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CONSIDERING CENTRALIZED PURCHASING SYSTEMS AS A PREDICTOR FOR PERFORMANCE OF CONSTRUCTION SECTOR IN RWANDA USING A CASE OF REAL CONTRACTORS LTD

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Abstract: **Procurement is a key activity in organization and major activity in the economies both developing and developed countries. Their management has contributed to the success of projects and overall performance of organizations. However, there are several challenges in the implementation of this activity and for that reason different strategies developed and deployed. Procurement is characterized by inventory management, volume ordering and adherence to best practices that safeguard the organization from losses. These activities vary in their outcomes depending on what procurement strategy has been chosen. This study sought to investigate the effect of centralized procurement systems on performance of construction companies in Rwanda. with specific reference to Real Contractors Ltd. The study used a sample of 55 participants including staff of financial, procurement and marketing departments. The study adopted the correlational research design. A questionnaire with open-ended questions was used to collect data. Data was analyzed using descriptive statistics (frequencies, mean and standard deviation) and inferential statistics (correlational and regression analyses) along with the use of SPSS which was used in all calculations and creation of tables. The findings revealed that Real Contractors Ltd. has been able to obtain higher organization performance as a result of centralized purchasing timeliness, quality of goods and services, and customer satisfaction the study also found that inventory management is essential in ensuring that adequate supplies are within the firm's storage to support continuous production process. The study recommends that the firm should enhance the bulk ordering process by undertaking a value chain analysis which will help the firm in selecting suppliers who will foster the firm savings and enhance its economies of scale.**

Keywords: **Centralized Procurement, Organization performance and Inventory Management.**

1. INTRODUCTION

The process by which global business partners connect with one another for faster and efficient operations in supply chain has been transformed through the proliferation of Globalization (Nagurney & Nagurney, 2010). Obiso (2011) argues that the unprecedented growth in business competition across different industries is as a result of globalization. The result has been the current adoption of sound procurement management practices that give an organization a competitive advantage (Msimangira & Tesha, 2009). Strategic purchasing process that climaxes into an interconnection between the firm suppliers and the organization strategic objectives have found a place in organizations (Hutt & Speh, 2012). These Procurement strategies are enabling organizations' success and with Technological development in the field of procurement more opportunities to achieve more efficient and effective procurement currently made possible.There is now an emphasis on Cost driven strategies with the aim of controlling and managing profitability and other non-financial performance of the organization.

Purchasing strategies have been widely implemented in the construction sector as part of value creation strategies (Sullivan, Kashiwagi, & Chong, 2010). Empirical evidence shows that procurement strategies are therefore instrumental to an organization's success and enable management of costs while embracing principles of best value for overall organizational performance (Mwikali & Kavale, 2012). Masiko (2013) indicated that strategic procurement practices were a key determinant of the organization performance in the current competitive environment. Wanyonyi (2014) indicated that poor procurement strategy adoption led to poor organization performance. This shows that the intense competition within the market calls for innovative strategies to be adopted in order to foster the purchasing processes within firms (Brownell, 2005).

One of the key purchasing strategies that firms in the construction sector have been adopting is centralized purchasing (John, Etim, & Ime, 2015; Msimangira & Tesha, 2009). This involves the adoption of purchasing strategies that are implemented from a localized center for the entire organization rather than within individual business units (van Weele, 2010). The adoption of centralized purchasing strategies enables firms to leverage on the bulk purchasing which enhances efficiency in the procurement process as well as reduce cost spillage and lead time in delivery and production units (Njagi & Shalle, 2016).

In centralized procurement, the procurement is coordinated and regulated from the headquarters of an organization (Karjalainen, 2009; Lysons & Farrington, 2012). This involves coordination from the firm central headquarters which allows for all the firms purchasing to be coordinated from a central point (Van-Weele, 2010); this contributes to better negotiating power and scale benefits. Dimitri, Dini and Piga (2006) claim that there is a clear trend towards centralizing procurement practice in government procurement in Europe, United States and Southern America. However, it is extremely hard to assess the prevalent purchasing process due to government bureaucracy and rigidities.

The growth in construction has been a key element in the successful transformation of most economies that have seen sustained rises in their per capita incomes (World Bank, 2014). In most of Africa, performance in construction sector has been particularly poor over the last decades (World Bank, 2014). In East Africa construction sectors accounts for 10.6 % of the GDP, which is low compared to most middle-income countries, yet it is the most manufacturing and construction sector are major sectors in the economies of Eastern Africa. Improving the sector will require addressing some outstanding purchasing constraints on construction activities. This calls for the implementation of best strategic practices in the purchasing process that will foster the performance of the sector and accelerate attainment of the vision 2030 goals. The implementation of centralized purchasing strategies has been advocated as one of the central tenets of supporting better purchasing benefits and enhance organization performance (Amemba, Nyaboke, Osoro, & Mburu, 2013).

The need for centralization of purchasing has been driven by the need for firms to reduce costs and enhance the efficiency of the purchasing process. The centralization of purchasing enhances the economies of scale through low prices for large volumes of pooled purchases and the standardization of purchases (Cousins, Lawson, & Tyler, 2008). The study of centralized purchasing practice and organization performance at such a time is imperative. This is because many organizations have been accused of massive procurement irregularities that have led to adverse business results, for instance loss of shareholder's money and procurement of inferior goods at high prices. This has led to serious compromise on quality of offered goods and service to end customers (Njagi & Shalle, 2016). Locally Abuko (2013) indicates that lack of stringent policies has contributed to increasing inefficiencies in purchasing departments, corruption and pilferage of company products which has resulted in poor profitability and organization performance. Augustine and Agu (2013) indicated that effectiveness can be achieved through e-procurement and enhanced standardization in materials. John, Etim and Ime (2015) established that inventory management practices can improve the operational performance of organizations.

