

IMPACT OF INFORMATION TECHNOLOGY INVESTMENT ON SUPPLY CHAIN PERFORMANCE: A CASE OF TRANS NZOIA COUNTY, KENYA

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Abstract: The purpose of the study was to find out the impact of information technology investments on supply chain performance. It was guided by the following objectives that includes; to determine the effect of cost reduction on supply chain performance in Trans Nzoia County; to establish the effect of labor reduction on supply chain performance in Trans Nzoia County; to assess the effect of efficiency in operations on supply chain performance in Trans Nzoia County and to evaluate the effect of knowledge and skills on supply chain performance in Trans Nzoia County. The study was theorized by the Theory of Information Systems, The Theory of Performance and the Stakeholder Theory. The reviewed literature did not show any work done on impact of information technology investments on supply chain performance in county governments. Descriptive study research design was used as the population made up of top management, IT staff and Procurement staff totalling to 103 respondents. Data was collected through survey method by the use of structured questionnaires. The administration of the questionnaires was through drop and pick. Responses in the questionnaire were tabulated, collected and analyzed using descriptive statistics and Statistical Package for Social Sciences (SPSS) version 22.0 programme. The results of the study revealed a strong effect of cost reduction, labor reduction, efficiency in operations and knowledge and skills on Supply Chain Performance. The independent variables do influence supply chain performance, hence cost reduction, labor reduction, efficiency in operations and knowledge and skills have a significant association with supply chain performance in Trans Nzoia County. Information technology investments thus influence supply chain performance in the short, medium and long run operations and results within the County Government of Trans Nzoia.

Keywords: Cost reduction, Labor reduction , Efficiency in operations and Supply chain performance.

I. INTRODUCTION

Background of the study

The background of this study is approached in line with the global perspectives, regional perspectives and local perspectives of information technology investments on supply chain performance.

Global Perspectives of impact of information technology on supply chain performance

Globally, the prevailing stiff competition and radical changes in the business environment has caused enterprises to be alert continually for ensuring survival (Karimi & Rafiee, 2014). One area for organizations to ensure success is taken to be supply chain performance and aspects of information technology investments play a role too. Over the past few decades, the world has witnessed transformation in information generation and sharing due to the rapid technological

developments. The way business is conducted has been altered for the better because customers, suppliers and other stakeholders are able to access new commodities instantaneously from anywhere on earth (Shaqiri, 2015). These developments have affected many areas of business whereby the researcher believes one of them should be supply chain performance. It was emphasized in a United Nations Conference on Trade and Development that ICT presents a great promise for fundamental changes in lives of people, business processes and also governments. Additionally, IT influences the way an individual interacts and works. Thus, it improves the quality of all aspects of human beings and organizations.

According to a research carried out in Iran, information technology can enhance the agility of supply chain management by ensuring flexibility, responsiveness, competitiveness due to improvements in operations and techniques in the organization (Fasanghari, Roudsari, & Chaharsooghi, 2008). This was an assessment of IT on supply chain management and shows the importance of this function in firms and points to how it contributes to performance in general. In today's world, supply chain activities have kind of become irreplaceable in organizations because they affect provision of services and goods and do raise or reduce the performance of an enterprise both in the short term and in the long run (Aserkar, Kumthekar, & Aserkar, 2014). In the dynamic organizations in the modern dispensation, the customer demands are so unpredictable due to the ever-volatile environment with stiff competition in terms of offerings, good planning and effective strategy is required in order to align information technology and supply value chains optimally. To perform is to take a complex series of actions that integrate skills and knowledge to produce a valuable result. A rudimentary set of performance measures reveals how many units of service have been delivered. More sophisticated sets of measures provide this basic information and much more. A good set of performance measures also reveals how efficiently a given service was rendered, and at what level of quality it was delivered, and, ideally, what effect is having on service recipients or the community as a whole (Ammons, 2007). In an International Management Conference in Budapest, Hungary, lead time, profitability, order analysis and management reports were emphasized as some of the key measurements in regard to supply chain management (Sillanpea, 2012). In this study, lead time, profitability, order analysis, management analysis reports were taken to be some of the indicators of supply chain performance.

For organizations in the whole world to gain a competitive advantage, ensuring that there is an effective supply chain is critical (Li, Nathan, Nathan, & Rao, 2004). Therefore, any efforts to invest in information technology are important as it is a base of operations in an organization. In a study in India, it was emphasized that information technology is a base that assists to get quickly any past information and be able to forecast the future. It is also so important in getting business intelligence information and across the globe for decision making (Ranjan, Business Intelligence; Concepts, Components, Techniques and Benefits, 2009). Staying ahead of the competition implies making customers happy and the researcher notes that business intelligence on a timely basis provided by investments in information technology cannot be under estimated. More so, powerful data or information available in the organizations around the world has leveled the operational fields for all and sundry so long as there are investments in information technology. An orientation towards analytical information and operational systems has revolutionized organizational abilities in ever rediscovering and utilization of readily available information. A study carried out in Mumbai, India, it was found out that information technology represents a means or vehicle through which performance and competitiveness in respect of supply chain performance is achieved and therefore enhance efficiency and effectiveness in an organization (Bhandari, 2004). County governments aim at providing quality service to their citizens which can only happen if effectiveness and efficiency is assured.

In the whole universe, information is currently shared instantaneously and organizations and even individuals have continued to invest in information technology so as to enhance efficiency and integration with the whole world. Indeed, IT is considered as a main enabler for supply chain performance in enterprises, whether private or public (Kollberg & Dreyer, 2008). A study by (Lee, McCullough, & Town, 2013), found out that information technology investments had championed and transformed the delivery of health care services in the United States. The adoption of IT on an expansive basis brought about various benefits due to availability of prompt data and improved value addition in processes. The adoption of IT usually aims at improving efficiencies in the system and also the quality of commodities and at the same time being able to constrain costs or actually reduce them. If such improvements were evitable in America, then this study shall be able to determine whether there has been any impact of information technology investments on supply chain performance in the county of Trans Nzoia, Kenya.

Regional Perspective of Impact of Information Technology on Supply Chain Performance.

Very many organizations spend largely to develop and implement information technology systems so as to enhance supply chain performance but get minimal benefits. However, the study also emphasized that there are some other firms that similarly spend with notable success. Thus, the paradox of information technology productivity in regard to supply chain performance is seen to be polenic and therefore necessitates further investigation (Samadi & Kassou, 2016). The African governments are continuously facing transformation challenges in regard to paradigm shift that has been caused by the intelligence of technological networks. The swift developments in information communication technology dictate that there should be internal transformation and readjustments to the external environment too (Kundishora, 2003). The county governments to grow should focus on investments in information technology going by this publication in Harare, Zimbabwe (Inman, 2008). It is on this basis that the current proposed study evaluates the effect of information technology on supply chain performance in Trans Nzoia County, Kenya.

Local Perspectives of impact of information technology on supply chain performance

In a study conducted on logistics firms operating in Nairobi County, Kenya, it was emphasized that information technology influences competitive trends and contributes greatly to changing roles of supply chain significantly. Information technology assists in the tasks of integrating and also acceleration of products and information flows at various levels of the organization (Wilson, Iravo, Tirimba, & Ombui, 2015). The implication from these findings are that information technology changes very first and firms should be alert to continuously make new investments to avoid elements of obsolescence and therefore keep it up with the completion which is no longer local but international too. A firm organization can lack behind in supply chain performance if the investments in the information technology is wanting. Economic development of nations or counties is usually hinged on IT infrastructure as they lead various aspects of readiness digitally (Zuppo, 2012). The implication therefore is that aspects of performance are related closely to IT impact. Information technology can be major basis from which challenges of poor supply chain performance can be addressed.

