (4.124); and that the workforce needs external guidance with regard to sustainable public procurement (3.601). A majority however was neutral on whether the staff has the skills to enforce sustainable public procurement (3.342). A majority further disagrees that government has initiated and developed programs specifically for public universities to develop knowledge on implementation of sustainable public procurement (2.074). As such, training and development is a key constituent to the implementation of sustainable public procurement in Kenyan Public Universities. It is notable that most respondents are highly optimistic that training in sustainable public procurement has the potential to reduce wastage within the procurement processes hence sustainability and the same should involve all user departments and suppliers.

Respondents were finally asked to briefly provide their input if other training methods or forums could be used to aid implementation of sustainable public procurement. Among responses provided, a majority cited the adoption of user-orientated training concept, training-the-trainer workshops, educational and training modules, trainings on management concepts and techniques, public procurement operations as well as public procurement and good governance.

Pearson Correlation Analysis

Table 12 below presents the Pearson correlations for the relationships between the various constituents and the implementation of sustainable public procurement in Kenyan Public Universities. From the findings, a positive correlation is seen between each aspect constituent. The strongest correlation was obtained between training and development and implementation of sustainable public procurement (r = 0.7723), and the weaker relationship found between government regulations and policies and implementation of sustainable public procurement (r = 0.7318).

Financial resources and adequacy of technological infrastructure are also strongly and positively correlated with implementation

of sustainable public procurement at correlation coefficient of 0.7134 and 0.6933 respectively. All the independent variables were found to have a statistically significant association with the dependent variable at 0.05 level of confidence. Stigler (2002) offers that the Pearson product-moment correlation coefficient measure linear correlation (dependence) between two variables *X* and *Y*, giving a value between +1 and −1 inclusive, where 1 is total positive correlation, 0 is no correlation, and −1 is total negative correlation. He further demonstrates that P values less than 0.05 level of confidence can be considered statistically significant.

Table 12: Pearson correlation matrix

	Implementation	Financial resources	Government regulations and policies	Adequacy of technological infrastructure	Training and development
Implementation	1				
Financial resources	0.7134	1			
	(0.013)				
Government regulations and policies	0.7318	0.547	1		
	(0.027)	(.000)			
Adequacy of technological infrastructure	0.6933	0.684	0.539	1	
	(0.002)	(.076)	(.032)		
Training and development	0.7723	0.682	0.629	0.572	1
	(0.011)	(0.003)	(0.061)	(0.214)	

***Correlation is significant at the 0.05 level (2-tailed)**

Regression Analysis

To establish the degree of influence of the various constituents on implementation of sustainable public procurement, a regression analysis was conducted, with the assumption that: variables are normally distributed to avoid distortion of associations and significance tests, which was achieved as outliers were not identified; a linear relationship between the independent and dependent variables for accuracy of estimation, which was achieved as the standardized coefficients were used in interpretation.

The regression model was as follows:

$Y = \alpha + \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_3 X_4 + \epsilon$

Implementation of sustainable public procurement = $\alpha + \beta_1$ (Financial resources) + β_2 (Government regulations and policies) + β_3 (Adequacy of technological infrastructure) $_+$ β_4 (Training and development) $_+ \varepsilon$.

Regression analysis produced the coefficient of determination and analysis of variance (ANOVA). Analysis of variance was done to show whether there is a significant mean difference between dependent and independent variables. The ANOVA was conducted at 95% confidence level. According to Katz (2006) Regression analysis generates an equation to describe the statistical relationship between one or more predictor variables and the response variable.

Model goodness of fit

Regression analysis was used to establish the strengths of relationship between Implementation of sustainable public procurement (dependent variable) and the constituents, that is, financial resources, government regulations and policies, adequacy of technological infrastructure and training and development (independent variables).

The results showed a correlation value (R) of 0.771 which depicts that there is a good linear dependence between the independent and dependent variables. This is presented in table 4.13 below.

Table 13: Model Goodness of Fit

R	R^2	Adjusted R^2	Std. Error of the Estimate
0.771	0.594	0.587	0.046

a. Predictors: (Constant), financial resources, government regulations and policies, adequacy of technological infrastructure, training and development

b. Dependent Variable: Implementation of sustainable public procurement

With an adjusted R-squared of 0.594, the model shows that financial resources, government regulations and policies, adequacy of technological infrastructure and training and development explain 59.4 percent of the variations in the implementation of sustainable public procurement while 40.6 percent is explained by other factors not included in the model. According to Howell (2002), measures of goodness of fit typically summarize the discrepancy between observed values and the values expected under the model in question.

