



DETERMINANTS OF INTEGRATION OF LEAN PROCUREMENT METHODOLOGIES IN AVIATION INDUSTRY IN KENYA: A CASE OF KENYA AIRWAYS LIMITED

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ABSTRACT

The general objective of the study was to establish the determinants of integration of lean procurement methodologies in the aviation industry in Kenya. The study findings revealed that: volume purchase had a positive impact on lean integration, the organization had adopted recent information technologies in purchasing of goods/services and maintenance of supplier relationships however inadequate lean information dissemination was carried, the management strategies considered lean practices however employee and supplier involvement was minimal and substantial cost was further incurred in lean procurement methodologies integration. The study further revealed lean integration in procurement was moderate. The study recommended that: employees to be involved in lean policy formulation, proper dissemination of lean procurement information to staff and suppliers, proper monitoring and evaluation of lean integration as well as cost-benefit analysis of lean integration. The study recommended that there was need for setting up purchase volumes which is based on usage, urgency and perishability of the item. The purchase volumes guidelines and the level of integration of lean procurement methodologies need to be well articulated. The purchasing in volumes lowers costs, contributes to continuous innovation and improvement and gives the organization competitive advantage. The study recommended that there is need to have information tools in ensuring integration of lean procurement methodologies. The organization needs to adopt recent technologies in information management such as ERP systems, E-procurement and electronic fleet spares manuals and maintenance manuals. The study recommended that there is need to enhance management strategies in support of the lean procurement methodologies integration. The top management need to emphasize on waste elimination and process standardization audits before purchasing of any goods, the management should emphasize on screening of suppliers and management appreciated the role played by supply chain. There was need to develop lean policies which could lead to incidental cost such as training costs, loss of investment opportunities, replacing of fleets and purchase of lean products compared to conventional in order to enhance lean procurement methodologies integration in the organization.

Key Words: Volume of Purchases, Information Tools, Management Strategies, Lean Procurement

INTRODUCTION

Procurement nowadays' becoming a vital entity to the organizations performance measurement and metrics, has received much attention from researchers and practitioners. To support this, Gunasekaran, Patel (2001) and McGaughy (2004) have discussed that the role of these measures and metrics in the success of an organization cannot be overstated because they affect strategic, tactical and operational planning and control. Some more, the revolution of procurement in the last decade has testified that an increasing number of companies seek to enhance performance beyond their own boundaries (Boyson et al., 1999; Proirier, 1999). Procurement has been viewed on every perspective.

Procurement is the process of getting the goods and/or services your company needs to fulfill its business model. Some of the tasks involved in procurement include developing standards of quality, financing purchases, negotiating price, buying goods, inventory control and disposal of waste products like packaging. In the overall supply chain process, procurement stops once your company has possession of the goods. To make a profit, the cost of procuring your goods must be less than the amount you can sell the goods for, minus whatever costs are associated with processing and selling them (Jake Wayne , 2002). According to Agarwal and Shankar (2002), a supply chain is an inter-linked set of relationships connecting customer to supplier, perhaps through a number of intermediate stages such as manufacturing, warehousing and distribution processes.

Change is the word that best characterizes the nature of our modern societies and determines the challenges that managers face. Management of change therefore needs to be an everyday plan for a leader. The success of a manager depends on

their ability to react, operate and adapt to change. With today's rapid technological progress, global communications, intensified competition and increasingly change in consumer tastes and preferences, old methods of firms operations can no longer produce desirable results nor can they respond to the fast changing situations. Powerful methods and tools are required for successful structuring of change processes (Kotler, 2007; Mertins and Jochem 2001; Spur *et al.*, 1996).

Staying competitive requires looking for new ways of reducing cost and increasing the quality of the company's products. Liker, (1998) argues that competitive advantage and leadership in the global marketplace can only be gained by applying lean principles to the supply chain .It is likely that most aviation firms in Kenya have difficulties to compete with lower prices given the high cost of production and therefore need to be more efficient, productive and simultaneously increase their capabilities regarding quality, delivery and service. Lean procurement methods can presumably enable this. Lean is considered to be one potential approach for improving organization's performance. This complex highly integrated system is the reason for Japan's manufacturing effectiveness (Womack *et al.*, 1990; Liker, 1998). Lean procurement integrated as a complete system in the organization can ensure company's competitiveness and help the firm unlock the power of lean aviation principles. It is the future of supply chain management in a demand driven world. One of the essential aspects to lean concept is to attain highest possible satisfaction among internal and external customers of the procurement and logistics departments. The benchmark here is cost, quality which has become important for the airline in regard to customer's satisfaction (Barla, 2003).

Global supply chain survey conducted by Price water Coopers (2013) revealed that Swedish

companies are worried about the increasing competition, especially from manufacturers in China that offer substantially lower prices and simultaneously increase their capabilities regarding quality, delivery and service. It is likely that Swedish companies have difficulties to compete with lower prices, and therefore need to be more efficient and productive. Lean solutions can enable this.

According to Safaricom (2012) Kenya has firms which have achieved excellence in supply chain performance through implementation of effective lean management programs. Safaricom has successfully implemented effective Lean procurement methodologies through the development of strong relationships with its stakeholders, process standardization in its supply chain, effective information technology tools usage, effective supplier relationships that ensure best value in terms of cost, quality, service and innovation. To ensure that all their stakeholders are aligned to its ways of working, they have developed the 'Drive Operational Excellence' document, reviewed annually, that is about innovation and finding new ways to do things better and faster to benefit their customers. Operational excellence also means getting good returns on capital used to deliver their products and services.

The term lean refers to a systematic approach of identifying and eliminating waste (non-value added activities) through continuous improvement by moving the product at the pull of the customers in pursuit of perfection. Womack and Jones (2009) in their book argue that the adoption of lean approach will change almost everything in every industry choices for suppliers, consumers, and the nature of work. The lean approach consists of various practices which aim to improve efficiency, quality and responsiveness to customers

The aviation industry in Kenya is made of private and commercial airlines. Privately owned aircraft are for rentals or private use. The commercial airlines ferry passengers and include Kenya Airways which is the national carrier and third largest airline in Africa, Jet link Express, Fly 540, ALS- Aircraft Leasing Services, 748 Air Services, East African Safaris, African express, Air Kenya, Delta Connection, Safari link Aviation, Astral Aviation, CMC aviation and Jambojet which is a subsidiary low cost carrier for Kenya Airways. Kenya Civil Aviation Authority (KCAA) is a state corporation under the Ministry of transport that is responsible for regulating the aviation industry in Kenya and for providing air navigation services in the Kenya flight region. This is the registered regulator for the aviation industry. Aviation in Kenya is dominated by Kenya Airways with tight competition from the low cost carriers for local and east African destination.

Kenya Airways limited is the National carrier of the republic of Kenya and the Third biggest Airline in Africa. Kenya Airways was established in February 1977 following the breakup of the East African Community and subsequent disbanding of the jointly-owned East African Airways. In 1995 Kenya Airways signed a Shareholders' Agreement and a Master Cooperation Agreement with Royal Dutch Airline KLM thereafter an Initial Public Offer for shares is issued in March 1996. Since then Kenya Airways has invested in acquisition of modern fleet which range from Boeing 737 classic series and New Generation series, Boeing 767 Long range aircraft and new generation Boeing 777 jumbo as well as Embreair E170 jets. Orders have been made for the more efficient next generation airlines the Boeing 787 commonly known as Dreamliner. The Boeing 787 Dreamliner are aimed at replacing Boeing 767 which will soon be faced out.