Statement of the Problem

Generally, it is the expectation of organizations that the more the investments are made in information technology, the better the performance. However, it was noted that it is the usage of the IT systems in place that may matter most than the real levels of investments in technology (Devaraj & Kohli, 2003). This is so because the information technology may be unnecessarily very expensive and even in any case not pocket friendly. It can also turn out to be ineffective, inefficient, slow and ignorantly increase time wastage by the workers in an organization. This could be due to the incompetence of the staff and lack of better knowledge or skills in IT.

According to Samadi & Kassou (2016), many organizations spend largely to develop and implement information technology systems so as to enhance supply chain performance but get minimal benefits. However, the study also emphasized that there are some other firms that similarly spend with notable success. Thus, the paradox of information technology productivity in regard to supply chain performance is seen to be polenic and therefore necessitates further investigation. Usually firms expect to reap maximum benefits when they invest heavily in IT, but from the empirical evidence reviewed, this is hardly the case. Thus organizations get up not getting the best from IT and failing as a result to improve supply chain performance. It is on this basis that the current proposed study evaluates the effect of information technology on supply chain performance in Trans Nzoia County, Kenya. That was why the researcher set out to find out the impact of information technology investment on supply chain performance. The problem herein for the research was the delay challenges in firm operations that cause poor value optimization in the supply chain performance processes.

General Objective

The general objective of the study was to find out the impact of information technology investments on supply chain performance.

Specific Objectives

The specific objectives of the study were:

- i) To determine the effect of cost reduction on supply chain performance in Trans Nzoia County.

- ii) To establish the effect of labour reduction on supply chain performance in Trans Nzoia County.
- iii) To assess the effect of efficiency in operations on supply chain performance in Trans Nzoia County.
- iv) To evaluate the effect of knowledge and skills on supply chain performance in Trans Nzoia County.

Research Questions

The research questions of the study were:

- i) What is the effect of cost reduction on supply chain performance in Trans Nzoia County?
- ii) What is the effect of labour reduction on supply chain performance in Trans Nzoia County?
- iii) What is the effect of efficiency in operations on supply chain performance in Trans Nzoia County?
- iv) What is the effect of knowledge and skills on supply chain performance in Trans Nzoia County?

Research hypotheses

The research hypotheses were as follows:

- Ho1:** No significant relationship exists between effect of cost reduction and supply chain performance.
- Ho2:** No significant relationship exists between extent of labor reduction and supply chain performance.
- Ho3:** No significant relationship exists between effect of efficiency in operations and supply chain performance.
- Ho4:** No significant relationship that exists between effect of knowledge and skills and supply chain performance.

Significance of the Study

The major significance of this study was to establish the relationship which existed between information technology investments and supply chain performance. The study was also important because it was meant to inform students, scholars and other researchers about the effectiveness of information technology investments and supply chain performance. Thus, the study contributes to decisions being made in information technology investments so as to improve supply chain performance in the short term and long run too. More so, the significance for this study is that various stakeholders like investors, leaders of the county and national government shall be able to appreciate the role of proper information technology investments on supply chain performance in their endeavors. Businesses will be able to know whether proper levels of information technology investments can help them acquire competitive strength in the market place as well as achieve operational excellence and raise the value of an organization due to the fruits arising from supply chain performance. Furthermore, the conclusions inferred from data analysis are useful to policy makers in manufacturing, commercial, service and also public sectors in Kenya and elsewhere in the world. The study further suggests workable and effective balance of information technology investments that would quicken business growth through sustained supply chain performance.

More so, the results from the study informs business executives of aspects of capacity planning in order to manage and control information technology investments and supply chain performance. In such ways, value for money, cost savings and overall goals are likely to be achieved as conceptualized by the stakeholders. On the basis of the difficult financial and operational times that firms keep on facing due to global competition in the markets in the recent years, the researcher saw this as a looming danger in aspects of losing on the current and potential base of customers. This then required quick attention so as to protect the existing base of customers and competitively attempt to exploit new jurisdictions. This therefore called for a look at the information technology investments over time by the firms as this was an aspect of necessity in regard to supply chain performance which cuts across or affects all sections of organizations in the current business world.

The researcher also believed that lessons were to be drawn from the study by other stakeholders facing the same difficulties at the time and also the future in aspects of supply chain performance. The present and future investments in information technology by other stakeholders will be informed by this study in order to optimize supply chain performance. The researcher also reckoned that no comprehensive study had been undertaken on information technology investments influence on supply chain performance.

Scope of the Study

This study took place in Trans Nzoia County, Kenya. It focused on the period 2015 to 2018. The study restricted itself in evaluating information technology investments on supply chain performance. This study was guided by the Theory of Performance, Theory of Information Systems and the Stakeholder Theory.

Limitation of the Study

Some of the interview respondents that took part in the study are the ones who are actually mandated to oversee that information technology investment is practiced within the county and since they are directly involved in this there is some biasness in their response. Another limitation was the lack of cooperation from some respondents who were quite unwilling to part with information they deemed to be confidential to disclose. To overcome this challenge the study sought to demystify the study to the respondents by explaining to them the purpose and the significance of the study at the county.

2. LITERATURE REVIEW**Introduction:**

This chapter covers literature relevant to the research. It specifically presents previous empirical studies in order to develop a link between information technology investments and supply chain performance.

Theoretical Framework

The study was guided by the following theories and models:

Theory of Information Systems

This theory was also used to explain the conceptual framework in that it itemizes every step involved in the conversion of data into useful information that supports decision making. Systems theory provides a theoretical framework for study of performance of public organizations. Information system is a combination of equipment, policies, people, and procedures that work together to capture data and transform it into useful information for decision making. (Husain, 1997) explained his definition as that system which contains a group of harmonized and interrelated of business, components, and resources which group, process, manage, and control the data for producing and carrying the useful information for decision makers through a network of the channels and communication lines.

The Theory of Performance

The Theory of Performance (TOP) develops and relates to six foundational concepts that form a framework which in turn can be used to explain performance as well as performance improvements. To perform is to produce valuable results. A performer can either be an individual or a group of people engaging in a collaborative effort. Developing performance is a journey, and level of performance describes location in that journey. Current level of performance depends mostly on 6 components, which include; context, level of knowledge, levels of skills, level of identity, personal factors, and fixed factors. These involve a performer's mindset, immersion in an enriching environment, and engagement in reflective practice.

To perform is to take a complex series of actions that integrate skills and knowledge to produce a valuable result. In some instances, the performer is an individual. In other performances, the performer is a collection of people who are collaborating such as an academic department, research team, committee, student team, or a university. We all want to be high performers: 'be like Mike, the Nike adage suggests'. TOP is a huge challenge to public organizations, in that by improving our own performance, we empower ourselves to help others learn and grow by becoming a self-grower. As advocated by Harvard's Project Zero, performance is closely related to learning for understanding (Wiske, 1998). In that case, building performance capabilities is rightfully a central theme in this study. When people learn and grow, they are empowered to create results that make a difference by the way of creating an assessment culture. Working and learning together in ways that make the world better has been a primary goal of higher education throughout the ages.

