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Influence of Technological Innovation on Public Sector Performance in Nairobi City County Government

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Abstract: **The purpose of the study was to analyse the influence technological innovation on public sector performance in Nairobi City County Government.**

Methodology: **The study used both qualitative and quantitative research designs. The study targeted the 32,099 civil servants operating in respective public sectors. This study utilized both primary and secondary data. Primary data was collected by use of questionnaire method. From the research population, a sample of 384 respondents was selected and administered with questionnaires using a drop and pick method. A multiple linear regression model was used to analyze the data using statistical package for the social sciences (SPSS).**

Results: **The study found that 34.8% of the variation in public sector performance in Nairobi City County Government. The results of coefficients to the estimates was 0.005 hence significant at the 0.05 level of significance. This indicated that technological innovation positively and significantly influence public sector performance in Nairobi City County Government.**

Unique contribution to theory, practice and policy: **The findings of this study are useful to the county government and policy makers to seek policies that will incorporate adoption of technological innovation for public sector performance.**

Keywords: **technological innovation, public sector performance.**

1. INTRODUCTION

Innovation refers to changing processes or creating more effective processes, products and ideas (Nielsen, 2016). For businesses, this could mean implementing new ideas, creating dynamic products or improving your existing services. Innovation can be a catalyst for the growth and success of an organization, and can help in adapting and growth in the marketplace (Kumar, 2016).

Successful innovation should be an in-built part of your business strategy, where you create a culture of innovation and lead the way in innovative thinking and creative problem solving. Innovation can increase the likelihood of your business succeeding. Businesses that innovate create more efficient work processes and have better productivity and performance (Hall, 2011).

As per the study conducted by Mulgan (2006), the public-sector organizations can become more effective innovators. Public sector innovations involve creating, developing and implementing practical ideas to achieve a public benefit. Innovation in the public-sector organizations induce better understanding of opportunities and problems, thus generating more useful ideas by scaling things up and improving adoption.

Government policies have had an impact on the innovation strategy and its efforts towards development and advancement. Government policies are critical for innovation within the public sector because it decides resource allocation in accordance with comparative advantages (O'Donnell, 2006). In public sector organizations, there is a need to balance innovation policies that supports traditional technology with the policies that better respond to the issues of competition and enterprise development (Jong et al, 2008). Apart from this, there are various organizational factors that create a learning environment which promotes innovation. Transition to new ideas within the organization faces not only financial barriers but a lot of cultural and political barriers too in both public and private sector organizations. So, implementation of innovation is not an easy task in both the types of organizations.

An organization that provides an environment and culture that promotes learning and development of employees; open communication channels and learning from customers, suppliers and even competitors is better positioned to innovate. It is through learning that an organization is able to increase the depth and diversity of knowledge (Mavin, Lee & Robson, 2010).

Problem Statement:

Innovation is a catalyst for the growth and success of an organization, and helps in adapting and growth in market place (Kumar, 2016). Scholars and practitioners have become increasingly interested in innovation in the public sector (Osborne and Brown 2011). Many embrace the idea that innovation can contribute to improving the quality of public services as well as to enhancing the problem-solving capacity of governmental organizations in dealing with societal challenges (De Vries et al, 2015). Innovation can increase the likelihood of a business succeeding. Organizations that innovate create more efficient work processes and have better productivity and performance. This is also true for the public sector.

Innovation is an established field of study that tries to explain why and how innovation takes place (De Vries et al, 2015). General literature reviews and systematic reviews have been carried out to assess the state-of-the-art in this field as well as to generate new avenues for theory building and research (Perks & Roberts, 2013). What is known about innovation in the public sector? What topics have been addressed in the innovation studies to date, and what are the possible avenues for future research? Moreover, what can be added to the current methodological state-of-the art when it comes to public innovation research?

Many researches have been conducted to identify the challenges and barriers to adopt innovation in the public-sector organizations but a comprehensive systematic overview of public sector innovation, which are replicable and transparent is still lacking. So this research study will try to explore how implementation of innovation benefits the public sector in Kenya empirically and it will attempt to overcome the loopholes of the review of literature on the stated topic.

Most of the literature reviews were mostly grasping the meaning and importance of public sector innovation conceptually rather than empirically. This research will explore the empirical grounding of the knowledge that has been put forward in the scholarly articles related to innovation in the public sector and in so doing will seek to improve the quality and efficiency of internal and external processes; Creation of new organizational forms, the introduction of new management methods and techniques and new working methods; Creation or use of new technologies, introduced in an organization to render services to users and citizens; Creation of new public services or products; Introduction of new concepts, frames of reference or new paradigms that help to reframe the nature of specific problems as well as their possible solutions. Innovation has shown a statistically significant change mainly in Nairobi County through imposing technological techniques in revenue collection and use of new ideas and knowledge in industries. The margin of good production and revenue collection has drastically increased in the County compared to the past when innovation was not mainly practiced.

Study Objective:

To determine the influence technological innovation on public sector performance in Nairobi City County Government.