Analysis of Variance (ANOVA)

As presented in table 14, ANOVA statistics was conducted to determine the differences in the means of the dependent and independent variables to show whether a relationship exists between the two.

Table 14 Analysis of Variance (ANOVA)

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	4.181	4	1.394	3.135	.038a
Residual	15.562	69	.445		
Total	19.743	73			

The P-value of 0.038 implies that implementation of sustainable public procurement has a significant joint relationship with financial resources, government regulations and policies, adequacy of technological infrastructure and training and development which is significant at 5 percent level of significance. This also depicted the significance of the regression analysis done at 95% confidence level. This is implies that the regression model is significant and can thus be used to assess the association between the dependent and independent variables. Gelman (2006) provides that ANOVA statistics analyzes the differences between group means and their associated procedures (such as "variation" among and between groups).

Regression coefficients of determination

To determine the relationship between the independent variables and the dependent variable and the respective strengths, the regression analysis produced coefficients of determination as presented in table 15 below.

Table 15 Regression Coefficient Results

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	7.724	5.006		1.543	.043
Financial resources	1.740	0.589	.296	2.954	.017
Government regulations and policies	1.722	.697	.338	2.471	.033
Adequacy of technological infrastructure	1.644	.689	.287	2.386	.032
Training and development	1.779	.720	.362	2.471	.023

a. Dependent Variable: Implementation of sustainable public procurement

The data in table 4.15 reveals a positive relationship between implementation of sustainable public procurement and all the independent variables.

Taking the regression model: $Y = \alpha + \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X3 + \epsilon$; where, Y= Implementation of sustainable public procurement; α = Constant; β_1 - β_4 = Beta coefficients; X1 = Financial resources; X_2 = Government regulations and

policies; X_3 = adequacy of technological infrastructure; X_4 = training and development and Є = Error term, the established regression equation was:

Implementation of sustainable public procurement = 7.724 + 1.740 Financial resources + 1.722 Government regulations and policies + 1.644 Adequacy of technological infrastructure + 1.779 Training and development

A unit change in financial resources would thus lead to a 1.740 change in implementation of sustainable public procurement ceteris paribus; a unit change in government regulations and policies would lead to a 1.722 change in implementation of sustainable public procurement ceteris paribus and a unit change in the adequacy of technological infrastructure would lead to a 1.644 change in implementation of sustainable public procurement ceteris paribus while a unit change in Training and development would lead to a 1.779 change in implementation of sustainable public procurement. This is in conformity with Katz (2006) who provides that regression analysis helps one understand how the typical value of the dependent variable (or 'criterion variable') changes when any one of the independent variables is varied, while the other independent variables are held fixed. This implies that among other factors, financial resources, government regulations and policies, adequacy of technological infrastructure and training and development are key determinants of implementation of sustainable public procurement in public universities in Kenya.

SUMMARY OF FINDINGS

Financial Resources

The study sought to establish the effect of financial resources on the implementation of sustainable public procurement in Kenyan Public Universities. A majority of respondents did not agree with the view that the amount budgeted is sufficient to aid implementation of sustainable public procurement in the university (59.4%); training costs are adequate to the enforcing of sustainable public procurement (55.1%); and that technological infrastructure costs are adequate for the implementation of sustainable public procurement (63.8%). A majority however agree that limitations for funds allocated by the government on areas of spend would restrict the implementation of sustainable policies (56.5); and that the whole life costing (shelf life) of products would restrict sustainable purchasing (60.9%).

Further, majority of respondents highly agree that: technological infrastructure and maintenance costs are high (4.301); allocations by the central government to the university is too small (3.913); and that internet and connectivity charges are quite affordable to the institution (3.813). A majority are however neutral on the view that training costs on global changes on sustainable public procurement can be maintained (3.276).

Government Regulations and Policies

The study also sought to assess the effect of government regulations and policies on the implementation of sustainable public procurement in Kenyan Public Universities. In this regard, a majority of respondents, the organization has enforced government regulations and policies with regard to sustainable public procurement (63.8%). A majority however disagrees with the view that laws and regulations that govern sustainable public procurement in Kenya are specific to public universities (57.9%). A majority further agrees that the organization has enforced the e-procurement (IFMIS) guidelines (55.1%).