Instrumental Theory

Instrumental theory offers the most widely accepted view of technology. It is based on the common-sense idea that technologies are like tools standing ready to serve the purposes of their users. Technology is deemed neutral in that it is without evaluative content of its own. However, what does the notion of the neutrality of technology actually mean? This often implies at least four points. First is that technology is pure instrumentality, it is also indifferent to the variety of ends it can be employed to achieve (Kenneth & Laudon, 2007). For this stance the neutrality of technology is merely a special case of the neutrality of instrumental means, which are only contingently related to the substantive values that they actually serve. This conception of neutrality is familiar and self-evident. Also, technology also appears to be indifferent with respect to politics, at least in the modern world, and especially with respect to capitalist and socialist societies. A boat is a boat, a goat is a goat, and such tools are useful in any social context. In respect of this, technology appears to be quite different from traditional legal or religious institutions, which cannot be readily transferred to new social contexts because they are so intertwined with other aspects of the societies in which they originate from (Cappemini, 2008).

The transfer of technology, on the contrary, seems to be inhibited only by its cost. Thirdly, the socio-political neutrality of technology is usually attributed to its 'rational' character and the universality of the truth it embodies. Technology, in other words, is based on verifiable causal propositions. Insofar as such propositions are true, they are not socially and politically relative but, like scientific ideas, maintain their cognitive status in every conceivable social context. Hence, what works in one society can be expected to work just as well in another. Lastly, the universality of technology also means that the same standards of measurement can be applied in different settings (Bitner, Brown, & Meuter, 2000). Thus, technology is routinely said to increase the productivity of labor in different countries, different eras and different civilizations. Technologies are neutral because they stand essentially under the very same norm of efficiency in any and every context. Given this understanding of technology; the only rational stance is unreserved commitment to its employment. Of course, we might make a few exceptions and refuse to use certain devices out of deference to our moral or religious values. Reproductive technologies are a case in point. Even if one believes that contraception, abortion, test tube babies are value neutral in them, and, technically considered, can only be judged in terms of efficiency, one might renounce their use out of respect for the sacredness of life (Bitner, et al, 2000). This approach places 'tradeoffs' at the center of the discussion. 'You cannot optimize two variables' is the fundamental law of the instrumental theory of technology. There is a price for the achievement of environmental, ethical or religious goals, and that price must be paid in reduced efficiencies. On this account, the technical sphere can be limited by non-technical values, but not transformed by them (Bitner, et al, 2000). The instrumentalist understanding of technology is especially prominent in the social sciences. It appears to account for the tensions between tradition, ideology and efficiency, which arise from socio-technical change. Modernization theory, for instance, studies how the elites use technological know-how to promote social change in the course of industrialization. In addition to that, public policy analysis worries about the costs and consequences of automation and environmental pollution. Instrumental provides the framework for such research (Howells & Tether, 2004).

Supply Chain Performance

In today's world organizations are mostly defined as instruments of purpose. They are coordinated by intentions and goals and performance. To be able to perform is to take a complex series of actions that integrate skills and knowledge to produce a valuable or desired result. Usage of AIS leads an organisation in producing the desired results, a good ROI to the investor, a favourable liquid level of an organisation and higher profits. Business firms are compared in terms of profits, sales, market share, productivity, debt ratios, and stock prices. Performance is often defined simply in terms of the output that is visible for all to see as the achievement of quantified objectives. But performance is a matter not only of what people achieve but how they achieve it. The Oxford English dictionary confirms this by including the phrase 'carrying out' in its definition of performance, the accomplishment, execution, working out, carrying out of anything ordered or undertaken. High performance results from appropriate behavior, and the effective use of the required knowledge, skills and competencies (Armstrong, 2006).

The logistic firms should adopt the use of IT in their service delivery in order to improve their efficiencies as the higher the level of usage, the more efficient firms become the more profitable it is. The management should be in the four fronts in enhancing the level of usage with all activities being technologically integrated (Wilson, Irayoo, & Tirimba, 2015). Good supply chain performance leads to profitability which is the primary goal of all business ventures. Without

profitability the business will not survive in the long run. So measuring current and past profitability and projecting future profitability is very important. Profitability is measured with income and expenses. Income is money generated from the activities of the business. An example is if crops and livestock are produced and sold, income is generated Expenses are the cost of resources used up or consumed by the activities of the business. For example, seed corn is an expense of a farm business because it is used up in the production process. A resource such as a machine whose useful life is more than one year is used up over a period of years. Repayment of a loan is not an expense; it is merely a cash transfer between the business and the lender. Profitability is measured with an income statement. This is essentially a listing of income and expenses during a period of time which is usually a year for the entire business. Department of Economics University Extension, Iowa State University (2013). Whether you are recording profitability for the past period or projecting profitability for the coming period, measuring profitability is the most important measure of the success of the business. A business that is not profitable cannot survive. Conversely, a business that is highly profitable has the ability to reward its owners with a large return on their investment. Improved liquidity is a sign of better supply chain performance. Liquidity is the ability of the firm to convert assets into cash. It is also called marketability or short-term solvency. The liquidity of a business firm is usually of particular interest to its short-term creditors since the liquidity of the firm measures its ability to pay those creditors. Several financial ratios measure the liquidity of the firm. Those ratios are the current ratio, the quick ratio or acid test, net working capital, and the interval measure or the burn rate. Performance means both behaviors and results. Behaviours emulate from the performer and transforms performance from abstraction to action. Not just the instruments for results, behaviours are also outcomes in their own right- the product of mental and physical effort applied to tasks and can be judged apart from results. This definition of performance leads to the conclusion that when managing performance both inputs 'behaviour' and outputs 'results' need to be considered, (Johnson & Scholes, 2007). Information technology that is used in organization can be a basis for controlling the behaviour of workers so to ensure they operate within set rules in the system including those touching on supply chain performance. Performance in business operational chain is the act of performing, an act of doing something successfully, using knowledge as distinguished from merely possessing it. However, performance seems to be conceptualised, operationalised and measured in different ways thus making cross-comparison difficult. Among the most frequently used operationalisations are survival, growth in employees, and profitability. literature seems to suggest that there are five factors; individual characteristics, management practices, goals and motivations, networking; and entrepreneurial orientation, influencing the performance of entrepreneurs (Teoh & Chong, 2007). Supply chain performance measurement cover all aspects of business: the financial results, the operating performance through the dimensions of time, quality and flexibility, the way the company is perceived externally through its customers and the cultural aspects of the working environment through the human resource dimension. It is, however important to note that these dimensions are not prescriptive. Instead, they are intended to encourage the holistic consideration of these areas when developing measures to support the company strategy (Hudson, Smart, & Bourne, 2001).