Statement of the Problem

According to Van Weele (2002) the largest part of cost of goods is in purchased raw materials, components and services. Efficient procurement can therefore lead to substantial competitive advantage (Langley; Coyle and Gibson; Novack and Bardi, 2008). Extensive research has been conducted in the field of lean procurement and much of it point to the fact that lean can lead to efficient procurement (Liker, 2004; Hines & Taylor 2000; Lee, 2003). Lubben (1988) also expresses the objectives of lean supply chains as improving efficiency, quality and delivery performance of suppliers. They concluded that for successful implementation of lean, requires participation and full support of all the supply chain members and also depended on factors like stable demand, long term partnership and fast and frequent exchange of information.

Airlines worldwide have been embarking on lean programs as a measure to overcome aviation performance challenges and realize increased efficiency on supply chain profitability. In Kenya, aviation industry has been trying to meet efficient and effectiveness in supplying customers with good terms of price, service standards, innovation in inflight products and services offered.

Statistics from the Kenya Airways annual financial reports, show that in the financial year ending 2015 Kenya Airways accumulated losses of Ksh. 25.7 billion which is a further slump from the 2014 losses which amounted to Kshs.3.4 Billion (Kenya Airways, 2015). The financial performance woes began in the financial year 2012 when the profit declined by 46.7% from previous year's profit (Wahome, 2012). This was followed by a loss of Ksh. 7.8 Billion in 2013. This perennial decline in financial performance calls for more scrutiny on the

operations of the airline. The loss could be as a result of decline in turn over or increase in cost of operations. This study focuses on the cost of operations, specifically on the supply chain by assessing the integration of lean procurement methodologies. This study therefore sought to assess the possible factors influencing effectiveness of lean integration in supply chain of the Kenya Airways. Four main factors that included: volume of purchase, information tools used, management strategy adopted and lean management costs were thus considered.

Objectives of the Study

The general objective of the study was to establish the determinants of integration of lean procurement methodologies in the aviation industry in Kenya. The specific Objectives were:-

- To establish the influence of volume of purchases on the integration of lean procurement methodologies in the aviation industry in Kenya
- To establish the influence of information tools on the integration of lean procurement methodologies in the aviation industry in Kenya.
- To assess the influence of management strategies on integration of lean procurement methodologies in the aviation industry in Kenya.
- To find out the influence of lean procurement costs on integration of lean procurement methodologies in the aviation industry in Kenya.

LITERATURE REVIEW

Theoretical Review

Stakeholders' Theory

The stakeholder theory is a theory of organizational management and business ethics that addresses morals and values in managing an organization. It was originally detailed by R. Edward Freeman in the book *Strategic Management: A Stakeholder Approach*, and identifies and models the groups which are stakeholders of a corporation, and both describes and recommends methods by which management can give due regard to the interests of those groups. In short, it attempts to address the "Principle of Who or What Really Counts."

In the traditional view of the firm, the shareholder MH (Majority Holder) view (the only one recognized in business law in most countries), the shareholders or stockholders are the owners of the company, and the firm has a binding fiduciary duty to put their needs first, to increase value for them. In older input-output models of the corporation, the firm converts the inputs of investors, employees, and suppliers into usable (salable) outputs which customers buy, thereby returning some capital benefit to the firm. By this model, firms only address the needs and wishes of those four parties: investors, employees, suppliers, and customers. However, stakeholder theory argues that there are other parties involved, including governmental bodies, political groups, trade associations, trade unions, communities, associated corporations, prospective employees, prospective customers, and the public at large. Sometimes even competitors are counted as stakeholders.

The stakeholder view of strategy is an instrumental theory of the corporation, integrating both the resource-based view as well as the market-based view, and adding a socio-political level. This view of

the firm is used to define the specific stakeholders of a corporation (the normative theory (Donaldson) of stakeholder identification) as well as examine the conditions under which these parties should be treated as stakeholders (the descriptive theory of stakeholder salience). These two questions make up the modern treatment of Stakeholder Theory.

There have been numerous articles and books written on stakeholder theory. Recent scholarly works on the topic of stakeholder theory that exemplify research and theorizing in this area include Donaldson and Preston and Mitchell, Agle, and Wood (1997), Friedman and Miles (2002) and Phillips (2003).

Donaldson and Preston argue that the normative base of the theory, including the "identification of moral or philosophical guidelines for the operation and management of the corporation", is the core of the theory. Mitchell, et al. derive a typology of stakeholders based on the attributes of power (the extent a party has means to impose its will in a relationship), legitimacy (socially accepted and expected structures or behaviors), and urgency (time sensitivity or criticality of the stakeholder's claims). By examining the combination of these attributes in a binary manner, types of stakeholders are derived along with their implications for the organization. Friedman and Miles explore the implications of contentious relationships between stakeholders and organizations by introducing compatible/incompatible interests and necessary/contingent connections as additional attributes with which to examine the configuration of these relationships.

The political philosopher Charles Blattberg has criticized stakeholder theory for assuming that the interests of the various stakeholders can be, at best, compromised or balanced against each other. Blattberg argues that this is a product of its emphasis on negotiation as the chief mode of dialogue for dealing with conflicts between stakeholder interests. He recommends conversation

instead and this leads him to defend what he calls a 'patriotic' conception of the corporation as an alternative to that associated with stakeholder theory.

Adaptive Structuration Theory

Based on Structuration theory, the study intends to determine the effects of information technology on effective procurement management. Structuration theory was first proposed by Anthony Giddens in his *Constitution of Society* in 1984, which was an attempt to reconcile social systems and the micro/macro perspectives of organizational structure. DeSanctis and Poole (1994) borrowed from Giddens in order to propose AST and the rise of group decision support systems. AST provides the model whereby the interaction between advancing information technologies, social structures, and human interaction is described, and which focuses on the social structures, rules, and resources provided by information technologies as the basis for human activity. AST is a viable approach in studying how information technology affects effective procurement management in the public sector because it examines the change from distinct perspectives.

Adaptive Structuration Theory (AST) is relevant to today's procurement management practice due to the expanding influence that advancing technologies have had with regard to the human-computer interaction aspect of AST and its implications on socio-biologically inspired structuration in security software applications (Ramakrishna 2005). AST theory presents specific advances in information technology that are driving organizational changes in the areas of business alignment, IT planning, and development that show how AST is being used to as a driving force of effective management within organizations. The study will use the theory to investigate how complexity of the procurement operations is influenced by Information Technology (Ramakrishna

2005). According to De Sanctis and Poole (1994), AST is a viable approach for studying the role of advanced information technologies in effective procurement management. AST examines the procurement management process from two vantage points 1) the types of structures that are provided by the advanced technologies in procurement operations and 2) the structures that actually emerge in human action as people interact with these technologies in procurement operations. In conclusion AST's appropriation process might be a good model to analyze the utilization and penetration of new technologies in organizations.

