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Supply Chain Management Practices and Performance of Public Institutions in Rwanda: A Case of Rwanda Biomedical Center

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Abstract

The purpose of this research was to assess the role of supply chain management practices in the performance of the public institution in Rwanda a case of Rwanda Biomedical Center (RBC) as The study specifically looked at role of Strategic supplier partnership, customer relationship and information sharing on organization performance of RBC. The study was important to RBC, public institution in Rwanda and other private institutions. To elaborate on role of supply chain management practices in the performance of the public institution the related literature, the researcher was guided by the study objectives. The study was guided by theory of constraints and information sharing theory. The research design was used as descriptive while the population is 450 employees of Rwanda Biomedical Center and the sample size was 82 respondents. Purposive and simple random sample procedures were used for data collection. The researcher obtained primary data using a questionnaire and analyzed it using qualitative and quantitative methods. Descriptive studies were used to examine the data, and inferences were drawn from the data using the Statistical Package for Social Sciences (SPSS) version 22. The data was analyzed using descriptive and inferential data analysis, with tables, charts, and percentage studies showing that they all had a substantial impact on Rwanda Biomedical Centre's performance. For instance, strategic supplier partnership (0.305, $p < 0.05$); customer relationship (0.482, $p < 0.5$) and information sharing (0.183, $p < 0.05$) were all significant affecting the performance of Rwanda Biomedical Centre. The study further found that there was variation of 66.5% on the Customer Relationship, information sharing, strategic supplier partnership at 95% confidence interval. This shows that 66.5% changes in performance of public institution in Rwanda. According to the findings, Rwanda Biomedical Centre/effectiveness RBC's is aided by smart supplier partnerships, customer relationships, and information exchange. Managers are advised to increase the organization's performance through cultivating supplier relationships. Managers must also build a clear channel of communication and collaboration between suppliers and customers in order to be effective.

Keywords: *Supply Chain Management Practices, Performance of Public Institutions, Rwanda Biomedical Center, Rwanda*

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1. Introduction

The supply chain management is critical because each firm in a supply chain is both a provider and a client. Customers and suppliers must be integrated both downstream and upstream. Because rivalry is now across supply chains rather than between firms, it has become a potentially valuable approach to gain a competitive advantage (Thatte, 2017). The Rwanda Biomedical Centre (RBC) is the country's major health implementing organization, whose mission is to enhance Rwandans' health by providing high-quality, affordable, and long-term health care. RBC works to safeguard the nation from diseases and other health dangers by conducting scientific research, providing diagnostic services, and implementing new health treatments. The COVID-19 has drastically dampened this high performance and growth is poised to decelerate to about 2.0 percent in 2020 due to both the reduction of global and domestic demand and disruptions in disruption of the supply chains and transport challenges, affecting both prices and volumes of Rwanda's exports.

As the coronavirus pandemic unfolds across the world, it has now been established that it is not only a public health emergency, but it is also an enormous burden on household livelihoods with far-reaching adverse consequences to national and global economy. It has disrupted production and supply chains and has resulted in an unprecedented drop in aggregate consumption. Rwanda Biomedical Centre (RBC) is the country's major health implementing organization was in forefront in fighting the pandemic by using Innovative supply chain strategies in order to enhance the health of Rwandans by delivering high-quality, inexpensive, and long-term health-care services. Studies done on the influence of supply chain management methods on its performance include; Janaki, *et al.*, (2018) have used SCMP to improve operational performance, Suchanek, Richter and Kralova, (2014) study was in U.S. and other Western Economies Shin, et al, (2010) SCM methods will increase an organization's market share, return on investment. There are no local studies done Therefore this study seek to fill gap by observe the role of supply chain management practices on performance of public institution in Rwanda with specific to Biomedical Centre/RBC.

1.1 Objectives of the study

1.1.1 General objective

The general objective of this study was to examine the role of supply chain management practices on performance of public institution in Rwanda with specific to Biomedical Centre/RBC.

1.1.2 Specific Objectives

- (i) To evaluate the role of Strategic supplier partnership on performance of Rwanda Biomedical Centre/RBC
- (ii) To assess the role customer relationship on performance of Rwanda Biomedical Centre/RBC.
- (iii) To determine the role Information Sharing on performance in Rwanda Biomedical Centre/RBC

1.1.3 Research Hypotheses

H01: There is no significant relationship between Strategic supplier partnership and performance of Rwanda Biomedical Centre

H02: There is no significant relationship between customer relationship and performance of Rwanda Biomedical Centre.

H03: Information Sharing has no significant relationship with performance of Rwanda Biomedical Centre in Rwanda Biomedical Centre/RBC.