Information Technology Investments

Information system (IS) is a combination of people, equipment, policies, and procedures that work together to capture data and transform it into useful information. (Husain, 1997) explained his definition as that system which contains a group of harmonized and interrelated of business, components, and resources which grouping, processing, managing, and controlling the data for producing and carrying the useful information for decision makers through a network of the channels and communication lines. Information technology assists in the tasks of integrating and also acceleration of products and information flows at various levels of the organization (Wilson, Iravo, Tirimba, & Ombui, 2015). The implication from these findings are that information technology changes very first and firms should be alert to continuously make new investments to avoid elements of obsolesce and therefore keep it up with the completion which is no longer local but international too. As per the study by Fasanghari et.al(2008), the usage of information technology is seen to be a prerequisite for effectively controlling the current complex business operations that includes supply chain activities. For instance, it enhances the speed in order placement and also knowing its status any time. Kundishora(2003), re-affirmed information technology as being a growth enabler and that the right interventions and resource investments, even through appropriate partnership networks should be made so as to reap maximum benefits.

According to (Samadi & Kassou, 2016), very many organizations spend largely to develop and implement information technology systems so as to enhance supply chain performance but get minimal benefits. However, the study also emphasized that there are some other firms that similarly spend with notable success. Thus, the paradox of information

technology productivity in regard to supply chain performance is seen to be polenic and therefore necessitates further investigation. The findings in their study which was on the relationship between Information Technology and Supply Chain Performance affirmed that information technology plays a significant and direct role on performance of some supply chain areas and stated that there is need for a model to match IT characteristics with supply chain characteristics for use by managers. It is on this basis that the current proposed study evaluates the effect of information technology on supply chain performance in Trans Nzoia County.

Conceptual Framework

A conceptual framework is a logically developed, described and elaborated network of interrelationships amongst variables in a scenario that is being investigated (Kothari, 2004). A dependent variable is the variable of primary interest to the researcher and in this study, it is information technology investments while the independent variable is supply chain performance. An independent variable is the one that influences the dependent variable in either a positive or negative way. The following conceptual framework was derived by the researcher for purposes of the study.

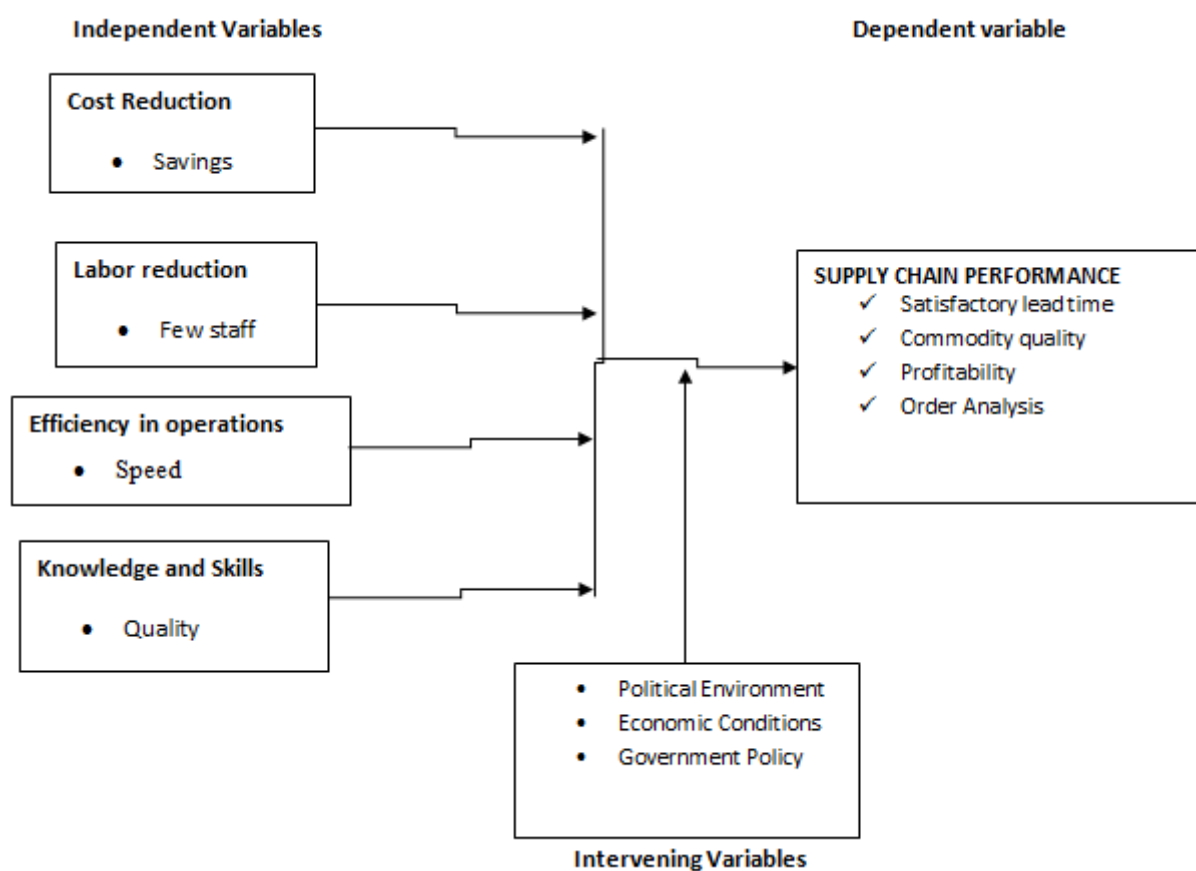


Figure 2.1: Conceptual Framework

Review of Variables

The following is the empirical review on information technology investments and supply chain performance. This majorly covers the studies carried out by other researchers and their respective findings and conclusions. Cost reduction, labor reduction, efficiency in operations, knowledge and skills are indicators of information technology investment in line with the Theory of Information Systems and Instrumental Theory. Satisfactory lead time, commodity quality, profitability, order analysis and management analysis reports are indicators of supply chain performance in line with the Theory of Performance and the Stakeholder Theory.

Effect of Cost Reduction on supply chain performance

A study by (Lee, McCullough, & Town, 2013), found out that information technology investments had championed and transformed the delivery of health care services in the United States. The adoption of IT on an expansive basis brought

about various benefits due to availability of prompt data and improved value addition in processes. The adoption of IT usually aims at improving efficiencies in the system and also the quality of commodities and at the same time being able to constrain costs or actually reduce them. Efficiencies in operations do have a great impact on reduction of costs that eventually improves profitability. Controlling of costs is one of the main demands by stakeholders on the management of organizations especially in this era of free trade and information on the global scene. Investments in information and communication technologies therefore come in handy for purposes of gaining continuously better results on performance basis (Apulu & Latham, 2011). If costs are effectively controlled and minimized, then the performance in respect of supply chain activities may be impacted positively. The focus is on achieving lower costs for goods and services that are being produced by the firm. Such demands good control systems that are within the organization and ensure output on a timely basis.

According to (Mithas, Tafti, Baadhan, & Goh, 2012), usage of information technology enables cost reduction and hence the profitability and growth of enterprises. Firms invest in technology with an expectation of reaping benefits in the short and long run. In the contemporary business world, IT is a necessary evil for purposes of containing operational costs. Technology is simply a tool to create, maintain, or improve a system. The business environment in a developing country differs from that within a developed country with regards to market size, access to manufactured inputs, human capital, infrastructure, volatility and governance. According to Tybout (2000), although some developing economies are quite large, most are not; them enough domestically produced intermediate inputs and capital equipment is often limited; a scarcity of technicians and scientists also affects flexibility in the production process and the ability to absorb new technologies; infrastructure is relatively limited; macroeconomic can relative price volatility is typically more extreme; legal systems and crime prevention are also relatively poor; and corruption is often a serious problem. Information technology can significantly impact the efficiency and effectiveness with which the preceding activities are carried out. An organization's value chain can be connected with the value chains of its customers, suppliers, and distributors. The functions of Accounting Information Systems are to, Collect and store data about events, resources, and agents. Transform that data into useful information that management can use to make decisions about events, resources, and agents and also provide adequate controls to ensure that the entity's resources which include data are available when needed, and are accurate and reliable.