From further findings, a majority of respondents highly agree that amendments of existing laws and policies need to be made to support sustainable public procurement in public

universities (3.913); and that the university has fully complied with laws and regulations on the implementation of the sustainable public procurement (3.672). A majority was however neutral on the view that E-procurement (IFMIS) has been fully implemented in bid to ensure sustainable public procurement (2.691). A majority further disagrees that the government regulations encompass the entire scope on implementation of sustainable public procurement in public universities (2.143); and that adequate consultation was made with regard to implementation of sustainable public procurement in public universities (2.015).

Technological Infrastructure

The study further examined the effect of the adequacy of technological infrastructure on the implementation of sustainable public procurement in Kenyan Public Universities. A majority of respondents were found to disagree with the views that the university has modern reliable devices that would aid the implementation of sustainable public procurement (68.1%); systems installed are compatible with other diverse programs (55.1%); and that the university is operating within a secure network that can protect information from outsiders (56.5%). A majority however agrees that the university is connected to a reliable intranet and internet service network (53.6%). Overall, low levels of agreement were noted in this particular finding, with a majority of respondents only highly agreeing that additional investments should be made on existing infrastructure (3.855). A majority however was neutral on whether the intranet and internet are highly reliable (3.114); and that the existing IT infrastructure can lead to attainment of sustainable public procurement (3.052). A majority was however found to disagree that the systems can accommodate and process massive data at once (2.423); and that staff are well trained in the existing IT services provided (2.261).

Training and Development

Finally, the study sought to determine the effect of training and development on the implementation of sustainable public procurement in Kenyan Public Universities. A majority of respondents disagrees with the view that university staffs have been trained on the concept of sustainable procurement (56.5%); and that university staffs are comprehensively and adequately trained on sustainable public procurement (60.9%).

A majority of respondents however agrees that the university has the capacity to enhance further training (regular update of skills) on sustainable public procurement (68.1%); and that there is need for additional skills and competency of sustainable public procurement (55.1%). A majority of respondents were further found to highly agree that training in sustainable public procurement will reduce wastage within the procurement processes (4.228); training on sustainable procurement should also involve all user departments and suppliers (4.124); and that the workforce needs external guidance with regard to sustainable public procurement (3.601). A majority however was neutral on whether the staff has the skills to enforce sustainable public procurement (3.342). A majority further disagrees that government has initiated and developed programs specifically for public universities to develop knowledge on implementation of sustainable public procurement (2.074).

Pearson correlation was conducted to determine the relationships between the various constituents and the implementation of sustainable public procurement in Kenyan Public Universities. From the findings, a positive correlation is seen between the each aspect constituent. The strongest correlation was obtained between training and development and implementation of sustainable public procurement ($r = 0.7723$), and the weaker relationship found between government

regulations and policies and implementation of sustainable public procurement (r = 0.7318). Financial resources and adequacy of technological infrastructure are also strongly and positively correlated with implementation of sustainable public procurement at correlation coefficient of 0.7134 and 0.6933 respectively. All the independent variables were found to have a statistically significant association with the dependent variable at 0.05 level of confidence.

Regression analysis was also performed with ANOVA statistics conducted to determine the differences in the means of the dependent and independent variables to show whether a relationship exists between the two. The P-value of 0.038 implies that Implementation of sustainable public procurement has a significant joint relationship with financial resources, government regulations and policies, adequacy of technological infrastructure and training and development which is significant at 5 percent level of significance.

Conclusions

From the foregoing findings, it can be deduced that financial resources present a key constituent in the implementation of sustainable public procurement in Kenyan Public Universities. Whereas fund allocation by the government and sustainable purchasing do not constitute major hindrances to sustainable public procurement in the said institutions, most notably hindrances to the same include insufficient budgeting, inadequate training costs and inadequate technological infrastructure costs.

It was also established that whereas government regulations and policies form a key constituent to the implementation of sustainable public procurement in Kenyan Public Universities, vital loopholes exist on existing laws and policies with respect to their applicability in and support of sustainable public procurement in public universities. Organizational factors also play a key role in sustainable public procurement in Kenyan Public Universities as regards full compliance with laws and regulations on the implementation of the sustainable public procurement including the implementation of e-procurement (IFMIS) in bid to ensure sustainable public procurement in Kenyan Public Universities.