In attempt to address transparency issues in the construction sector, companies are implementing centralized procurement systems. However, there was no clear benefits of such moves as other organizations have adopted decentralized or hybridized their system by implementing both. This gave room for studies that bring out the empirical relevance of centralized procurement systems. Few studies had been conducted on the role of centralized procurement on the performance of constructions sectors especially in Rwanda though the government through its e-procurement system is driving for a centralized option in Rwanda. The current study addressed the gaps in the field of procurement by examining the role of centralized procurement systems in Rwanda.

Consequently, this study sought to address the following research questions:

1) What is the effect of inventory management on performance of construction sector in Rwanda?
2) What is the effect of best practice adherence on performance of construction sector in Rwanda?
3) What is the effect of volume ordering on performance of construction sector in Rwanda?

We believe that the study would be of importance to the managers at Real Contractors who may use the findings in understanding the supply chain and centralized procurement strategies and factors influencing performance of the company and thus guide in development of guidelines and policies which would improve the performance of the company. The findings are also expected to enhance policy formulation and purchasing strategies within other organization especially in the construction industry. More so the research findings would help to enhance policy formulation within the devolved and national government where bureaucracy and corruption have extensively dampened public procurement.

2. LITERATURE REVIEW

2.1 History of Real Contractors Ltd

Real Contractors Ltd was formed after the merger of Real Contractors SARL and Bond Trading SARL in January 2011. Prior to the merger, Real Contractors SARL was in realestate development and construction business while bond trading was in property management, engineering services and investments. In 2017, Real Contractors Ltd expanded its portfolio after the merger with CVLD Ltd, a sister company dealing in built environment consultancy, real estate development and property management. The company is 100% owned by Crystal Ventures Ltd. Since its inception, Real Contractors Ltd has grown from strength to strength and has been a proud winner of the BID International.Real Contractors Ltd is one of the leading construction companies in Rwanda and the East African region. Their experience is widely diversified and covers a wide spectrum of the construction industry and its ancillary services including commercial buildings, airports, housing, educational facilities, sports facilities, water & sewage projects, wastewater treatment plants, power stations and transmission lines, electromechanical engineering projects, production and workshop, maintenance services, built environment consultancy and property management services.

2.2 Theoretical Review

Procurement is the procedure of acquiring goods, works and services, covering both acquisitions from third parties. It entails option assessment and the critical “make or buy” decision which may result in the provision of goods and services in appropriate circumstances (Public Procurement Board (PPB), 2003). According to Azeem (2007), Public Procurement “is the acquisition of goods and services at the best possible total cost of ownership, in the right quantity and quality, at the right time, in the right place for the direct benefit or use of governments, corporations, or individuals, generally via a contract”. It can be said to be the purchase of goods, services and public works by government and public institutions. It has both an important effect on the economy and a direct impact on the daily lives of people as it is a way in which public policies are implemented (Azeem, 2007).

According to Porter (1985), procurement is categorized as a prop up activity. In recent times however, the procurement utility has started to get improved identification and class (Pearson et al., 1996). According to van Weele (2005), top managers have progressively accepted procurement as vital business drivers (van Weele, 2005), and as affirmed by Gadde and Hakansson (2001) “what started as a clerical and administrative utility has developed into a tactically momentous profession”.

Sarpong (2007) defined procurement as the management of sustainable acquisition of goods, works and services to optimize value for money through a professional, auditable and transparent framework. He believes that any good procurement should have the following principles:

Efficiency and Effectiveness: all procurement functions should aim at achieving the right quantity and quality at the minimum cost. Competitiveness: the procurement process should ensure some competition among the competing parties. Ethical approach: procurement process should avoid all practices that could lead to possible conflict of interest. Fairness: all procurement should aim at achieving fairness and ensuring that all participating bidders are given equal opportunity to bid. Transparency: the procurement process should be open enough to avoid giving competitive bidders advantage over other bidders.

Strategic procurement may well be defined as the method of planning, implementing, evaluating and controlling tactical operational procurement decisions. These activities are directed such that procurement operations towards opportunities may be consistent with the organizations capabilities to attain its long-term targets (Zheng et al., 2007). Suppliers‟ management in the current business environment is very vital, since every organization needs good and unsophisticated suppliers. Therefore, every organization needs to have fresh approach of contacting suppliers. Organizations need different approaches to its acquisition processes and policies. Good relationships with suppliers have impact not only on suppliers‟ performance but also on the organization's performance. No business can be booming devoid of the support of its supplier foot.

2.2.1 Procurement System

It is argued that a proficient organizational design provides a foundation upon which firms can pursue progressive supply strategies (Trent, 2004). However, regardless of its significance, clerical design has narrowly received attention in the Supply Management (SM) literature (Trent, 2004; Karlsen and Tollefsen, 2009). Organizational structure as defined by Wit and Meyer (2004) is the clustering of tasks and people into smaller groups. According to Wit and Meyer (2004), company's organizational system consists of organizational structure and organizational process and culture. The foundation of every business is its organizational system. Wit and Meyer (2004) defined organizational system as the way a company makes money.