The present invention provides a process for supporting computer infrastructure, aid process of providing at least one support service for creating, integrating, hosting, maintaining, and deploying computer-readable code in a computing system. The computing system comprise of computer-readable memory unit, wherein the code in combination with the computing system is capable of performing an accounting transaction. In order to produce useful and meaningful accounting information, data must be processed and kept for future retrieval and use. Most companies process data by using computers. Accounting information system produces data by following instructions and procedures. In computerized accounting information systems, software includes procedures and instructions that direct computers to process the data. Users are people who use the accounting information produced by the system and who interacts with the system. For example, accounting managers who use financial statements that are produced by an accounting information system are the users of the information system. In order to make the accounting information system produce correct, and error free accounting information, necessary measures should be taken to protect and control the accounting information system from un-authorized access. An advantage of accounting information system (AIS) is good cooperation, to meet the need of multi user, and control of financial transactions. An accounting literature indicates that accounting information system has importance and wide use in accounting profession (Marriot and Marriot, 2000; Riemenschneider and Mykytyn, 2000; and Ismail, 2007). Accounting managers need to exploit accounting information system for job success of their organizations (Ismail, 2009; Dastgir, 2003).

Accounting information systems offers value and is a very important part of the value chain. Although adding value is a commonly used buzzword, in its genuine sense, it means making the value of the finished component greater than the sum of its parts. It can mean, making it faster, making it more reliable, providing better service or advice, providing something in limited supply, providing enhanced features or customizing it. Value is provided by performing a series of activities referred to as the value chain which includes primary activities and support activities. These activities are sometimes referred to as line and staff activities respectively.

Effect of labor reduction on supply chain performance

According to Lee (2013), they found no evidence that was so compelling for IT investments complementing labor. That implies that no chances of reducing labor were available. This was quite unexpected since according to this researcher, information technology should result in ease of working and therefore be able to have an impact on labor. A study on evaluation of information technology investment by (Chen, Liang, Feng, & Zhu, 2006) emphasized that increased usage of IT had necessitated an evaluation of the productivity of the same in regard of returns to management, investment and general business operations. If productivity per employee goes up then the expectation was reduction in labor unless there is business increase in terms of transactions or simply expansion.

Sharing of information reduces duplication of duties by employees, cuts down the storage costs and releases tied up capital in computer Hard/Software. The need to integrate these often-diverse systems led to the accountant's appreciation of shared databases that provide a picture of the organization's data, eliminating duplications and reducing data conflicts (Moscove, 1999). When information is shared optimally across, those employees that were keeping information on a hard copy basis and judged with the responsibility to move around with it are done away with in the organization. Several studies have continued to find that top management support is vital driver of success across a wide variety of tasks and contexts. Specifically, top management support has been found to affect the success of enterprise resource planning (ERP) systems (Ngai, 2008). Despite such strong evidence that top management support is a key to the success of information technology, a careful review of the literature does not reveal any explore attempting to develop a comprehensive top management support influence effectiveness accounting information system.

Usage of IT can lead to quick execution of transactions by the computer software that was hitherto being performed by workers manuals. Such manual workers can then be laid off. In the Resource Mobilization Practical Guide for Research and Community Based Organizations (CBO) (St-Pierre, 2010), it is brought out that the art of resource mobilization entails learning how to connect with prospective donors in a manner and language they understand, and finding common ground through shared values and interests. It also entails discerning the right prospect to approach, and matching the appropriate resource mobilization strategy to the prospect.

According to (Tisdell, 2014), one of the economic advantages of the Internet and computers is that they save storage space because information does not need to be retained in hard copies. Consequently, many offices can be virtually 'paperless'. Printed material such as forms can be downloaded as required. Given the availability of e-books and so on, less physical material needs to be housed in libraries and on shelves. Consequently, staff in many industries in particular service industries can be fitted into a smaller space reducing overhead costs, for example, rents for office space. Open-plan work areas appear to become more common in many service industries with the diffusion of ICT and these reduce the amount of space needed per employee and the costs of partitioning areas of work-space.

As well, information technologies are often labor saving. For example, fewer staff are required in many businesses so as to supply information to customers or potential customers because much of this information can be accessed via the Internet. As an example, consider the widespread availability now of information about real estate on the internet. There is also greater scope for buyers to engage in self-service, for instance, at retail outlets and this reduces the number of check-out staff required. This is not only true of supermarkets and similar outlets but also is important in finance and insurance.

Effect of efficiency in operations on supply chain performance

Information technology investments are usually meant to champion and transform the delivery of efficient services. The adoption of Information Technology on an expansive can result in various benefits due to availability of prompt data and improved value addition in processes. The adoption of IT usually aims at improving efficiencies in the system and also the quality of commodities. Devaraj and Kohli (2003) emphasized that organizations view good investments in IT as a means of gaining operational quality in the short run, medium term and into the foreseeable future. Efficiency in the processes brings about value addition such timely completion of a commodity and its delivery.

Value based on usage of IT and its related efficiencies such as improved efficiency in the warehouse including less time spent on: receiving; put away; picking; checking/counting, shipping; exception handling; reduced labor and material costs due to improved efficiency; reduced transportation costs; reduced inventory on hand in the warehouse, and throughout the supply chain; reduced shrinkage in the supply chain, due to reductions in: theft, spoilage and product diversion and

improved sales, due to lower out of stocks (Subirana, Eckes, Herman, Sarma, & Barret, 2003). These efficiencies in operations become a base for productivity and better financial performance. Efficiency in information technology is also seen in terms of automatic generation of a stream of accounting reports is of momentous importance to any organization if it is to achieve sound performance. Reports generated by AIS may include Management reports, internal Audit reports and reports on Cash flow in public organizations. Chang(2001) asserts that accounting information plays a significant role in enhancing organizational effectiveness in a global competitive environment. Doms, Jarminand Klimek(2004) say that financial statements still remain the most important source of externally feasible information on companies. In spite of their wide spread use and continuing advance, there is some concern that accounting practice has not kept pace with rapid economic and high technology changes which invariably affects the value relevance of accounting information. Accounting exists because it satisfies a primary need for information. In order to be relevant, accounting data must among others, be quick to respond to users' (particularly the investors) needs. Generally, investors are not in a situation to directly access the performance of companies in which they intend to invest. They usually depend on financial reports prepared by the management of such organizations. A financial report is one of the best sources of accounting information about a company. Financial reporting is an essential part of disclosure and helps investors to discover investment opportunities. The primary purpose of financial statements is to provide information concerning the financial situation of the company, its operational results, any changes of control in the company and cash flow.