2. LITERATURE REVIEW

Theoretical Literature Review:

Consumer Behavior Theory: This takes into consideration the needs of producers and uses this as a starting point for evaluating the benefits and shortcomings of an innovation. CBT assumes that a potential adopter actively searches for information and dedicates a great deal of time and energy in making decisions. Consumer Behavior Theory provides a

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context for determining how innovations can contribute to satisfying the needs of the adopters. There is a postulation that a variety of decision processes occur when making the decision whether or not to adopt an innovation. Besides, consumer behavior theory provides criteria for identifying the decision processes occurring in particular circumstances and recognizes that different individuals adopts the same products for differing needs (Kaine, 2004) In this study, this theory mainly supports organisation innovation variable. The theory supports the variable of technological innovation by linking the Consumer Behavior Theory to public-sector performance in Nairobi City County Government.

Empirical Review:

Technological innovation comprises activities that contribute to the research, development and design of new products, services or techniques, or to improving existing products, and generates new technological knowledge. Innovation process depends essentially on external conditions; designing of new technologies results from interactions with customers, suppliers, competitors and various other public and private organizations (Diaconu, 2011). This explains why clusters, competition and other business linkages are so important for the process of technological development.

In this context, innovation seen as a system, in terms of spatial, at the regional or national level, allows understanding and analysis of these interactions, with impact on innovation propensity and performance of innovation activity (Diaconu, 2011). However, technological competitiveness resulted from innovation based on in-house R&D activity is an economic development moving force. An innovative company will achieve a high profit rate, giving a signal to other companies, including imitators who, if they have market entrance conditions, will pursue to share profit, resulting in diminishing initial innovator advantage. Such imitators “spreading” at the industrial or sector level tackle technologic development in a time interval, after which emerged effects from new technologies upon growth will slow down. Taking this idea of Marxist origin, Schumpeter was to note the importance of innovations diffusion, arguing that imitators can be successful if they improve the original innovation, that is, if they become themselves innovators (Diaconu, 2011). In this framework, it becomes obvious that the technology acquisition cannot be simply assimilated with purchasing from suppliers. Companies must have the ability to identify the appropriate technologies they need, to assess technological options for using or their modification and, last but by no means to least, to integrate new technologies into production processes. With other words, companies that practice this type of innovation must have skills to purchase and use new or substantially improved technologies (Diaconu, 2011).

Information sharing; refers to the official or unofficial sharing of meaningful, timely, and appropriate information between firms and can be defined as parties favorably providing helpful information to their partners (Lee, 2015). Traditionally, an organization’s management distributed information along a well-defined, top-down channel (Daft, 1983). Today, due to the spread of social technologies, information can be shared with great ease and almost no effort. This ease of information sharing makes it very difficult to assure that all information travels along the defined channels. Thus, many organizations that already use social technologies to a wider extend are facing the problem of how to adopt their policies to the new nature of information sharing (Martin & van Bavel, 2013).

This expectation of collecting a diverse range of information enables the partner to better respond to internal processes and external market conditions. Accordingly, the sharing of accurate, timely and appropriate information enables reasonable decision making and the improved effectiveness of the process. It can also reduce the level of uncertainty a firm faces in its decision-making process (Rouhani et al, 2016). If a firm has incomplete information or lacks it, it is likely to have difficulty making decisions under a high level of uncertainty (Taghavifard, 2007). In particular, in the case of manufacturing firms located overseas, they are placed in high-uncertainty situations, which make reasonable management difficult. However, in the case of manufacturing subsidiaries in overseas locations with relatively poor resources, the sharing of technology-related information with parent headquarters can be defined as technology information sharing (Lee & Kim, 2015).

In particular, from the research-based theory perspective, the sharing of technology-related information that can have considerable influence on the competitiveness of the firm is likely to be an important factor strengthening the competitiveness and capability of its manufacturing subsidiaries from their perspective (Diaconu, 2011). Open information sharing means to establish an organizational and technical infrastructure that encourages free exchange but also enforces controls that mitigate the risks of irresponsible use (Cybersecurity, 2014). Daniel Michelis (n.d) provides us with six different concepts of open information sharing which includes;

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Explaining decisions; this concept aims at explaining management decisions and strategies. Employees should not only understand management's behavior but also comprehend the background of their decisions and strategies (Lee, 2016). This may strengthen the motivation. Using social technologies to explain decisions is a first step to openness and is already widespread. The intranet of many organizations has evolved into a corporate social network that includes internal weblogs. Employees are able to comment and discuss decisions made by their managers (Naik, 2015). Vice versa the management can listen to staff opinions and take part in ongoing discussions.

Mutual report; With mutual reporting, management and employees of an organization regularly provide and update each other with information about current developments. Social technologies enable an interactive, two-way exchange of information (Ariel, 2015). They can also be divided into individual communication channels to which executives and employees can subscribe. Information sharing with partners; Information exchange can include both internal and external information that staff or management exchange with external stakeholders of the organization (Welch & Jackson, 2007). The general aim is to build and maintain external relationships in order to obtain direct access to all relevant information (Gaál, 2015).