The procurement function of companies can be classified as either centralized or decentralized. The combination of the two systems, conversely, is now practiced by a good number of companies (Gadde and Hakansson, 2001). The amalgamated structure has existed since some companies try to harvest the gains of the two extremes and conversely, trying to do away with the disadvantages of the two. Using an external resource in organizing procurement might be dangerous. If the client organisation is not aware of the management of its suppliers even itself, the involvement of a new third-party middle-hand, such as a consulting enterprise, cannot be expected to enhance the situation any better (Iloranta and Pajunen-Muhonen, 2012).

Centralized Procurement

Centralized procurement means the purchasing of a bulk number of materials for a business (business.answers.com, 2014). A manager oversees what materials need to be purchased and buys a very large quantity in order to meet the demand for all employees. Usually only one person oversees the operation so that items are bought for a cheaper price. This means that the manager needs to have a great understanding of how resources are distributed. The person must also possess a great amount of knowledge with how fast items are used (business.answers.com, 2014).

Procurement centralization is nowadays a common way to leverage the benefits of indirect purchasing in an organization (Karjalainen, 2009). In centralized procurement, the procurement is coordinated and regulated from the headquarters of an organization. The main aim of it is to capture the economies of scale by unifying the procurement processes of an organization‟s different units (Karjalainen, 2009; Lysons and Farrington, 2012). Usually this involves that a corporate-wide frame agreement is set for all the procurements to be made from certain preferred suppliers, and the number of suppliers per product category is kept low (Karjalainen, 2009; Iloranta and Pajunen-Muhonen, 2012). Like this, spend per a supplier can be maximized and hence the procuring power of the buying organization increased. This can lead to a better negotiation position regarding prices, quality, compliance, and strategy with suppliers (van Weele, 2010).

Advantages and disadvantages of the Centralized Procurement System

Some advantages of the centralized procurement as enumerated by Iloranta and Pajunen-Muhonen (2012) are: Consolidation of procurement volume brings purchasing power and economies of scale; Mutual procurement prices; Standardization of procurement practices; more efficient procurement organizations; and Cumulative procurement expertise due to centralization of purchasing roles. Whileaccording to Iloranta and Pajunen-Muhonen (2012), some of the disadvantages of the centralized procurement system are: Limit of decision making of the business units; Might gain resistance in the business units; Narrow focus on the procurement personnel; Connection between procurement and other administrative functions can be weak; and the distance between the internal customers and the procurement personnel can be large.

Decentralized Procurement

In contrast to centralized procurement is decentralized procurement. According to Leenders and Johnson (2000), decentralized procurement is defined as when business units, plants and divisions controlled the main procurement activities. This indicates that different divisions/ business units are accountable for their own procurement activities. Decentralized procurement mostly is practice by companies with business units or branches. According to van Weele (2005), the business unit managements are accountable for all its procurement activities. Decentralization is „the redistribution of functions or tasks from central units in organizations to more widely dispersed units that is it is about where in an organization particular functions are best carried out.

In the decentralized model separate business units within an organisation are responsible of their own procurement. Hence, the business units have a profit-loss responsibility of their own in their procurement (van Weele, 2010). Business unitdriven organizations usually prefer decentralized procurement model as the users of the procured materials can affect the decision making more and hence their needs are satisfied with higher probability (Ritvanen and Koivisto, 2006; Iloranta and Pajunen Muhonen, 2012). Secure local supply and overall internal satisfaction are also achieved more easily by these organizations due to the close buyer-seller relationship in the local business community. Hence, decentralized procurement or purchasing model supports local approach in procurement (Lysons and Farrington, 2012). Consequently, the great benefit of decentralized model is that the procurement is executed in terms of supporting the organization's key business as well as possible.

The advantages and disadvantages of decentralized Procurement

Some of the most prominent advantages of decentralized procurement as summarized by Iloranta, Pajunen-Muhonen (2012) are: Procurement supports fully the key-business of the business units; direct profit-loss responsibility for business units; Suppliers and internal customers are in close connection with each other while according to Iloranta, Pajunen-Muhonen (2012), some of the disadvantages of the decentralized procurement system are: Procurement volumes are scattered and negotiation leverage is loss with suppliers; Suppliers' contract, procurement prices and conditions are different in separate business units. As a results of overlapping work; difficulty of standardization; difficult to develop procurement expertise; Total cost of procurement on enterprise level are difficult to perceive and control; and Main stress is the use of local suppliers; global opportunities are hard to utilize.

2.2.2 Factors that determine the choice of a procurement plan

High volume products with a predictable usage pattern calls for centralization, in order to reap cost benefits of aggregated purchase (Corey, 1978). Corey (1978) argues that products possessing some specific characteristics should be handled in a decentralized procurement department. These products and characteristics are standard products with need for local service that are ordered in small amounts and subject to unpredictable usage pattern and immediate need, products that are subject to high engineering involvement, products with high need for coordination of the purchased parts with production schedules, and products with unique use requirements. A way of classifying different product types is to use portfolio models. Such a model has been developed by Peter Kraljic (1983).

The Kraljic-model classifies four different product types: Non-critical items, leverage items, bottleneck items and strategic items. According to Kraljic (1983), the handling of the different product groups are as follows: Non-critical items may be handled at a decentralized level, due to the low strategic importance and the low supply market complexity. At the same time, a centralized approach may be favorable in order to achieve economies of scale, due to standardized products.