An information system is a means of collecting, entering, and processing data and storing, managing, controlling, and reporting information so that an organization can achieve its objectives or goals (Romney et al., 1997). The definition of information system indicates that an information system has following components. The information system is designed to accomplish one or more objectives or goals. For example, an information system may be designed to collect and process data about finance to help accountants prepare financial statements. Process of accounting information system consists of input, output, data storage, processing, user, and control measures. Data must be entered into the information system to be processed. Data are the facts that are collected and processed by the information system. Data are meaningless and useless, hence, should be processed and transformed to meaningful, organized, and useful form that is called information. Output is the meaningful and useful information produced by the information system. In this research effectiveness of accounting information system (AIS) refers to collecting, entering, processing data, storing, managing, controlling, and report information of accounting so that an organization can achieve financial statements quality. Accounting information system (AIS) consists of reliability, relevance, and timeliness. Reliability is defined as accuracy and consistency/stability of available information, relevance refers to adequacy, preciseness, and significance of available information and timeliness is defined as currency of available information (Sanghoon et al., 2009). For example, financial statements are produced by the accounting information system is an output.

According to Pearce and Robinson (2007), operational controls provide post action evaluation and controls over short periods from one month to one year. To be effective, operational controls must take four steps common to all post action controls; set standards of performance, measure actual performance, identify deviations from standards and initiate corrective actions.

Effect of Knowledge and Skills on supply chain performance

Generally, it is the expectation of organizations that the more the investments are made in information technology, the better the performance. However, it is noted that it is the usage of the IT systems in place that may matter most than the real levels of investments in technology (Devaraj & Kohli, 2003). This could be due to the incompetence of the staff and lack of better knowledge or skills in IT. According to Shaqiri(2015), information technology over the past few decades has increased and quickened the availability of knowledge about commodities, customers, suppliers, investors and even competition has become stiff.

Historically major innovations in information and communication technology have been significant influences on economic growth and social change. The development of writing and its transmission on clay tablets in Sumeria some 5500 years ago was one such early innovation. For example, it facilitated the development of state administration and enabled written agreements to be made, including written contracts. Many other important innovations in ICT occurred in subsequent millennia but most relied on hard copies for communication of information. The development of computer technology and the communication of information electronically for example, via broadband has in many cases made communication by hard copy obsolete (Tisdell, 2014). Quick communication results in timely sharing of important

information across the various stakeholders who then use it for useful decision-making processes at all levels in the organizations. Improved levels of skills in an organization results in a seamless process of mobilization hence pooling of savings. Mobilizing savings involves overcoming the transaction costs associated with collecting savings from different individuals and overcoming the informational asymmetries associated with making savers feel comfortable in relinquishing control of their savings. The costs of acquiring information, enforcing contracts, and making transactions create incentives for the emergence of particular types of financial contracts, markets and intermediaries. Different types and combinations of information, enforcement, and transaction costs in conjunction with different legal, regulatory, and tax systems have motivated distinct financial contracts, markets, and intermediaries across countries and throughout history (Levine, 2005). Thus, high levels of knowledge and skills lead to better output in the long run given that good performance is almost guaranteed.

Knowledge that is computer based enhances networked sharing of skills and innovative developments across all the inter-linked networks. Personenvironment (PE) fit describes the situation when the person's characteristics match the environment's characteristics (Walsh, Craik, & Price, 2000). A complete social network contains a quantity of members with incoming and outgoing ties. If our information is limited to someone's connections to other network members and does not include, in turn, their interconnections, then this would represent a so-called ego-network (Wolfer, Faber, & Hewstone, 2015). Information technology investments assures availability of knowledge acquisition and quick sharing of skills.

Critique of existing literature

Generally, it is the expectation of organizations that the more the investments are made in information technology, the better the performance. However, it is noted that it is the usage of the IT systems in place that may matter most than the real levels of investments in technology (Devaraj & Kohli, 2003). This is so because the information technology may be unnecessarily very expensive and even in any case not pocket friendly. It can also turn out to be ineffective, inefficient, slow and ignorantly increase time wastage by the workers in an organization. This could be due to the incompetence of the staff and lack of better knowledge or skills in IT. This is why the researcher has set out to evaluate the impact of information technology investment on supply chain performance.

To some extent the researcher agrees with Kundishora (2003) who re-affirmed information technology as being a growth enabler and that the right interventions and resource investments, even through appropriate partnership networks should be made so as to reap maximum benefits. However, much more is needed for an evaluation of the impact of information technology on supply chain performance and hence the need for this study.

Research Gaps

The reviewed literature above did not show any work done on impact of information technology investments on supply chain performance in county governments. The researcher aimed at filling this gap of showing whether information technology investments had an influence on supply chain performance. There was an evaluation of the impact of information technology on supply chain performance and hence the need for the study.

Summary

The daily decisions and operational activities can be driven effectively by the information technology present within the organization. One of the main focus of operations is to ensure there is excellent supply chain performance. The present and future investments in information technology by other stakeholders will be informed by this study in order to optimize supply chain performance. Generally, it is the expectation of organizations that the more the investments are made in information technology, the better the performance.

3. RESEARCH METHODOLOGY

Introduction

This chapter covers a description of research design and methods to be applied in carrying out the research study. It is organized under the following sections: Research Design, Target Population, Sampling Procedure and Sampling Size. The chapter also covers: Instruments' Validity and Reliability of Instruments, Data Collection Procedure and Data Analysis Plan.

Research Design

The research design was important because it assisted the researcher to collect relevant data at minimal cost, time and effort and hence achieving optimal efficiency (Kothari, 2004). A design is a guide on how the research was done and the work plan and time frame involved. This study used descriptive research design. The study adopted a descriptive research design. The design was appropriate because the main interest was to explore the viable relationship and describe how the factors support matters under investigation. Descriptive design method provides quantitative data from cross section of the chosen population. According to Mugenda and Mugenda (2003) the descriptive research collects data in order to answer questions concerning the current status of the subject under study. Descriptive Research is the investigation in which quantity data is collected and analyzed in order to describe the specific phenomenon in its current trends, current events and linkages between different factors at the current time.

Target Population

The target population for the study was 103 staff consisting of top management, heads of departments, IT staff and procurement staff. The researcher targeted these staff as they were relevant respondents who were usually involved directly or indirectly with information technology investments and supply chain performance.

Table 3.1: Target Population

Strata	Total
Top Management	12
HODs	16
Information Technology Staff	32
Procurement and Stores Staff	43
Total	103

Sample Size and Sampling techniques

The sample size was derived from top management, HODs, Information Technology Staff and Procurement and Stores Staff. This was a census study which refers to complete enumeration of the universe that is a group of people. The census method was embraced because the respondents were not many and there was adequate time and a higher degree of accuracy was required. A research that considers all respondents in the target population or universe is a census study (Kothari, 2004). The researcher shall therefore use 100% of all the top management, HODs, Information Technology Staff and Procurement and Stores Staff. These are the people who mostly interact with information technology and supply chain systems in the county. In regard to sampling techniques, this was census study as all members of the population were respondents as shown in table 3.1 above. The respondents had the right experience and exposure to information technology investments and supply chain performance.

Data Collection Instruments and Procedure

Questionnaires were appropriate as they allowed collection of information from a large sample with diverse background and the findings remained confidential, saved time and had no biasness. The questionnaire was very appropriate because of the confidentiality aspect as names of respondents were not written anywhere. The study relied on primary data through use of questionnaires that gathered data covering the study period. The questionnaire used a 5-point rating scale (Likert scale). The questionnaire solicited information from respondents that was elaborate and designed in such a way that every question in the questionnaire related to the objectives and the hypotheses of the study. A questionnaire, as a method of data collection costs less when mailed to respondents who are spread widely, yields answers without interviewer's bias, allows respondents enough time to provide answers that are thought out in detail, reaches out to many respondents and hence reliable feedback (Kothari, 2004).