Encourage Participation; Employees, customers, partners or external supporters are invited to contribute their opinion, their own ideas or any other information (Medal, 2008). The information collected allows the organization to assess its own performance from different perspectives and to build on the motivation and engagement of individuals who are willing to freely support the goals of the organization (Oyza, 2016).

Outsource Problem Solving; an open exchange with customers and business partners can generate ideas that help to improve the organization's performance, to solve specific problems and to develop innovations. In recent years a growing number of organizations have started to offer outside individuals the possibility to participate in open innovation projects (Gaál, 2015).

Open Interfaces; this last concept of open information sharing is different to the others because it does not focus on the exchange between people but on the exchange between computers. Open interfaces allow external actors to build on standardized processes of the organization and enhance these processes by adding new components. They also allow the automatic exchange of information, which is often the basis for entirely new services.

3. RESEARCH METHODOLOGY

The study used both qualitative and quantitative research designs. This study utilized both primary and secondary data. Primary data was collected by use of questionnaire method. The study targeted 32,099 civil servants operating in respective public sectors. From the research population, a sample of 384 respondents was selected and administered with questionnaires using a drop and pick method. A multiple linear regression model was used to analyze the data using statistical package for the social sciences (SPSS).

4. RESULTS AND DISCUSSIONS

Ordinary least squares regression was carried out to determine the relationship between technological innovation and public sector performance in Nairobi City County Government. The regression model Y= $\beta 0 + \beta_1 X$ was thus fitted from the data where X represented technological innovation and Y denoted public sector performance.

The results of coefficients to the model Y= 1.033 + 0.706 X estimates were both significant at the 0.05 level of significance as shown on Table 4.8.2. This was because the significance was 0.000, which were less than 0.05. The constant term implied that at zero organizational factors, in-house software quality assurance is at 1.033 measures, improvement in exercising of organizational factors by a unit increases the in-house software quality assurance by 0.706 measures.

Table 1: Regression Analysis for Organizational Factors

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.829	0.290		6.305	0.000
Organizational Factors	0.645	0.052	0.521	12.404	**0.005**
Dependent Variable: Quality Assurance					

Hypothesis Testing:

The hypothesis was tested by using simple linear regression (Table 1). The criteria used in testing research hypothesis was that it was accepted if the p value is 0.05 or less. The research hypothesis was to be rejected if the p value is greater than 0.05. The research hypothesis was that technological innovation has a positive significant influence on the public-sector performance in Nairobi City County Government.

Results in Table 1 show that the p= 0.000 which is less than 0.05, the research hypothesis was therefore accepted hence technological innovation on public sector performance in Nairobi City County Government. This finding is consistent with the finding that an innovative company will achieve a high profit rate, giving a signal to other companies, including imitators who, if they have market entrance conditions, will pursue to share profit, resulting in diminishing initial innovator advantage. Information sharing; refers to the official or unofficial sharing of meaningful, timely, and appropriate information between firms and can be defined as parties favorably providing helpful information to their partners (Lee, 2015)..

5. DISCUSSION CONCLUSIONS AND RECOMMENDATIONS

Discussion:

The study sought to analyse the influence of technological innovation on public sector performance in Nairobi County Government. Hypothesis stated that "Technological innovation has a positive significant influence on the public-sector performance in Nairobi City County Government."

Ordinary least squares regression was carried out to determine the relationship between technological innovation and public sector performance in Nairobi County Government. The results of coefficients estimates were significant at the 0.05 level of significance. The significance was 0.005, which was less than 0.05. This indicated that the hypothesis was not rejected hence technological innovation has a positive significant influence on the public-sector performance in Nairobi City County Government.

Findings on the technological innovation showed that it had positive influence on public sector performance. This response could mean that since the technological innovation of firms has become a topic of increasing interest in empirical research, and it has been shown that research and development investments have a positive impact on economic and performance. Probably technological innovation has contributed to the research, development and design of new products, services or techniques, or to improving existing products, and generated new technological knowledge. This finding is supported by the coefficient of determination which shows that unit increase in technological innovation will lead to an increase of 0.645 in the public-sector performance in Nairobi County. Since P-value is 0.005 which is less than 0.05, the impact of technological innovation on public sector performance is statistically significant and hence we accept alternate hypothesis.

Conclusions:

Based on the findings of the study, it can be concluded that technological innovation affect the public-sector performance in Nairobi County. Use of technology innovation promotes a friendly and helpful staff hence customer satisfaction. Innovations ensured that the services given to customers were of high quality.

Recommendations:

Technological innovation concept stimulate knowledge flows and induce economic performance. It is therefore recommended that the technological innovation be incorporated at all levels of public sector. This study considered influence of technological innovation practices in public sector performance only in Nairobi County a further study is recommended to perform the same study in other counties. Also, a comparative study on influence of innovation practices in public sector performance can be done per counties.

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