Leverage items may be handled at both a decentralized level and centralized level. A decentralized level is favorable due to the low complexity of the market, while a centralized approach is favorable in order to strengthen and to exploit the purchasing power. Bottleneck products may be handled at a decentralized level, but there is a need for centralized coordination in order to ensure supply of products that are subject to production scarcity. Strategic items should be handled at a centralized level, in order to ensure supply of products that are of high strategic importance and are subject to market complexity.

Savings potential is also a relevant factor when deciding on the procurement structure. Many raw materials are sensitive to volume by utilizing a centralized procurement function one is able to accumulate the quantity in order to reap savings potential (van Weele, 2005). Aggregating procurement activities through centralization may be an effective way of achieving large cost savings, especially related to standardized parts, supply items and non-product purchases (Corey, 1978).

Inventory Management in procurement

Inventory refers to the value or quantity of raw materials, supplies, work in progress (WIP) and finished stock that are kept or stored for use as need arises (Lyons and Gillingham, 1981). Raw materials are commodities such as steel and lumber that go into the final product. Supplies include items such as Maintenance, Repair and Operating (MRO) inventory that do not go into the final product. Work in progress is materials that have been partly fabricated but are not yet completed. Finished goods are completed items ready for shipment (Kothari, 1992). Inventory management is the art and science of maintaining stock levels of a given group of items incurring the least cost consistent with other relevant targets and objectives set by management (Jessop, 1999). It is important that managers organizations that deals with inventory, to have in mind, the objective of satisfying customer needs and keeping inventory costs at a minimum level. Drury (2004) asserts that inventory costs include holding costs, ordering costs and shortage costs. Holding costs relate to costs of having physical items in stock. These include insurance, obsolescence and opportunity costs associated with having funds which could be elsewhere but are tied up in inventory.

The use of company resources to purchase goods and services must be based on adherence to specific policies and procedures to reduce the chance of fraud and theft. The main purpose of the procurement function is to manage the process used for the purchase of goods and services by the organization.

Inventory Management encompasses processes that ensure product availability while reducing investment costs (Krautter, 2009; Schroeder, 2000). For most companies, there are two forms of inventory: Physical and Logical. Physical inventory includes all the materials that are tangible and required to fabricate the final product (Toomey, 2000). Proper synchronization of these two inventories is essential for proper management of company assets. Inventory management also involves identifying the most effective source of supply for each item in each stocking location. Forecasting and replenishment are also integral to inventory management.

Good inventory management by the procurement function also means having accurate forecasting and accurately timed replenishments (Onwubolu & Dube, 2006). In most companies, inventories represent up to 50% of the total product cost, the money entrusted on inventory, thereby affecting the performance of the procurement function and the overall performance of the company.

Best practice adherence and procurement performance

Payan and McFarland (2005), defined compliance as referring to ‘acting in accordance with an influence attempt from source’ as reported by Gelderman et al., (2006). The concept of compliance looks at the conduct of the regulated actor in comparison to the corresponding obligation that the actor is supposed to obey.

Procurement best practices are strategies that may be followed when making company purchasing decisions. These practices may include building supplier relationships, team-based approaches to procurement and proper use of technology or e-procurement. Implementing procurement best practices may significantly improve the effectiveness of purchasing decisions(Lawson, 2020).

The procurement cycle begins with Planning, Sourcing, Contracting, Evaluation and Contract Administration. Procurement planning enables the identification of major investment expenditures, which in turn facilitates budgetary decision-making. In addition, the effective provision of public services often requires the coordinated delivery of materials and the like, which the state purchasing apparatus must accomplish.

The significance of the compliant process cannot be overstated in that it helps determine if the procurement of goods, services and works are done efficiently and economically. It also helps to assess if the procurement process is being undertaken in accordance with the rules and regulations as pertaining to the regulatory framework within which the reform takes place. The compliance process also helps in identifying weaknesses within the procurement system and how to take corrective measures so as to correct deficiencies within the system. The enforcement of the rules and regulations, the reward of incentives and the sanctioning of practitioners is deemed to influence compliance rates or the degree to which public procurement practitioners/governmental purchasers comply with the rules.

Procurement and Organizational performance

Organizational performance refers to the final achievement of an organization and contains; existence of certain targets to be achieved efficiently and effectively within a specified period of time (Gibson, Mundy & Sink, 2010). According to Koontz and Donnell (2003), organizational performance refers to the ability of an organization to achieve objectives such

as high profit, quality product, large market share, good financial results, and survival at pre-determined time using relevant strategy for action.The Norton (2001) measurements focuses on the financial and non-financial constructs of business organization performance. This study adopted the definition that firm performance involves both financial and non-financial performance including both environmental and intangible performance. The current study utilized the balance scorecard as proposed by Kaplan and Norton (2001) to measure the organization performance. The financial measures were sales growth, profit margin, ROA while non-financial measures were on time delivery, new product adoption, customer satisfaction, increased market share.

Delaney et al, (2006) point that organizational performance can be evaluated by quality service and products, satisfying customers, market performance, service innovations, and employee relationships. On the other hand, Hoque et al, (2000) in their study of organizational performance based on balanced scorecard, stated that organizational performance can be appraised by return of investment, margin on sales, capacity utilization, customer satisfaction and product quality.