Institutional Theory

Institutional theory focuses on the deeper and more resilient aspects of social structure. It considers the processes by which structures, including schemas; rules, norms, and routines, become established as authoritative guidelines for social behavior (Scott, 2004). Different components of institutional theory explain how these elements are created, diffused, adopted, and adapted over space and time; and how they fall into decline and disuse.

Powell and DiMaggio (1991) define an emerging perspective in organization theory and sociology, which they term the 'new institutionalism', as rejecting the rational-actor models of classical economics. Instead, it seeks cognitive and cultural explanations of social and organizational phenomena by considering the properties of supra-individual units of analysis that cannot be reduced to aggregations or direct consequences of individuals' attributes or motives.

Scott (1995) indicates that, in order to survive, organizations must conform to the rules and belief systems prevailing in the environment (DiMaggio and Powell, 1983; Meyer and Rowan, 1977), because institutional isomorphism, both structural and procedural, will earn the organization legitimacy (Dacin, 1997; Deephouse, 1996;

Suchman, 1995). Multinational corporations (MNCs) operating in different countries with varying institutional environments will face diverse pressures. Some of those pressures in host and home institutional environments are testified to exert fundamental influences on competitive strategy (Martinsons, 1993; Porter, 1990) and human resource management (HRM) practices (Rosenzweig and Singh, 1991; Zaheer, 1995).

There is substantial evidence that firms in different types of economies react differently to similar challenges (Knetter, 1989). Social, economic, and political factors constitute an institutional structure of a particular environment which provides firms with advantages for engaging in specific types of activities there. Businesses tend to perform more efficiently if they receive the institutional support.

Martinsons (1998) developed a theory of institutional deficiencies (TIDE) suggesting that relationship-based commerce will prevail where rule-based markets cannot flourish due to institutional deficiencies. Martinsons (2008) extends TIDE to show how the development of relationship-based e-commerce in China has resulted from that country's lack of trustworthy and enforceable set of rules for doing business. His theory suggests that factors such as personal connections (Guanxi in China, blat in Russia, etc.), informal information, and blurred business-government relations (which also encourage corruption) will constrain the transition from the physical marketplace to online market spaces.

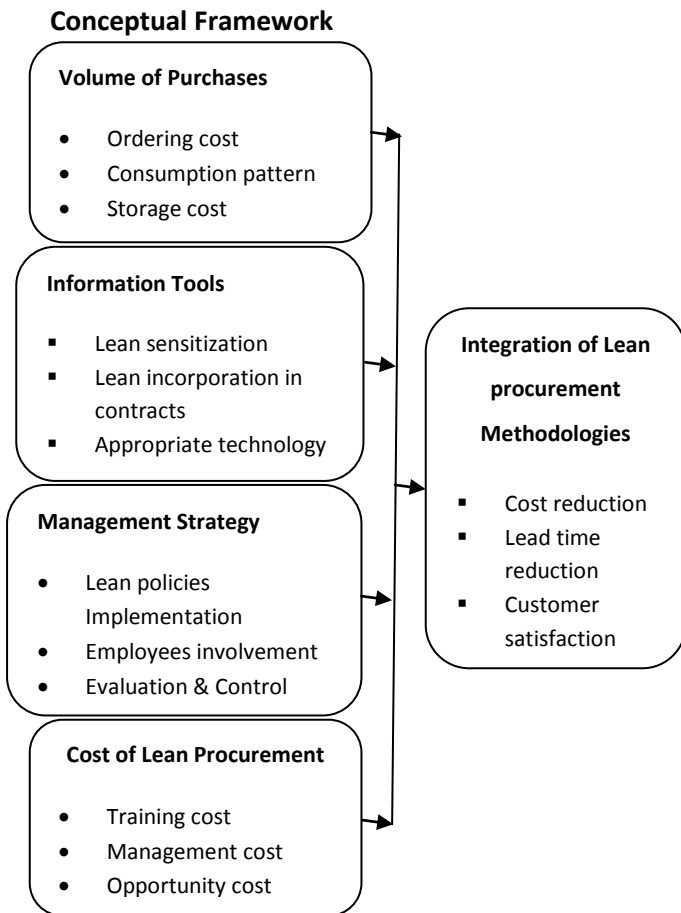
Resource Based Theory

The knowledge based literature of the firm fosters and develops the resource based theory in that it considers knowledge to be the most complex of an organization's resources (Alavi and Leidner, 2001). According to resource-based theory, the intangible assets are the main source to improve enterprise growth. Therefore, intellectual capital has been studied by many past researchers who investigate

the influence of intangible assets on business performance. However, most past researchers focused on the impact of individual intangible assets on performance while neglecting the effects of specific elements of the assets.

The currently dominant view of business strategy – resource-based theory or resource-based view (RBV) of firms – is based on the concept of economic rent and the view of the company as a collection of capabilities. This view of strategy has a coherence and integrative role that places it well ahead of other mechanisms of strategic decision making. Rauch *et. al.* (2005) used the Resource Based Theory (RBT) to explain the importance of human capital to entrepreneurship. According to RBT, human capital is considered to be a source of competitive advantage for entrepreneurial firms. Ownership of firm-specific assets enables a company to develop a competitive advantage. This leads to idiosyncratic endowments of proprietary resources (Barney, 1991). According to RBT, sustainable competitive advantage results from resources that are inimitable, not substitutable, tacit in nature, and synergistic Davila, Epstein & Shelton (2006). Therefore, managers need to be able to identify the key resources and drivers of performance and value in their organizations.

The RBT also states that a company's competitive advantage is derived from the company's ability to assemble and exploit an appropriate combination of resources. Such resources can be tangible or intangible, and represent the inputs into a firm's production process; such as capital, equipment, the skills of individual employees, patents, financing, and talented managers. As a larger. Through continued use, these “capabilities”, defined as the capacity for a set of resources to interactively perform a stretch task or an activity, become stronger and more difficult for competitors to understand and imitate. (Research and Development expenditures) and can be used to augment future production possibilities.



Independent Variables Dependent Variable
Figure 1: Conceptual Framework

Volume of Purchases

Nowadays businesses are becoming more and more competitive, and for companies to preserve their competitive edge, purchasing has started to receive more attention. Campbell and Morris (2014) state that in many companies purchasing used to be seen as a cost center, naturally because money is spent to buy materials. These days purchasing is seen more as a profit center, because every cent that is saved in purchasing is a direct profit for a company; furthermore, purchasing is perceived as a value adding function (Morris, 2013). Lysons and Farrington (2010) state that the classic definition of purchasing objectives is to buy goods and services in the right quantity, at the right price, in the right quality, from the right suppliers at the right time.

The difference between purchasing and procurement is that purchasing is an act of obtaining goods and services by paying money for it and procurement is the process of acquiring goods and services in any possible way.