Pilot Study

The pilot test involved ensuring the validity and reliability of research instruments as follows and had 103 questionnaires to 103 respondents.

Validity of Research Instruments

Validity refers to a situation whereby the instrument does what it is meant to carry out and the validity may be in form of face, construct and finally internal validity. Face validity implies that anybody can see that the method being used is valid and sensible. Construct Validity is whereby the used technique really captures what it is supposed to measure. Internal Validity implies causality, thus the happening of X results in Y taking place. Basically, does the independent variable explain totally for the adjustments in a dependent variable or is the outcome in the dependent variable affected by also factors other than the independent variable? (Greener, 2008). In this study, validity of the research instruments was determined through content analysis of the instruments by piloting, where the responses of the subjects were checked against the specific research objectives. The opinion of the experts was sought on the aspects of validity of documents.

Reliability of Research Instruments

Reliability refers to consistency of scores obtained using a research instrument, the degree to which a research instrument yields consistent results or data after repeated trials. Reliability is another term for repeatability over time, thus the research must be auditable, transparent and clear so that readers can apply the same method themselves and produce the same results. The method used should be clear enough to instil confidence in the reader that the results were real. Reliability was enhanced through collection of adequate data so as to draw conclusions that were coherent. Cronbach alpha test re-test method was used to measure reliability of the research instruments and a coefficient which was over 0.7 was deemed satisfactory. The coefficient of reliability was computed using the Karl Pearson's coefficient of correlation formula given below.

$$r = \frac{\sum xy - \sum x \sum y}{\sqrt{[n \sum x^2 - (\sum x)^2] [n \sum y^2 - (\sum y)^2]}}$$

Where

r = Coefficient of Correlation

n = number of respondents

x = total score of the test administration

y = total score of the retest administration

Data analysis and presentation

Data analysis is a process that involves concentrated operations which are performed in order to summarize obtained data and present it in a format which answers questions of the study (Kothari, 2004). It involves inspecting, transforming, and modelling data with the main aim of highlighting useful information, suggesting conclusions, and supporting decision making. It is examining what has been collected in a study and making deductions and inferences. After analysis, data was presented with ease of comprehension. Since the data collected was of quantitative and qualitative nature, both quantitative and qualitative data analysis techniques were used. Qualitative analysis technique constituted tables to analyze data collected while quantitative analysis technique relied on inferential statistics using the Statistical Package for Social Science software with Chi Square tests and Spearman's rank correlation coefficient in order to establish variations in responses given. The researcher had to first establish if adequate data had been collected through the administration of the research instruments. Thereafter, SPSS was used to generate frequency tables, percentages and means. Data was analyzed on a deductive manner based upon the importance and significance of achieving the research objectives. Research findings were presented thematically on account of the research objectives or questions. Analyzed data was presented in form of frequency tables and bar graphs.

All filled questionnaires were checked for completeness before they were entered into the SPSS (version 21) software for analysis. A filled questionnaire was entered into the software and determined if it had over 75% of the items answered. Regression analysis was used to establish the relationship between the study variables (Kothari, 2004). The regression equation was:

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

Where

Y is the dependent variable (Supply Chain Performance)

β_0 is the regression constant

$\beta_1, \beta_2, \beta_3$ and β_4 are the coefficients of independent variables X_1, X_2, X_3 and X_4

X_1 is Cost Reduction

X_2 is Labor Reduction

X_3 is Efficiency in Operations

X_4 is Knowledge and Skills and

ε is the error term.

4. RESEARCH FINDINGS AND DISCUSSIONS

Introduction

This chapter contains presentation and interpretation of the data collected in the study. The first section presents the response rate, coefficient of reliability and demographic characteristics of the respondents. The second section presents the findings of the study based on the objectives that the study sought to achieve. The specific objectives were to determine the effect of cost reduction on supply chain performance in Trans Nzoia County; to establish the effect of labor reduction on supply chain performance in Trans Nzoia County; to assess the effect of efficiency in operations on supply chain performance in Trans Nzoia County and to evaluate the effect of knowledge and skills on supply chain performance in Trans Nzoia County.

Response Rate

Out of the total 103 questionnaires that were sent to the respondents, 89 of them were fully filled and returned by the respondents; yielding a response rate of 86.40%. This was considered a very reliable response rate for generalizations of the study findings since a rate of response that is over 70% as per Mugenda and Mugenda (1999) is deemed to be sufficient to allow the analysis of data to proceed. The rate of response for the issued questionnaires was high and attributable to consistent follow ups and immediate collection of filled ones from the respondents in order to curtail chances of misplacement.

Pilot Study

To determine the reliability of the findings, Cronbach's alpha correlation coefficient was computed at 95% confidence interval for all the variables under the study. Cronbach's alpha correlation coefficient was found to be 0.812, 0.79, 0.88 and 0.71 for cost reduction, labor reduction, efficiency in operations and knowledge/skills respectively which also indicated the levels of internal consistency for each variable. Fraenkel and Wallen (2000) stated that items are considered reliable if they yield a reliability coefficient of 0.70 and above. Therefore, the study showed the existence of acceptable level of inter-item consistence.

Demographic Characteristics of the Respondents

The researcher analyzed respondents' characteristics in regard to their gender, age group, and years of working experience which were deemed necessary.

Gender

The respondents' analysis according to gender yielded the following as depicted in the table. The table below shows gender distribution in terms of percentages for the male and female respondents. The figure of the pie chart also shows gender distribution of the respondents.

Table 4.1: Respondents' Distribution by Gender

Gender	Frequency	Percentage
Male	51	57.30
Female	38	42.70
Total	89	100

As revealed in the above table 4.1 on gender distribution, the majority of the respondents were male (57.3 percent) while 42.7 percent were female. These depicted a good representation of both gender as each had at least 30 percent participating in the study which is in line with the 2010 Constitution of Kenya. Thus, there was no gender bias.

Age Group Analysis of Respondents

The table 4.2 below shows the age distribution in terms of percentages for the respondents.

Table 4.2: Respondents' Distribution by Age Bracket

Age bracket	Frequency	Percentage
18-24 years	13	14.6
25-34 years	19	21.3
35-44 years	22	24.7
45 – 54 years	18	20.4
55 – 64 years	11	12.3
Above 65 years	6	6.7
Total	89	100

From the above table, the majority of the respondents were in the age group 35-44 years at 24.7% and the least was 6.7% for those above 65 years. It can also be noted that all other age groups were fairly distributed too but the lowest was that of over 65 years.

Respondents' Distribution by Departments

The table 4.3 below shows the departmental distribution in terms of percentages for the respondents. The figure of the bar chart also shows age distribution of the respondents.

Table 4.3: Respondents' Distribution by Department

Department	Frequency	Percentage
ICT	11	12.5
Procurement	9	10.1
Stores	5	5.6
Finance /Accounts	12	13.5
Lands	6	6.7
Gender & Sports	6	6.7
Transport & Works	6	6.7
Trade & Planning	7	7.9
Environment	4	4.5
Health	10	11.2
Human Resource	9	10.1
Education	4	4.5
Total	89	100

From the table 4.3, the respondents were evenly distributed across most of the departments with Information Communication Technology and Finance being the leading ones. This implies that all the responses in questionnaires represented general and true views on the subject matter of the study.