Chong and Ooi, (2008) assert that a good organized and executed procurement will make it possible for companies to decrease their inventories, have better customer service, diminish costs as well as aid fast inventory turns. One of the biggest advantages of procurement in the situation of short-term objectives is increasing productivity and decreasing inventory and reducing lead time. Based on long term objectives, this factor has significant role in increasing company's market share and having outside integration of the procurement (Li et al., 2006).

Carr and Smeltzer (1999) have documented how firms with strategic purchasing are able to foster long term, cooperative relationships and communication, and achieve greater responsiveness to the needs of their suppliers. Although other factors, such as restructuring and governance, and transaction cost economizing are also important for understanding strategic purchasing and its linkage to supply management, they are beyond the scope of this investigation. Strategic purchasing fosters communication, which is critical to achieving effective integration throughout the supply chain.

2.3 Empirical Review

Koumanakos (2008) studied the effect of inventory management on firm performance of 1, 358 manufacturing firms operating in three industrial sectors in Greece, food textiles and chemicals were used in the study covering 2000 – 2002 period. The findings suggested that the higher the level of inventories preserved by a firm, the lower the rate of return. Agus and Noor (2006) did measure the perception of managers about the impact of inventory management practices on financial performance of manufacturing firms in Malaysia. However, circumstances in Malaysia could be different from those in Rwanda.

In their study,an Analysis of the Effects of Inventory Management on the Performance of the Procurement Function of Sugar Manufacturing Companies in the Western Kenya Sugar Belt, Mito Mukopi and Mike Iravo (2014) conducted a descriptive research design, specifically a survey study on a sample 30 procurement personnel of Mumias Sugar Company, West Kenya Sugar Company, Nzoia Sugar Company and Butali Sugar Mills. The research instrument was structured questionnaires self-administered to the respondents. Finding showed that there was a highly significant relationship between the variables (lean inventory systems, strategic supplier partnerships, information technology, legal policies) at F = 2.727 and P = 0.000and performance of the procurement function of sugar manufacturing companies in the western sugar belt.

In his study Glavee-Geo (2008) analised literature and theories of procurement with a purpose to make a contribution to the literature on compliance with respect to public procurement reforms in developing countries with particular reference to Ghana. Research used data was from a survey of 58 responding public procurement practitioners/governmental purchasers from procurement entities within the public sector of Ghana. The finding showed that both organizational goal achievement and familiarity of rules by public procurement practitioners have a positive, statistically significant impact on compliance. The monitoring of procurement practitioners behavior though having a positive association with compliance was found not to be of much significance while a fourth factor (used as a controlled variable): intra-organizational pressure (denoting the impact that decisions and actions of other staff in the organization have on the efforts of procurement practitioners to adhere to the established procurement rules) was found to have a significant but negative association with compliance. The study concluded that education and training of procurement practitioners to be knowledgeable and familiar with procurement rules, regulations, processes and procedures was an effective tool for increasing compliance.

2.4 Operationalization

According to Karlsen and Tollefsen (2009), when an organization has a small number of members, a simple centralized structure is satisfactory. Since the top manager has capacity and enough overview of the organization, decision authority rest entirely on him/her. From Donaldson (1999), as the organization grows this simple structure is replaced by a bureaucracy featuring a top to bottom extensive specialization. So, this situation makes decentralized system close to necessity. The internal structural complexity and length of hierarchy of centralized system makes it infeasible (Donaldson, 1999). The task uncertainty according to Karlsen and Tollefsen (2009) is caused by environment and technological changes. Modernism can be used to reinforce task uncertainty which is influence by environment technology. Task with low uncertainty is most efficiently performed in a centralized operational system. This is because it allows efficient planning and coordination. For high task uncertainty companies can rely more on ad hoc solutions (Donaldson, 1999; Karlsen and Tollefsen, 2009). Firm should reduce formalization and have more decentralized structure.

3. METHODS

This chapter describes the methodology that was used in this study including the research design, study population, sample design, data collection method, data analysis, research procedures, reliability and validity, and data analysis methods.

3.1 Research Design

Brink and Wood (1998) state that the purpose of a research design is to provide a plan for answering the research question and "is a blueprint for action". It is the overall plan that spells out the strategies that the researcher uses to develop accurate, objective and interpretative information. This study utilized a descriptive research design along with correlation research design. According to Brink and Wood (1998), a descriptive survey design may be utilized "to study characteristics in a population for the purpose of investigating probable solutions of a research problem". While according to Mugenda and Mugenda (2003) a descriptive study enables a researcher to be systematic in evaluating the research situation and coming up with an elaborate blueprint to probe and draw statistical findings on the research problem.

3.2 PARTICIPANTS

In this study the sample size of 55 respondents was considered as reflected in Table 3.1. The target population is "the entire aggregation of respondents that meet the designated set of criteria" (Burns & Grove 1997).

Table 3.1: Population and sample size distribution

Department/ Details	Numbers	Sampling technique
Finance staff	10	Purposive sampling
Procurement	15	Purposive sampling
Marketing and sales	35	Purposive sampling
TOTAL	55	

Source: Researcher,2021

3.3 Measures

Reliability is the degree at which results obtained from a survey is consistent after interpreted number of times (Joppe, 2008). The study adopted the Cronbach alpha in determining the internal consistency of the research instrument. The study adopted all constructs with a Cronbach Alpha of above 0.7. A Cronbach Alpha of above 0.7 indicates that the study variables can be utilized in solving the research problem.To ensure content validity, the questionnaire was subjected to thorough examination within a mid-sized construction firm –within Kigali.