Several years earlier the buyer’s role in purchasing actions was mostly to gain cost reductions. Nowadays the purchasing agenda has evolved from attaining reductions in costs to also managing the risks and improving the value. Johnson, Leenders and Flynn (2011, 255) state that fair price is the lowest price that secures the constant supply of ordered items. TCO means that the buyers need to estimate the direct and indirect costs (logistics, materials handling, maintenance etc.) of the bought goods and services from purchase to disposal. Indirect costs can be decreased by getting rid of the unnecessary buffers or waste in the supply chain, e.g. quality inspections, safety stocks and field expediting (Weele 2010)

Management Strategies

Modern management strategies are dynamic and interconnected networks that are gradually lengthening and globe-spanning (Chiang *et al.* 2011). Procurement practices integrates various firm’s operations and support functions, synchronizing production with new orders, purchasing with demand, scheduling and shipping with customer requirements (Paulraj, Chen & Flynn, 2006). According to Sánchez-Rodríguez (2009), when well-implemented procurement practices in an organization, forms an efficient, quick and accurate management tool that reduces cycle time and builds reliability thereby impacting positively on the performance of organizations

Effective management strategies are ever-growing means of conducting business in many industries around the world and is projected to reach \$5 trillion in transactions by the year 2020, up from

\$75 billion in 2011 according to Mol (2013). In their discussion of competitive purchasing strategies required for the twenty-first century, Ellram (2012) stated that manufacturing firms must maximize the use of strategic based decisions, including cost management and management of supplier relationships in every aspect of the business, linking across all members of the supply chain, increasing the speed of information transfer, and reducing non-value adding tasks. Clearly, the use of strategic based procurement has the potential to significantly impact national economies as well as the competitive position of individual firms (González-Benito, 2007).

Information Tools

Knowledge of the tools and method is often not the problem, according to Bhasin and Burcher (2006), but rather difficulties of coordinating the work and making people believe in them. In his article, Philip Atkinson states that most organization fail to create a culture that will sustain lean and any other programme of organization improvement. He states that failing to plan for change equates to planning to fail. Firms should pay equal attention to creating the right culture, conditions and circumstances which can become the foundation of implementing change.

Implementing lean methodologies also requires extra resources which most of the firms are not willing to spend. Financial resources are needed for employee training programs, external consultants, ICT Integration and coordination etc. Sometimes even production of firms may be interrupted as a result of the employees training in the new techniques. The managers would rather refuse unnecessary loss of resources especially if they do not anticipate immediate returns (Pius Achanga *et al.*, 2008).

Lean Procurement Costs

Implementing lean methodologies require use of intellectual capital and ability to innovate and differentiate. Most companies experience difficulties after employing people with low skills levels, who do not foster the ideology of skill enhancement. Companies often lack clarity of differentiating value from waste in the supply chain. Balancing procurement related activities that are “necessary waste” with those that create value presents an on-going struggle for companies of all sizes. For instance, it might be difficult for firms to tell whether employees’ movement within the firm adds value or not.

Integration of Lean Procurement Methodologies

Lean procurement is becoming a strategy method for gaining competitive advantage and even for survival, not just for airlines, but also for manufacturers and wholesalers since adding value and removing waste is no longer an option for companies. Non- lean practicing companies face competition from foreign made goods which can have significant impacts on their business and industry as well as the economy. The heart of lean can be seen as eliminating waste (Licker, 2004). Arguably the most significant part of the lean philosophy is its focus on elimination of all forms of waste. Waste can be defined as any activity which does not add value. Supply chain partners have work together and individually to eliminate wasteful processes and excess inventory across the chain. Two simple devices are commonly used in lean improvements. One is concerned with identifying waste as the first step towards eliminating it. There are seven forms of waste which need to be eliminated as suggested by Philips and Nystuen (2002); Meier, 2001; Siekman, Taylor & Brunt, 2000 *et al.*,

Inventory kept in waiting or as a safety stock does not add value and should be eliminated (Karlsson

and Ahlstrom, 1996). Firms are under increasing pressure to reduce inventory levels in the demand driven enterprises. Many companies today produce directly into trailers and maintain no idle or waiting inventory. In this order to make scenario, all raw materials are sourced and utilized and no space is designated to store raw materials.

Typically, waste across the supply chain will be made manifest in excess inventory. Reducing inventory can be aided by introducing postponement and customization strategies, which push the final assembly of a completed product to the last practical point in the chain. Applying one-piece flow and pull systems and JIT techniques can reduce raw materials and WIP dramatically. A Kanban or visual signal for more goods to be pulled and moved forward to the next process can also accomplish this procedure. The ultimate goal is to eliminate raw materials and any WIP. Although the leanest organizations have arranged just in time deliveries to support manufacturing, this approach requires the absolute highest degree of competency and coordination within the supply chain. JIT driven processes in the inventory management techniques enables firm to maintain no waiting inventory resulting in smooth inventory orders (Worthington, 1998).

.Lean procurement methodologies helps develop flexible and responsive supply chain where when customers demand unexpectedly goes up, the supply chain meets the increase and when forecast go down, the firm is left with no level of inventory. Lean procurement systems also allow a supply chain to not only to be more efficient, but also faster and responsive. As the culture of lean takes over the entire supply chain, all links increase their velocity. A culture of rapid response and faster decisions becomes the expectation and the norm. This does not mean that decisions are made without careful thought. It simply means that a "bias for action" becomes the new corporate culture. Slow response

or no response becomes the exception, rather than the rule.

Empirical Literature

According to Drucker, (2005) a best practice is a technique, method, process, activity, incentive, or reward that is believed to be more effective at delivering a particular outcome than any other technique, method, process, etc. when applied to a particular condition or circumstance. The idea is that with proper processes, checks, and testing, a desired outcome can be delivered with fewer problems and unforeseen complications. Best practices can also be defined as the most efficient (least amount of effort) and effective (best results) way of accomplishing a task, based on repeatable procedures that have proven themselves over time for large numbers of people. Ansoff, (1990) argued given best practice is only applicable to particular condition or circumstance and may have to be modified or adapted for similar circumstances. In addition, a "best" practice can evolve to become better as improvements are discovered. Despite the need to improve on processes as the environment changes, best-practice is considered by some as a business used to describe the process of developing and following a standard way of doing things that multiple organizations can use for management, policy, and especially software systems.

Brian, (2006) articulated that Price increases are impacting companies at unprecedented levels and plans to keep profits at the same level, or even increase your profitability despite this increase in costs have been: Reduce capital spending, Implement yet another round of layoffs, GM and Ford are currently pursuing this strategy, Increase employee share of health insurance and raise prices. However, if you want to maintain your stature as a "best in class organization" you cannot continue to rely on the above four methods to improve your profits. Your competitors are increasing capital spending, adding employees,

offering competitive benefit packages and actually lowering prices to their customer's year after year. Their Secret – Implementing best practices in purchasing.