Respondents' Distribution by Years of Working Experience

The table 4.4 below shows the duration of working experience distribution in terms of percentages for the respondents.

Table 4.4: Years of Working Experience with County Government of Trans- Nzoia

Duration	Frequency	Percentage
Less than 1 year	12	13.4
1-2 years	8	9.1
3-4 years	25	28.1
Above 4 years	44	49.4
Total	89	100

From the findings, majority of the respondents had above 4 years' experience at 49.4%, followed by those of 3 to four years' experience at 28.1%. Those with less than 1 year were at 13.4% while for 1-2 years of work experiences were at 9.1%. This implies most respondents gave responses that were informed by their experience on the area of study in the county.

Presentation of Findings

The following are the research findings presented in line with the specific objectives of the study which were to determine the effect of cost reduction on supply chain performance in Trans Nzoia County; to establish the effect of labor reduction on supply chain performance in Trans Nzoia County; to assess the effect of efficiency in operations on supply chain performance in Trans Nzoia County and to evaluate the effect of knowledge and skills on supply chain performance in Trans Nzoia County.

Effect of Cost Reduction on Supply Chain Performance

The results on the effect of cost reduction on supply chain performance are as per the responses below which indicate the level of agreeableness against each particular statement.

Table 4.5: Effect of Cost Reduction on Supply Chain Performance

Statement	1	2	3	4	5
	%	%	%	%	%
Cost Reduction is a result of improved supply chain performance	33	18.4	2.8	26.7	19.1
Is Cost reduction achieved through information technology investments?	37.4	23.2	4.1	21.2	14.1
Supply chain performance can be improved with higher information technology investments	41.3	17.5	7.4	22.4	11.4

Key: 1 – Strongly Agree; 2 – Agree; 3 – Neutral; 4 – Disagree; 5 – Strongly Disagree

The above results in the table 4.5 show that the respondents strongly agree that cost reduction is a result of improved supply chain performance at a majority response of 33%. More so, 18.4% agree, 2.8% were neutral, 26.7% disagreed and 19.1% strongly disagreed that cost reduction is a result of improved supply chain performance. Cost reduction is achieved through information technology investments at a majority response of 37.4%. More so, 23.2% agreed, 4.1% were neutral, 21.2% disagreed and 14.1% strongly disagreed that cost-reduction is achieved through information technology investments. Supply chain performance can be improved with higher information technology investments supported by a majority of responses at 41.3%. More so, 17.5% agreed, 7.4% were neutral, 22.4% disagreed and 11.4% strongly disagreed that supply chain performance can be improved with higher information technology investments. The results can be interpreted to mean that there is a strong effect of Cost Reduction on Supply Chain Performance. Thus, the implication is that improved supply chain performance leads to reduction of costs which is a financial advantage.

In determining the Effect of Cost Reduction on Supply Chain Performance, the respondents were also asked on the questionnaire to list challenges in information technology investments that do not improve supply chain performance. The challenges mentioned by the respondents were lack of organization ,support ,poor management, poor quality of work and poor planning.

Hypotheses Testing

The testing of hypotheses was carried out in order to establish the relationship between each of the independent variables cost reduction, labor reduction, efficiency in operations and knowledge and skills and the dependent variable Supply Chain Performance. The research hypotheses Ho1,Ho2,Ho3 and Ho4 which were stated respectively as there is no significant relationship that exists between effect of cost reduction and supply chain performance, there is no significant relationship that exists between extent of labor reduction and supply chain performance, there is no significant relationship that exists between effect of efficiency in operations and supply chain performance and there is no significant relationship that exists between effect of knowledge and skills and supply chain performance were tested using Pearson Correlation and regression analysis.

The hypothesis Ho1 stated that; there is no significant relationship that exists between effect of cost reduction and supply chain performance. The p-value for cost reduction is 0.00, hence the null hypothesis is rejected since the calculated p value is less than 0.05. It is concluded that cost reduction had had a positive significant effect on supply chain performance. The b value(beta) of cost reduction is 0.146, implying that it has 14.6% influence on supply chain performance.

Effect of Cost reduction and Supply Chain Performance

The correlation between cost reduction and supply chain performance was calculated using Pearson`s Correlation in order to establish the association between the two variables. The results are as shown in the table 4.6 below:

Table 4.6: Correlation between cost reduction and supply chain performance

		Supply Chain Performance
Cost Reduction	Pearson Correlation	.801**
	Sig.(2-tailed)	.000
	N	89

** Correlation is significant at the 0.01 level (2-tailed)

A correlation coefficient of 0.801 between cost reduction and supply chain performance was obtained as shown in the above table. This implies the presence of a positive and significant association between cost reduction and supply chain performance. Thus, the better the supply chain performance the better is the cost reduction correspondingly.

Discussion

The present study shows that a majority of 33%, 48.7%, 55% and 46.9% respondents strongly agree that cost reduction, labor reduction, efficiency in operations and knowledge and skills respectively results in improved supply chain performance. The respondents clearly acknowledge that all these variables stated above do improve supply chain performance both in the short, medium and long term as illustrated in the presentation of findings from the tables above.

5: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter discusses summary, conclusion, recommendations and suggested areas for further research.

Summary of Findings

The summary of the findings is in line with the objectives which were to determine the effect of cost reduction on supply chain performance in Trans Nzoia County; to establish the effect of labor reduction on supply chain performance in Trans Nzoia County; to assess the effect of efficiency in operations on supply chain performance in Trans Nzoia County and to evaluate the effect of knowledge and skills on supply chain performance in Trans Nzoia County.

Effect of Cost Reduction on Supply Chain Performance

The results of the study revealed a strong effect of Cost Reduction on Supply Chain Performance. Thus, the implication is that improved supply chain performance leads to reduction of costs which is a financial advantage. Correlation findings showed the presence of a positive and significant association between cost reduction and supply chain performance. Thus, the better the supply chain performance the better is the cost reduction correspondingly.

Conclusion

The researcher failed to reject the model generated for determining supply chain performance using cost reduction, labor reduction, efficiency in operations and knowledge and skills. The independent variables are thus critical and do influence supply chain performance. Thus, cost reduction, labor reduction, efficiency in operations and knowledge and skills have a significant association with on supply chain performance in Trans Nzoia County. Information technology investments thus influence supply chain performance in the short, medium and long run operations and results.

Recommendations

The researcher came up with the following recommendations. The first one is that management of the county should continue making information technology investments as times change to continually improve supply chain performance. The second one is that the county government should continually monitor cost reduction, labor reduction, efficiency in operations and knowledge and skills as measures of effect of information technology investments on supply chain performance. Another recommendation should be that the county should embrace a culture of research and development on information technology to ensure that they are making huge strides towards cost reduction, labor reduction which on its part saves on cost and time, operations become more and more efficient and that personnel are more knowledgeable and skilled in performance of their duties which in the long run will improve supply chain performance within the county.

Areas for Further Research

Arising from the study, the researcher suggested areas for further research. First is that a similar study should be conducted on effect of information technology investments on supply chain performance in the private sector. The second is that further research should be undertaken on impact of supply chain performance on the overall financial performance of the county.

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