Table 3.2: Reliability test results

Variables	Number of items	Cronbach's Alpha	Comments
IM	15	0.915	Accepted
BPA	15	0.928	Accepted
VO	15	0.939	Accepted

Note: IM: inventory management, **BPA**: Best Practice Adherence, **VO**: Volume Ordering

The Cronbach's alphas were above 90%. This indicated that most items in this questionnaire had high squared multiple correlations an indication that the questionnaire passes reliability test. Cronbach's alpha above 0.7 is considered as satisfactory (George & Mallery, 2003). This meant that the tool was adequate in measuring the effect of centralized purchasing systems on performance.

4. FINDINGS

4.1 Demographic characteristics of respondents

The research was able to obtain a response rate of 78% (n=43) while only 14 % (n=12) of the respondents did not participate in the study. By age, respondents 44% (n=19) were between 25-35 years, 42% (n=18) of the respondent were above 36 years while only 14% (n=6) were below 25 years. By gender, 74% (n=32) were male respondents while only 26% (n=11) of the respondents were female respondents.

By education, 58% (n=25) had attained certified course, 35% (n=15) had attained Bachelor level education while only 7% (n=3) of the respondent had master level of education. By experience, 49% (n=21) had above 2 years within the firm, 32% (n=14) were up to two years while only

19% (n=8) of the respondents had less than 1 years of experience.

4.2 Influence of Inventory Management on Organization Performance

4.2.1 Inventory management

Inventory management was evaluated by assessing records management, inventory level and inventory tracking. Data is presented in terms of respondents' agreements with statements provided.

Table 1: Descriptive statistics on organization performance

Statement	mean	std. deviation
There is complete information sharing between the firm and its suppliers	4.1163	0.58592
The firm has an up-to-date database of suppliers	3.9535	0.72222
Records are available on electronic format for easy access	4.1395	1.01375

Source: Primary data, 2021

The research findings on table 1indicate that there was agreement among respondents that there is complete information sharing between the firm and supplier as shown by the mean value of 4.1163 and deviation of .58592 indicating minimal variation in the responses. The study findings also show slight agreement among respondents that the firm has an up-to-date database of suppliers as shown by a mean value of 3.9535 and a deviation of .72222. The study results indicate agreement among respondents in regard to whether records were available on electronic format for easy access as indicated by the mean value of 4.1395 and a deviation of 1.01375 showing dispersion among the opinions of the respondents.

4.2.2 Inventory level

Table 2: Inventory level

	SD		D		NS		A		SA	
Statement	N	%	N	%	N	%	N	%	N	%
Sometimes there is over stocking	2	5	10	23	3	7	24	56	4	9
Sometimes there is under stocking		0	2	5		0	19	44	22	51
There are delays in delivery leading to insufficient inventories	4	9	8	19	1	2	8	19	22	51

Source: Primary data,2021

According to the findings in Table 2, 56% of the respondents agreed that sometimes there is over stocking, while 9% strongly agreed. 51% strongly agreed that sometimes there is understocking, while 44% agreed. A51% strongly agreed that there were delays in delivery leading to insufficient inventories.

4.2.3 Inventory tracking

Table 3: Inventory tracking

	SD		D		NS		A		SA	
Statement	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
There is accurate prediction of supplier delivery dates	1	2%	11	26%		0%	17	40%	14	33%
The firm has computerized all inventory management systems	3	7%	2	5%		0%	26	60%	12	28%
The computers are linked with those of suppliers in a real time environment	5	12%	8	19%	5	12%	9	21%	16	37%
The firm uses Electronic Data Interchange Technology (EDI)		0%	6	14%	17	40%	10	23%	10	23%

Source: Primary data, 2021

According to the finding in Table 3, 40% agreed that accurate prediction of supplier's delivery date happens, while 60% agreed that the computers are linked with those of suppliers in a real time environment. A total of 40% were not sure if the firm uses electronic data interchange technology.

These study results are supported by Lwiki (2013) who indicated there is a positive association between inventory management and financial performance of manufacturing firms in terms of cost-efficiency and efficiency in production. Augustine and Agu (2013) indicated that inventory management fostered effectiveness within the firm which enhanced the performance of the firm. Gakinya (2013) concluded that inventory management enhanced the supply chain performance and was key to organizational efficiency.

4.3 Best Practices

4.3.1 Team Building

Table 4: Team Building

	SD		D		NS		A		SA	
Statement	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Procurement officers are involved early on project / product planning before actual procurement is required.	1	2%	8	19%	6	14%	11	26%	17	40%
Suppliers are involved during product planning.	3	7%	2	5%		0%	26	60%	12	28%
There is supplier development programs for example providing training to suppliers' staff so that they deliver best products, or support suppliers in acquiring modern equipment's to better their performance towards your organization.	16	37%	22	51%	0	0%	1	2%	4	9%

Source: Primary data, 2021

According to Table 4 40% strongly agreed that procurement officers were involved earlier in project, 28% strongly agreed that suppliers were involved during product planning, however 37% disagreed strongly that supplier development programs were done.