In his article on how to achieve world class organization, cost containment strategies looked at how long it takes to become a best in the world purchasing organization. The short answer is, a very long time. That means inch-by-inch, day-by-day, and price increase by price increase. However the best practices evolve over time; if you decide you want to become a master purchasing organization you have to recognize that change is inevitable, keep a positive attitude and passionately believe in the process improvement cycle. Some of the ten keys to effective procurement that have been developed by the some of the best purchasing gurus in the world are:

First, improve your vendor relationships – According to Carter and Drenser, (2001) suppliers don't stay the same from year to year? This means avoid cozy or adversarial relationships with suppliers keeping in mind sitting down with vendors once or twice a year to collaborate eliminates surprises from both you and them. Other strategies here include order in a manner that keeps the vendor's cost low, work with the best vendors, taking into account local, regional, national and global players for the goods and services you are purchasing, competitive pricing is key, focus on the overall best total cost. Companies working with too many vendors, find a great vendor or two and utilize your leverage by giving them all of your business hence firms should develop an annual cost reduction plan; the best vendors will understand this concept.

Secondly Leire, (2006) advised purchasers to develop a scorecard for keeping track of vendors' service, quality, delivery and pricing. Here the strategies include track the quality, service and price performance of your vendors, communicate the results of your scorecard to the vendors, understand what is important to your vendors and

make sure they understand what is important to your company and involve the vendor in the design of your product from the beginning. The third strategy is to obtain the right information and right sizing your vendor list and vendor costs. This involves leverage your volume with your vendors, purchasing and finance should form a team to identify current spending and where the greatest opportunities for improvement exist and brainstorm ideas for product improvements.

Jungman, (2003) claims the human resources as relates creating a purchasing staff with the following characteristics: Analytical –ability to get into the details of the items you are looking to buy, negotiation skills, business knowledge – understanding your business goals and the focus of your suppliers business, compliance to policies, Legal knowledge – creating contracts that benefit the company and monitor your vendors to make sure they comply with the agreements put in place and ability to work in other parts of the organization (Sales, operations, finance). Another strategy is getting the executive team behind purchasing with top officials having a direct line to purchasing so they can understand the impact of price increases will have on their business and make decisions as to whether increases should be passed on to your customers. A team approach to purchasing helps to focus on the priority areas within a company. As a best practice, Fernandez and Ortiz, (2006) proclaim to enforce a preferred vendor list which in turn preferred vendor lists prevent your total vendor list from getting out of control. If every buyer continues to buy from those vendors they like to do business with, you will lose the leverage, the pricing and the efficiencies of consolidating your spend with one or two selected vendors for an expense area. Consider structure centrally led, but locally implemented teams, in order to obtain the best leverage available to your organization you will need to gather data in a central point so that you can evaluate your total

spending by area. The local team will be critical to implementation of the suggested improvements. It is extremely difficult to implement a process improvement without local support.

Thomson, (2004) in his CIPS text Purchasing Context wants buyers to develop strong negotiation skills and use technology to propel yourself ahead of your competition. Have a system you utilize everyday can handle incredible tasks and automate things that you are handling manually and lastly, design an incentive program that actually profits the individual and the company in order to implement these best practices, one should develop an effective plan, form a team that will be compensated for their results, implement the plan and track performance. Once the plan is implemented, meet quarterly to share additional successes achieved along the way.

METHODOLOGY

The study employed a descriptive research design of a survey type. This is a measurement process used to collect information during a highly structured interview, sometimes with a human interviewer (Cooper & Schindler, 2008). The target population in this study was 120 staff drawn from senior and middle level management at Kenya Airways Ltd. The Multiple Regression model that aided the analysis of the variable relationships were as follows: $Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$,

Where, Y_i = Integration of Lean Procurement Methodologies;

β_0 = constant (coefficient of intercept),

X_1 = Volume of Purchase;

X_2 = Information Tools;

X_3 = Management Strategies;

X_4 = Lean procurement costs;

ϵ = Error term;

$\beta_1 \dots \beta_4$ = Regression coefficient of four variables.

FINDINGS AND DISCUSSIONS

Volume of Purchases

The study sought to find out the influence of the decisions on volume of purchases on the integration of lean procurement. The researcher first inquired on the existence of lean guidelines concerning the volume of purchase and then an assessment of various aspects of volume purchased by the airline was done. Majority of the respondents (64.7%) agreed that the organization had well set lean criteria for deciding on the volumes to be purchased. Further discussions by the respondents elaborated that: the criteria used in setting up of the volumes is based on frequency of bin pullouts or stock issuance frequency and critically considers: "items that can halt production, spare parts, chemical shelf life, suppliers lead time, aircraft servicing schedules, cost of spare parts, spare parts compatibility with other crafts". It further considered "manpower levels and seasons in case of staff uniforms as well as frequency and routes of flights in case of the meals on board". Fuel consumption trends were also analyzed to find out the economic order quantity.

The study sought to establish the extent to which respondents agreed with the statements relating to whether volume of purchases influence integration of lean procurement methodologies in the aviation industry in Kenya. A scale of 1-5, the scores were as follows: The scores "Strongly disagree=SD" and "Disagree=D" were represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale ($1 \leq \text{Disagree} \leq 2.5$). The scores of 'Neutral' were represented by a score equivalent to 2.6 to 3.5 on the Likert scale ($2.6 \leq \text{Neutral}=\text{N} \leq 3.5$). The score of "Agree=A" and "Strongly agree=SA" were represented by a mean score equivalent to 3.6 to 5.0 on the Likert Scale ($3.6 \leq \text{Agree} \leq 5.0$). The results were presented in mean and standard deviation as illustrated in Table 1. From the study

results, majority of the respondents agreed that the volumes purchased influence consumption patterns as shown by a mean of 4.38, Purchasing in large volumes gives competitive advantage as shown by a mean of 4.10; Firm buys smaller batches only when needed as shown by a mean of 4.10; purchasing in large volumes leads to higher adoption of product and process involvement as shown by a mean of 3.26; Purchasing in large volumes contributes to lean innovations and continuous improvement as shown by a mean of 4.27; Purchasing in volumes leads to few and long term relationship with the suppliers as shown by a mean of 4.08; Volumes have lowered costs through economies of scale as shown by a mean of 4.65; Purchasing in volume has led to the firm not relying on inspecting of products as shown by a mean of 3.88; Purchasing in volumes has led to use of containers, cards or visual cue to control movements of materials as shown by a mean of 3.88. Purchasing in volumes has led to use of

containers, cards or visual cue to control movements of materials as shown by a mean of 3.88. This implies that volume of purchase influence lean procurement methodologies integration in Kenya. This confirmed with Waters and Fuller (1995) who suggest that the difference between lean and traditional way of procurement is that the traditional approach uses multiple sources and short term contracts, instead of single sourcing and long term contracts which lean is associated to. Ansarri and Modarress (1988) emphasize that lean procurement involves smaller batches, less quality inspection and administrative work, which is in line with lean's philosophy of doing more with less. The respondents were neutral about: Purchasing in large volumes leads to higher adoption of product and process involvement, Purchasing in volume has led to the firm not relying on inspecting of products and Purchasing in volumes has led to use of containers, cards or visual cue to control movements of materials.