However, as GOK (2005) notes, regardless of the effort by the governments of developing countries, like Kenya and development policies like the procurement Acts and regulations enacted to improve resource performance of the procurement function, public procurement is still marred by poor quality goods and services. This assertion calls for consideration on whether suppliers and other practitioners in the procurement industry are doing enough to ascertain the quality of quality goods and services procured.

The study also deduces that there are low satisfaction levels in the study area, as regards the adequacy of technological infrastructure. As a key constituent to the implementation of sustainable public procurement in Kenyan public universities, notable inadequacies in technological infrastructure stem from among others, inadequate investments, weak IT infrastructure and a lack of training in the usage of existing IT infrastructure among practitioners in the public universities..

It can further be concluded that training and development is a key constituent to the implementation of sustainable public procurement in Kenyan Public Universities. It is notable that most respondents are highly optimistic that training in sustainable public procurement has the potential to reduce wastage within the procurement processes hence sustainability and the same should involve all user departments and suppliers. The study hereby concludes that among other factors, financial resources, government regulations and policies, adequacy of technological infrastructure and training and

development are key determinants of effective implementation of sustainable public procurement in Kenyan Public Universities. As Gelderman et al. (2006) also note that there is need to train procurement officers on evaluating and monitoring implementation of procurement and disposal of assets, policies, procedures and guidelines and make appropriate recommendation

Recommendations

The study has revealed the significance of resource allocation and planning and its contribution to public entity procurement in that public procurement goes through the same challenges in public organizations. Although this is the case of late most public financial institutions are run on private sector principles and therefore follow the procurement practices of the private sector which is based on strategic procurement. Resource allocation is an important aspect in determining how effective the whole process will be. This calls for public entities to try and balance resource allocation and even allocate more funds to procurement departments.

Whereas pieces of legislation and regulations exist governing Public Procurement in Kenya, including the Procurement Manual 2009, the Public Procurement and Disposal Act, 2005 and the Public Procurement and Disposal Regulations 2006, there is need for the government to institute more strict provisions and put in place punitive measures in the event of non-compliance with the same by public institutions and provide incentives to the compliant institutions. An effective way to this end would include having active tax incentives to institutions that observe sustainability in their procurement processes.

There is need for public institutions, including public universities to adopt the Web Service-based Procurement services, as both an efficient and a cost-effective way of sharing interspersed and/or disparate applications on the Internet and make them available for interoperation among public institutions. By adopting this, public administrations will be in a position to expose any involved public Procurement function, process and sub-process to any other entity, such as another business function, an organization, a particular community, or an end-user.

Further, Web Service-based public e-Procurement processes has the ability to be assembled quickly and tailored to the needs of individual recipients with a degree of granularity not previously possible or economically viable. This will ensure the efficient and effective service to both the internal and external customers of the university.

Public institutions' employees are at the core of processes involved in public procurement. From the lack of adequate training established from the research findings, on matters relating to the new concept of sustainable public procurement, there is need for public institutions to establish training and development programs based on training of and management needs identified by a training need analysis so that the time and money invested in training and management development is linked to the core business or goals of the organization. These training and development programs would ensure the enactment and embracement of sustainable procurement in the public sector upon which the alternate and redundant views and practices would be separated and the economic benefits embraced.

Suggestions for further studies

The present study has assessed the constituents that affect the implementation of sustainable public procurement in Kenyan Public Universities. From the regression analysis (model goodness of fit), the strength relationship between the independent variables (constituents) and the dependent variable was established at 59.4%. Further studies can hence

be conducted to examine other constituents (40.6%) that affect the implementation of sustainable public procurement in Kenyan public universities.

Considering that this study was a case of Technical University of Kenya, which is a single public university, a further survey can be conducted to encompass the other twenty one (21) public universities in a more advanced level, preferably doctorate level of which would be to assess the constituents that affect the implementation of sustainable public procurement a study of public universities in Kenya.

Replication of this study to assess the constituents that affect private universities in Kenya can also yield beneficial results as both academia and public institutions can interact with or accommodate. This is considering there are twelve chartered private universities in the country of which may have their own procurement and sustainability systems used in the processes and are as well affected by changes in the education sector.

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