4.3.2 Customer Relationship

Table 5: Customer relationship

	SD		D		NS		A		SA	
Statement	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
There is involvement of suppliers early in product design process	1	2%	8	19%	6	14%	17	40%	11	26%
There are frequent meetings between firms' procurement staff and the suppliers	3	7%	26	60%		0%	11	26%	3	7%
There is complete information sharing between the procurement and its suppliers	16	37%	20	47%	0	0%	1	2%	6	14%

Source: Primary data, 2021

According to table 5, 40% of respondents agreed that suppliers were involved earlier in product design process, 60% disagreed that there are frequent meetings between firm's procurement staff and the suppliers and 47% disagreed that there is complete information sharing between the procurement and its suppliers.

4.3.3 Monitoring and Evaluation

Table 6: Monitoring and Evaluation

	SD		D		NS		A		SA	
Statement	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Data for improving procurement is frequently collected	1	2%	19	44%	6	14%	17	40%	0	0%
The collected data is analyzed to make informed decisions.	3	7%	25	58%		0%	11	26%	4	9%

Source; Primary data, 2021

The finding shows that 40% of the respondents agreed that data for improving procurement was frequently collected, while 58% disagreed that the collected data was always analyzed to make informed decisions.

4.4 Volume of Ordering

4.4.1 Quality

Table 7: Quality of ordering

	SD		D		NS		A		SA	
Statement	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
The volume ordered is verified against standards	1	2%	17	40%	6	14%	19	44%	0	0%
The supplier is honest and provides the quality required	3	7%	25	58%		0%	11	26%	4	9%
Poor quality is rejected	16	37%	20	47%	0	0%	1	2%	6	14%
Increased bulk ordering contributes to price savings due to discounts offered.		0%	6	14%	10	23%	10	23%	17	40%
Bulk ordering arrangements promotes efficiency in the procurement process.		0%	1	2%	4	9%	4	9%	34	79%
Bulk ordering enables competitiveness in creating supplier linkages for the business.		0%		0%		0%	31	72%	12	28%
Batch ordering ensures timely delivery of supplies.		0%	15	35%		0%	8	19%	20	47%
Large orders ensure that the firm has sufficient inventory to support continuous production		0%		0%	10	23%	15	35%	18	42%

Source; Primary data, 2021

According to table 7, the findings, 44% of the respondents agreed that the volume ordered was verified against, 58% disagreed that the supplier was honest and provided the quality required. According to 37%, poor quality was rejected while according to 40% there was increased bulky ordering. A total of 79% strongly agreed that bulky ordering promotes efficiency in the procurement process, 72% agreed that bulk ordering enables competiveness in creating supplier linkages for the business. 47% of respondents strongly agrees that batch ordering ensures timely delivery of supplies and 42% of respondents strongly agreed that large orders ensures that the firm has sufficient inventory to support continuous production.

4.5 Organization Performance

4.5.1 Timeliness

Table 8: Timeliness

	SD		D		NS		A		SA	
Statement	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Procured items arrive in time		0%	13	30%		0%		0%	30	70%
Procurement levels are identified in time		0%	1	2%		0%	19	44%	23	53%
Suppliers respond to orders or feedbacks in time		0%	14	33%		0%	18	42%	11	26%
Procurement requests are processed faster		0%	2	5%		0%	15	35%	26	60%

Source: Primary data, 2021

According to Table 8, 70% strongly agreed that procured items arrived in time, 53% strongly agreed that the procurement level was identified in time, 42% agreed that suppliers responded to order or feedbacks in time and 60% that procurement requests were processed faster,

4.5.2 Customer satisfaction

Table 9: Customer Satisfaction

	SD		D		NS		A		SA	
Statement	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Customers have shown satisfaction with the quality of your constructions		0%		0%		0%	25	58%	18	42%
You have not received penalties due to delay in project completion	21	49%	7	16%		0%	7	16%	8	19%
You didn't receive penalties, but customer expressed dissatisfaction with procurement delays	14	33%		0%	5	12%		0%	24	56%
Customers are satisfied with your level of adherence to best practices	2	5%	2	5%		0%	18	42%	21	49%
Information sharing between your firm and the customer is satisfactory		0%	2	5%		0%	27	63%	14	33%

Source: Primary data, 2021

The finding shows that 42% of the respondents strongly agreed that customers had shown satisfaction with the quality of the construction, 49% of the respondents strongly agreed that the company has not received penalties due to delay in project completion. 56% strongly agreed that the company did not receive penalties, but customers expressed dissatisfaction with procurement delays, 49% strongly agreed that customers were satisfied with the level of adherence to best practice and 63% agreed that information sharing between the firm and the customer was satisfactory.

4.5.3 Quality of Service

Table 10: Quality of Service

	SD		D		NS		A		SA	
Statement	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
The quality of service is high	1	2%	1	2%		0%	19	44%	22	51%
Inventory management is of high quality	11	26%	7	16%		0%	15	35%	10	23%
We have high adherence to best practices	1	2%		0%	1	2%	23	53%	18	42%
Procurement requests are processed faster	2	5%	1	2%	3	7%	15	35%	22	51%

Source: Primary data, 2021

The finding in Table 10 shows that 51% strongly agreed that the quality of service was high, however inventory management was not of very high quality according to 26%. A total of 42% strongly agreed that they adhered to best practices while 51% strongly agreed that procurement processes ware fast.