Table 1: Volume Purchase and Lean Procurement Integration Methodologies

Statement	Minimum	Maximum	Mean	Std. Deviation
Volumes purchased influence consumption patterns	1	5	4.38	.923
Purchasing in large volumes gives competitive advantage	1	5	4.10	.964
Firm buys smaller batches only when needed	1	5	4.10	.918
Purchasing in large volumes leads to higher adoption of product and process involvement	1	5	3.26	1.121
Purchasing in large volumes contributes to lean innovations and continuous improvement	2	5	4.27	.670
Purchasing in volumes leads to few and long term relationship with the suppliers	2	5	4.08	.829
Volumes have lowered costs through economies of scale	3	5	4.65	.559
Purchasing in volume has led to the firm not relying on inspecting of products	1	5	3.88	.993

Purchasing in volumes has led to use of containers, cards or visual cue to control movements of materials	2	5	3.88	1.022
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Information Tools

The study sought to establish the extent to which respondents agreed with the statements relating to whether information tools influence integration of lean procurement methodologies in the aviation industry in Kenya. A scale of 1-5, the scores were as follows: The scores “Strongly disagree=SD” and “Disagree=D” were represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale ($1 \leq \text{Disagree} \leq 2.5$). The scores of ‘Neutral’ were represented by a score equivalent to 2.6 to 3.5 on the Likert scale ($2.6 \leq \text{Neutral}=\text{N} \leq 3.5$). The score of “Agree=A” and “Strongly agree=SA” were represented by a mean score equivalent to 3.6 to 5.0 on the Likert Scale ($3.6 \leq \text{Agree} \leq 5.0$). The results were presented in mean and standard deviation as illustrated in Table 2.

From the study results, majority of the respondents agreed that the employees are knowledgeable concerning delayering, downsizing, outsourcing and incremental process improvements (Lean thinking) as shown by a mean of 4.08, Organization uses information and communication technology (ICT) such as EDI, and E-markets in procurement process (E-procurement) as shown by a mean of 4.63; Organization provides comprehensive information to both suppliers and procurement staff on lean procurement methodologies as shown by a mean of 4.54; Organization is very clear on lean procurement in its tender documents as shown by a mean of 4.63; Organization has sensitized staff in the procurement department on benefits of lean

procured products and services as shown by a mean of 4.28; Organization provides buyers with significant information on lean purchasing so as to make informed choices when tendering as shown by a mean of 3.64; Lean procurement checklist has been developed as shown by a mean of 3.65; Procurement staff have significant information on waste elimination in all procurement cycles as shown by a mean of 3.76; Criteria has been established for selecting suppliers practicing lean procurement as shown by a mean of 3.78. Members of the supply chain align and coordinate their continuous improvements methods as shown by a mean of 3.88. This implies that information tools influence lean procurement methodologies integration in Kenya.

Therefore in general the information tools used facilitated integration of lean procurement especially the adoption of E-procurement and provision of comprehensive information to both suppliers and procurement staff on lean methodologies. This is in line with Kaufmann (1999) and Lamming (1995) assertions that E-procurement provides a higher supply chain transparency which enables companies to centralize strategic procurement and decentralize operational procurement processes. However monitoring and evaluation of lean procurement adoption was not keen since a checklist was not used and the organization did not provide guidance of the best lean procurement methodologies to both procurement staff and suppliers.

Table 2: Information Tools and Lean procurement Methodologies Integration

	Minimum	Maximum	Mean	Std. Deviation
Employees are knowledgeable concerning delayering, downsizing, outsourcing and incremental process improvements (Lean thinking)	1	5	4.08	1.140

Organization uses information and communication technology (ICT) such as EDI, and E-markets in procurement process(E-procurement)	3	5	4.63	.528
Organization provides comprehensive information to both suppliers and procurement staff on lean procurement methodologies	2	5	4.54	.613
Organization is very clear on lean procurement in its tender documents	2	5	4.63	.631
Organization has sensitized staff in the procurement department on benefits of lean procured products and services	2	5	4.28	.784
Organization provides buyers with significant information on lean purchasing so as to make informed choices when tendering	1	5	3.64	1.274
Procurement staff have significant information on waste elimination in all procurement cycles	1	5	3.65	1.309
Organization has disseminated information of best lean procurement methodologies to both procurement staff and suppliers	1	5	3.76	1.170
Organization provides concrete product selection guidance in identifying lean products and services	1	5	3.40	1.414
Lean procurement checklist has been developed	1	5	2.00	.938
Criteria has been established for selecting suppliers practicing lean procurement	1	5	3.78	1.200
Members of the supply chain align and coordinate their continuous improvements methods	2	5	3.88	.973

Management Strategies

The study sought to establish the extent to which respondents agreed with the statements relating to whether management tools influence integration of lean procurement methodologies in the aviation industry in Kenya. A scale of 1-5, the scores were as follows: The scores “Strongly disagree=SD” and “Disagree=D” were represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale ($1 \leq \text{Disagree} \leq 2.5$). The scores of ‘Neutral’ were represented by a score equivalent to 2.6 to 3.5 on the Likert scale ($2.6 \leq \text{Neutral}=\text{N} \leq 3.5$). The score of “Agree=A” and “Strongly agree=SA” were represented by a mean score equivalent to 3.6 to 5.0 on the Likert Scale ($3.6 \leq \text{Agree} \leq 5.0$). The

results were presented in mean and standard deviation as illustrated in Table 4.8.

From the study results, majority of the respondents agreed that the management insists on screening of suppliers for lean performance as shown by a mean of 4.22, The management works collaboratively with suppliers on lean design initiatives and new product development as shown by a mean of 2.77; The management provides training and information to suppliers to build their lean management capacity as shown by a mean of 2.45; The management appreciates the crucial role played by the purchasing function in activities; inventory reduction, demand management and process standardization as shown by a mean of 3.98; Top

management sensitizes employees on lean implementation and management issues as shown by a mean of 4.04; Top management has empowered employees to act immediately in response to waste elimination problems as shown by a mean of 2.38; Top management has branded the organization on lean lines as shown by a mean of 3.06; Top management emphasizes on waste elimination and process standardization audits before purchasing of any goods as shown by a mean of 4.29; Suppliers are able to participate during

product design/service delivery discussions as shown by a mean of 2.88. Employees are free to bring any lean procurement cultural change in the organization(Employee involvement)as shown by a mean of 2.92. Organization has set a compensating system on those employees who practice lean as shown by a mean of 3.08. This implies that management strategies influence lean procurement methodologies integration in the aviation industry in Kenya.