These study results are supported by Lwiki (2013) who indicated that there is a positive association between inventory management and financial performance of manufacturing firms in terms of cost-efficiency and efficiency in production. Augustine and Agu (2013) indicated that inventory management fostered effectiveness within the firm which enhanced the performance of the firm. Gakinya (2013) concluded that inventory management enhanced the supply chain performance and was key to organizational efficiency.

4.6 The relationship between centralized purchasing and performance of the construction firm.

This was measured using the regression model, ANOVA Model and Regression coefficient. Below are the details.

4.6.1 Regression Model

Table 11: Regression Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.919[a]	0.844	0.828	1.34061

a. Predictors: (Constant), Inventory management, Best Practices, Volume/Bulk ordering

The above generalized model sought to estimate the magnitude of the association between the predictor variables (*centralized purchasing*) and the dependent variable (*Organization performance*). The results of the study indicate that holding all other factors constant there is a positive relationship between centralized purchasing and organization performance as shown by the coefficient of determination R^2 = *.844*. This indicates that 84.4% variations in the organization performance can be explained by centralized purchasing. These findings are in congruence with Iloranta and Pajunen-Muhonen, (2012) who indicated that centralized purchasing was a key predictor of organization performance. Van Weele, (2010) also concluded that new and innovative purchasing strategies such as decentralized purchasing were positively related to organization performance.

4.6.2 Anova Summary

Table 12: ANOVA[a] Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	369.891	4	92.473	51.453	.000[b]
	Residual	68.295	38	1.797		
	Total	438.186	42			

a. Dependent Variable: Organization performance,

Source: Primary data 2021

b. Predictors: (Constant), Inventory management, Best Practices, Volume/Bulk ordering

The study further analysed the statistical significance of the regression model. From the resulting findings it was evident that the regression model was significant *sig = .000* which is less than the critical *sig value 0.05* testing at 95% confidence interval. The results also generated a *F-value of 51.453* which is above the critical value of 2.76 indicating that the entire research model was statistically significant.

4.6.3 Regression Coefficients

Table 13: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.529	2.844		0.538	0.003
Volume/Bulk ordering	0.367	0.128	0.304	2.854	0.004
Best Practices	0.319	0.061	0.42	5.242	0.000
Inventory management	0.424	0.106	0.082	-1.167	0.025

Source: primary data 2021,

The resulting regression model was of the form.

Y = 1.529 + .367 *Bulk Ordering* ***+ .319*** *Best practices* ***+.424*** *Inventory management* ***+ 2.844***

The above indicates that bulk ordering *p= .367; sig =.004<0.005* had a significant and positive effect on organization performance. A unit change in bulk ordering would result in 36.7% change in organization performance. The result also indicates that best practices *p= .319; sig =.000<0.005* had a significant and positive effect on organization performance. A unit change in best practices would result in 31.9% change in organization performance.

5. DISCUSSION

This study was carried out to provide answers for three questions as shown here; what is the impact of inventory management on performance of construction sector in Rwanda? What is the role of best practice adherence on performance of construction sector in Rwanda? What is the effect of volume ordering on performance of construction sector in Rwanda? The summary of findings about the achievement of the objectives is explained in this section as follows.

Concerning the research question one, the research findings indicate that inventory management ensures that there is minimal wastage of organization and timely flow of supplies which fosters smooth operation. The study results indicate strong agreement among respondents in regard to inventory management which ensures timely flow of supplies which

fosters operations. The findings of the study also indicate that proper inventory management fosters customer satisfaction. The research results indicate that effective inventory management enhances the profitability of firms through minimized pilferage. The findings also indicate that inventory management *p= .424; sig =.025<0.005* had a significant and positive effect on organization performance. A unit change in inventory management would result in 42.4% change in organization performance.

Concerning the research question two, the results of the study show that best practices fosters efficiency in the organization procurement and enhances the available information on stakeholders in the value chain. Findings also indicate that best practices fosters quality service delivery to customers. The study results also indicate that centralized purchasing fosters accountability in the procurement department which is integral for better financial performance. In general that centralized purchasing *p= .319; sig =.000<0.005* had a significant and positive effect on organization performance. A unit change in e-procurement would result in 31.9% change in organization performance.

Concerning the research question three, the study results indicate that increased bulk ordering contributes to price savings due to discounts. The study results also show that bulk ordering enhances the firm competitiveness in creating supplier linkages for the business; further bulk ordering arrangements promote efficiency in the procurement process. The results also indicated that large orders ensure that the firm has sufficient inventory to support continuous operations which is key to fostering the performance of the firm. In summary bulk ordering *p= .367; sig =.004<0.005* has a significant and positive effect on organization performance. A unit change in bulk ordering would result in 36.7% change in organization performance.

6. CONCLUSIONS

The research concludes that Real Contractors has been able to obtain higher organization performance as a result of centralized purchasing. The study also concludes that inventory management is essential in ensuring that adequate supplies are within the firm's storage to support continuous production process. Best practices are important in fostering procurement in organizations.

7. RECOMMENDATIONS

The study recommends that the firm should enhance the bulk ordering process by undertaking a value chain analysis which will help the firm in selecting suppliers who will foster the firm savings and enhance its economies of scale. The study also recommends that the organization should review the best procurement standards from large multinational corporations which will be of great importance in designing better and more effective procurement policies. The research also recommends that the organization should enhance the adoption of information technology systems which will be essential in promoting inventory management. The firm should also ensure that personnel strictly follow the inventory management practices which will help in enhancing the efficiency and effectiveness of the firm.

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