Table 3: Management Strategies and Lean Procurement Methodologies Integration

	Minimum	Maximum	Mean	Std. Deviation
The management insists on screening of suppliers for lean performance	1	5	4.22	.783
The management works collaboratively with suppliers on lean design initiatives and new product development	1	5	2.77	1.246
The management provides training and information to suppliers to build their lean management capacity	1	5	2.45	1.447
The management appreciates the crucial role played by the purchasing function in activities; inventory reduction, demand management and process standardization	1	5	3.98	1.029
Top management sensitizes employees on lean implementation and management issues	1	5	4.04	.862
Top management has empowered employees to act immediately in response to waste elimination problems	1	5	2.38	1.069
Top management has branded the organization on lean lines	1	5	3.06	.732
Top management emphasizes on waste elimination and process standardization audits before purchasing of any goods	1	5	4.29	.701
Suppliers are able to participate during product design/service delivery discussions	1	5	2.88	1.013

Employees are free to bring any lean procurement cultural change in the organization(Employee involvement)	1	5	2.92	1.197
Organization has set a compensating system on those employees who practice lean	1	5	3.08	1.186

Lean Procurement Costs

The study sought to establish the extent to which respondents agreed with the statements relating to whether management tools influence integration of lean procurement methodologies in the aviation industry in Kenya. A scale of 1-5, the scores were as follows: The scores “Strongly disagree=SD” and “Disagree=D” were represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale ($1 \leq \text{Disagree} \leq 2.5$). The scores of ‘Neutral’ were represented by a score equivalent to 2.6 to 3.5 on the Likert scale ($2.6 \leq \text{Neutral} \leq 3.5$). The score of “Agree=A” and “Strongly agree=SA” were represented by a mean score equivalent to 3.6 to 5.0 on the Likert Scale ($3.6 \leq \text{Agree} \leq 5.0$). The results were presented in mean and standard deviation as illustrated in Table 4.

From the study results, majority of the respondents agreed that firm spends less capital intensive machine, tools and fixture to procure as shown by a mean of 3.18, Inventory carrying cost and administration cost accounting is evaluated as

shown by a mean of 3.71; It is affordable to procure directly into production department as shown by a mean of 3.69; Company has lost many investment opportunities due to investment in lean procurement as shown by a mean of 4.17; Training costs on lean procurement are high as shown by a mean of 4.21; Lean products are expensive than conventional products as shown by a mean of 4.15; Mass production is costly as shown by a mean of 4.00; Lean management cost is affordable as shown by a mean of 3.19; Lean procurement is costly in the long run as shown by a mean of 2.87. This implies that lean management costs influence lean procurement methodologies integration in the aviation industry in Kenya. According to Pius Achanga *et al.* (2008) financial resources are needed for employee training programs, external consultants, ICT Integration and coordination etc. Sometimes even production of firms may be interrupted as a result of the employees training in the new techniques resulting to further integration costs.

Table 4: Lean Procurement Costs

	Minimum	Maximum	Mean	Std. Deviation
Firm spends less capital intensive machine, tools and fixture to procure	1	5	3.18	1.307
Inventory carrying cost and administration cost accounting is evaluated	1	5	3.71	1.177
It is affordable to procure directly into production department	1	5	3.69	1.245
Company has lost many investment opportunities due to investment in lean procurement	1	5	4.17	1.043

Training costs on lean procurement are high	1	5	4.21	.871
Lean products are expensive than conventional products	1	5	4.15	.916
Mass production is costly	1	5	4.00	.970
Lean management cost is affordable	1	5	3.19	1.172
Lean procurement is costly in the long run	1	5	2.87	1.172

Lean Procurement Methodologies Integration

The study sought to determinants of integration of lean procurement methodologies integration in aviation industry in Kenya reached attributed to the adoption of the volume of purchases, information tools, management strategies and lean procurement costs. Findings in Table 5 below reveal improved integration of lean procurement methodologies in aviation industry across the 5 year period running from the year 2012 to 2016. In the cost reduction, a majority of respondents affirmed having grown incrementally from 0%-20% in 2012 (41.9%), to cost reduction by 0%-20% in 2013 (37.9%), 21%-40% in 2014 (34.80%), cost reduction by 21%-40% in 2015 and 21%-40% in 2016. Shorter lead time also recorded positive with a majority affirming a majority of respondents affirmed having grown incrementally from 0%-20% in 2012 (42.30%), to shorter lead time by 0%-20% in 2013 (37.7%), 21%-40% in 2014 (3.10%), shorter lead time reduced by more than 40% in 2015 and reduced by more than 40% in 2016(37.50%).

A similar trend was recorded in compliance index, from improvement of 0%-20% in 2012 (44.10%), 0%-20% in 2013 (35.20%), 21%-40% in 2014 (36.40%), compliance index improved by more than 40% in 2015(41.10%) and improved by more than 40% in 2016(37.30%). It can be deduced from the findings that key integration of lean procurement methodologies in aviation industry have considerable improved with the volume of purchases, information tools, management strategies and lean procurement costs. The study findings are in line with the findings by Price Waterhouse Coopers (2014) established that outsourcing has moved markedly from attending to a single function more efficiently, to reconfiguring a whole process in order to attain greater shareholder value across the enterprise. The goals of outsourcing often include reducing labor and overhead costs, maximizing profits, dominating a market, and gaining a competitive advantage. While this strategy looks quite promising, it is surprising to find that “more than one-fourth of outsourcing deals fail in the first year.

Table 5: Lean Procurement Methodologies Integration

Cost Reduction	2012	2013	2014	2015	2016
Reduced by 0%-20%	41.9	37.9	33.8	29.7	29.1
Reduced by 21%-40%	33.2	29.6	34.8	31.3	34.7
Reduced by more than 40%	24.9	31.5	31.4	39.0	36.2

		2013	2014	2015	2016
Shorter Lead Time	2012				
Reduced by 0%-20%	42.3	37.7	31.6	30.7	29.5
Reduced by 21%-40%	31.8	32.9	36.1	28.2	33
Reduced by more than 40%	25.9	29.4	32.3	41.1	37.5
Compliance Index	2012	2013	2014	2015	2016
Improved by 0%-20%	44.1	35.2	33.4	25.7	27.1
Improved by 21%-40%	31.7	32.6	30.2	33.9	35.6
Improved by more than 40%	23.5	32.2	36.4	40.4	37.3

Multiple Regression Analysis Model

Table 6: Model Summary (Overall)

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	.877	.769	.742	.012

Table 7: ANOVA

Model	Sum of Squares	d.f	Mean Square	F	Sig.
Regression	15.888	4	3.972	11.453	.000
Residual	34.655	95	.3648		
Total	50.543	99			

NB: F-critical value = 3.890;

Regression Coefficients

The study conducted a multiple regression analysis so as to determine the relationship between the dependent variable and independent variables. With the aid of model $Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon$; Y = Dependent variable (integration of lean procurement methodologies in the aviation industry in Kenya); α = Constant (The intercept of the model), β = Coefficient of the X variables

(independent variables); X_1 = Volume of purchase; X_2 = Information Tools; X_3 = Management Strategies; X_4 = Lean procurement costs; ϵ = was the error. Therefore, the general form of the equation was to predict integration of lean procurement methodologies in the aviation industry in Kenya from X_1 = Volume of purchase; X_2 = Information Tools; X_3 = Management Strategies; X_4 = Lean procurement costs; is: $(Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon)$ becomes: $Y = 31.358 + 0.789X_1 + 0.759X_2 +$

$0.702X_3 + 0.689X_4$. This indicates that integration of lean procurement methodologies in the aviation industry in Kenya = $31.358 + 0.789 \times \text{Volume of purchases} + 0.759 \times \text{Information Tools} + 0.702 \times \text{Management strategies} + 0.689 \times \text{Lean procurement costs}$. From the study findings on the regression equation established, taking all factors into account (independent variables) constant at zero integration of lean procurement methodologies in the aviation industry in Kenya would be 31.358.

The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in volume of purchase would lead to a 0.789 increase in integration of lean procurement methodologies in the aviation industry in Kenya. Based at 5% level of significance, information tools was found to have a calculated $t = 6.765$ (greater than the tabulated value of $t > 1.96$) and a significance level of 0.000. This indicates that volume of purchase influenced integration of lean procurement methodologies in the aviation industry in Kenya.

A unit increase in information tools would lead to a 0.759 increase in integration of lean procurement methodologies in the aviation industry in Kenya, information tools show a calculated $t = 4.432$

(greater than the tabulated value of $t > 1.96$) and a significance level of 0.002 thus the value of less than 0.05. This indicates that information tools influence integration of lean procurement methodologies in the aviation industry in Kenya.

A unit increase in management strategies would lead to 0.702 increases in integration of lean procurement methodologies in the aviation industry in Kenya. The management strategies was found to have a calculated $t = 4.009$ (greater than the tabulated value of $t > 1.96$) and significance level of 0.003 thus the value of less than 0.05. This indicates that management strategies influenced integration of lean procurement methodologies in the aviation industry in Kenya.

A unit increase lean procurement costs would lead to 0.689 increases in integration of lean procurement methodologies in the aviation industry in Kenya. Based at 5% level of significance lean procurement costs show was found to have a calculated $t = 3.123$ (greater than the tabulated value of $t > 1.96$) and significance level of 0.005 thus the value of less than 0.05. This shows that lean procurement costs influenced integration of lean procurement methodologies in the aviation industry in Kenya.

Table 8: Coefficient Results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		β	Std. Error	β		
1	(Constant)	31.358	2.547		12.309	.000
	X ₁ -Volume of purchase	.789	.116	.602	6.765	.000
	X ₂ -Information Tools	.759	.171	.655	4.432	.002
	X ₃ -Management strategies	.702	.175	.505	4.009	.003
	X ₄ -lean Procurement Costs	.689	.220	.609	3.123	.005

a. Dependent Variable: Lean Procurement Methodologies Integration

CONCLUSION AND RECOMMENDATION

The study further revealed that respondents were aware of existing criteria of setting up purchase volumes which was based on usage, urgency and perishability of the item. A further regression analysis test of association revealed a close association between the purchase volumes guidelines and the level of integration of lean procurement methodologies. The respondents further affirmed that: purchasing in volumes lowers costs, contributes to continuous innovation and improvement and gives the firm competitive advantage.

Majority of the respondents confirmed the use of information tools in ensuring integration of lean procurement; further chi-square test revealed that there was association between the use of information tools in lean integration and the level of lean integration methodologies in procurement. The organization was found to have adopted recent technologies in information management such as ERP systems, E-procurement and electronic fleet spares manuals and maintenance manuals. However the respondents were neutral about dissemination of information about lean procurement methodologies and they also did not agree with maintenance of lean procurement checklist and thus leading to questioning about evaluation and monitoring of lean procurement integration.

The respondents confirmed that management strategies adopted were in support of the lean procurement integration. The respondents agreed that top management emphasizes on waste elimination and process standardization audits before purchasing of any goods, the management emphasized on screening of suppliers and management appreciated the role played by supply chain. However the respondents were neutral

about employees' involvement, and collaboration of suppliers. The respondents were also not in agreement that the management provided capacity building training and information to suppliers and empowering of employees to take their own jurisdiction in waste management.

The respondents were not distinctively aware of the substantiality of the cost incurred in lean procurement integration. However it was clear that lean policies lead to incidental cost such as training costs, loss of investment opportunities, replacing of fleets and purchase of lean products compared to conventional. The overall level of lean integration was rated by the respondents as moderate and there was still room for more lean integration. The benefits accrued so far were in form of: elimination of waste in all procurement cycles, reduction of lead time, reduction of inventory, reduction of cost, improved customer satisfaction, improved demand management and process standardization as well as making the supply chain a competitive weapon.

Conclusions of the Study

According to the study findings, the study concludes that volume of purchases is the first important factor that affects lean procurement integration methodologies integration in Kenya. The regression coefficients of the study show that volume of purchases has significant influence lean procurement integration methodologies integration in Kenya. This implies that increasing levels of volume of purchases would increase the levels of lean procurement integration methodologies integration in Kenya. This shows that volume of purchases has a positive influence on lean procurement integration methodologies integration in Kenya.

Additionally, According to the study findings, the study concludes that information tools is the first important factor that affects lean procurement integration methodologies integration in Kenya. The

regression coefficients of the study show that information tools have a significant influence lean procurement integration methodologies integration in Kenya. This implies that increasing levels of information tools would increase the levels of lean procurement integration methodologies integration in Kenya. This shows that information tools have a positive influence on lean procurement integration methodologies integration in Kenya.

Further, , the study concludes that management strategies is the third important factor that affects lean procurement integration methodologies integration in Kenya. The regression coefficients of the study show that management strategies have significant influence lean procurement integration methodologies integration in Kenya. This implies that increasing levels of management strategies would increase the levels of lean procurement integration methodologies integration in Kenya. This shows that management strategies have a positive influence on lean procurement integration methodologies integration in Kenya.

Finally, the study concludes that lean procurement costs is the fourth important factor that affects lean procurement integration methodologies integration in Kenya. The regression coefficients of the study show that lean procurement costs has a significant influence lean procurement integration methodologies integration in Kenya. This implies that increasing levels of lean procurement costs would increase the levels of lean procurement integration methodologies integration in Kenya. This shows that lean procurement costs has a positive influence on lean procurement integration methodologies integration in Kenya.

Recommendations of the Study

The study recommends that there is need for setting up purchase volumes which is based on usage, urgency and perishability of the item. The

purchase volumes guidelines and the level of integration of lean procurement methodologies need to be well articulated. The: purchasing in volumes lowers costs, contributes to continuous innovation and improvement and gives the organization competitive advantage.

The study recommends that there is need to have information tools in ensuring integration of lean procurement methodologies. The organization needs to adopt a recent technology in information management such as ERP systems, E-procurement and electronic fleet spares manuals and maintenance manuals.

The study recommends that there is need to enhance management strategies in support of the lean procurement methodologies integration. The top management need to emphasize on waste elimination and process standardization audits before purchasing of any goods, the management should emphasize on screening of suppliers and management appreciated the role played by supply chain.

There is need to develop lean policies which can lead to incidental cost such as training costs, loss of investment opportunities, replacing of fleets and purchase of lean products compared to conventional in order to enhance lean procurement methodologies integration in the organization.

Areas for Further Research

Due to constraints highlighted in the first chapter, this study could not exhaust all the determinants of lean procurement methodologies integration in the organization Kenya. The four independent variables that were studied explain 76.90% of the lean procurement methodologies integration in Kenya. This therefore means that other factors not studied in this research contribute 33.10% to the lean procurement methodologies integration in Kenya. Therefore other factors affecting lean procurement

methodologies integration in Kenya need to be established. The study suggests further research to be carried on Cost-Benefit analysis of lean procurement methodologies in Kenya Airways. Since the study was limited to Kenya Airways a

comparative study should also be carried on lean procurement integration between Kenya Airways and other leading corporates in the aviation industry.

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