2.1 Empirical Literature Review

2.1.1 Supply Chain Management Practices

Chen and Paulraj (2014) studied A theory of supply chain management: The constructs and measurements. The study used descriptive research design and prioritized communication, supplier-based reduction, cross-functional teams, long-term linkages, and supplier involvement. Tan *et al.*, (2018) studied Supply chain management: a strategic perspective. The study looked at the literature looks at SCMP from a variety of perspectives, all with the same goal in mind: to boost OP. Supply chain management promotes process management across departments. The study found SCMP ensures interaction with customers, quality, and purchasing. According to the study, decisions between competing supply chain demands can be made by connecting supply chain objectives to company strategy. Gunasekaran (2011) investigated performance metrics and measures in a supply chain context. The found that more innovation allows for more sophisticated management methods and operations in information and physical movement throughout the supply chain. Innovative supply chain strategies enable businesses to add value to their consumers while also improving their competitiveness and overall supply chain performance.

Suppliers who participate early in the product design process, according to the report, can provide more cost-effective design options, as well as help with component and technology selection and design review. Organizations that are strategically aligned can collaborate closely and save time and effort. Good supplier collaboration can considerably benefit a cutting-edge supply chain. At the Rwanda Biomedical Centre in Ethiopia, Woldemich, *at el.* (2012) evaluated the impact of supply chain management methods on the performance of the basic metal and engineering sectors. According to the report, the success or failure of supply chain management strategies today determines the end customer in the marketplace. They believe that getting the right product to the right client at the right time is a survival strategy as well as a competitive advantage. According to them, supply chain management is a multi-dimensional concept that includes both the upstream and downstream sides of the supply chain.

Basu, and Wright, (2007) study on Total Supply Chain Management in. Burlington, UK found that Supply chain management eternally based targets, rather than internal department objectives, drive performance improvements. The study further found that operations of supply chain management may vary depending on the type of business, but the concepts and duties are largely the same. "Turning raw materials and information into finished products and services, consuming the products and services, and disposing of the products and services," according to a comprehensive view of the supply chain. Omain (2010) looked on supply chain management practices in the palm oil business in Malaysia. The application set of SCM approaches differs based on the country and kind of firm covered in previous studies,

according to the study. The study found that different companies and countries have diverse approaches to SCM. This is attributable to a number of managerial perspectives on how supply chain processes interact with one another and with the business, for example, different management styles, different world perspectives from different nations, and cultural variations. Innovativeness is viewed as a complicated process that deals with environmental and technological uncertainty in order to find and embrace new methods, ideas, goods, and technologies that will satisfy customers.

Fantazy, Kumar and Kumar (2010) studied Supply management practices and performance in the Canadian hospitality industry. The study used descriptive research design. The study found that supply chain management promotes process management across departments. Decisions between competing supply chain demands can be made by linking supply chain objectives to company strategy. External targets drive performance improvements rather than internal department aims. Adebayo (2012) conducted research on current supply chain management (SCM) methods in Nigeria. The study used descriptive research design. The study found that Offering value to customers is more important than ever in today's competitive business world. The primary goal of most businesses is to create products and services that are more valuable than their competitors' are.

Building a Resilient Supply Chain is a research by Christopher and Peck (2014). The study discovered that supply chain management (SCM) has emerged as a potentially valuable way for Rwanda Biomedical Centre to acquire a competitive edge and improve performance. Study recommended that it is vital to adopt the most up-to-date collaborative information solutions that increase efficiency, performance, and quality throughout a supply chain to further accelerate collaboration. Green, McGaughey, and Casey (2016) investigated the supply chain management strategy mediation relationship between market orientation and Rwanda Biomedical Centre's performance. Both inferential and descriptive research designs were used in this study. The study discovered that supply chain management creates the activities to be accomplished and the resources required by an organization at any level of the supply chain through design decisions.

As a result, supply chain management's responsibility is to mandate the actions that will be carried out by an organization's departments at specific periods and stages of the manufacturing and distribution processes. Supply chain management also determines when raw materials should be obtained, production should commence, and final products should be issued to the market, according to the report. The supply chain also influences the selection of operational partners. Businesses can achieve more production flexibility, shorter product development cycles, lower input costs, and enhanced end-product quality by strongly integrating suppliers in SCM, according to Kotabe, Martin, and Domoto (2003), resulting in increased market share and premium prices. The purpose of supply chain expansion is to boost profitability, customer response, and the capacity to provide value to customers, as well as to improve corporate connectedness and dependability. When a market extends from a domestic to a global market, customers seek lower prices, faster delivery, higher-quality products or services, and a wider selection of commodities.

Arifin and Baihaqi (2012) studied the relationship between environment uncertainty, institutional theory, internal resource, supply chain management Practices, and performance of Rwanda Biomedical Centre in small and medium enterprises. The study used descriptive research design and found that the success or failure of supply chain management practices today determines the end customer in the marketplace. Getting the right product to the right

client at the right time is both a survival strategy and a competitive edge. According to them, supply chain management is a multi-dimensional concept that includes both the upstream and downstream aspects of the supply chain. Supply Chain Management and Logistics Integration in Marketing were investigated by Alvarado and Kotzab (2011). Alvarado and Kotzab looked at supply chain management methodologies in terms of the inter-organizational system used, key competences, and reducing excess inventory through postponement in their empirical study.

2.1.2. Strategic Supplier Partnership

Koh, *et al.*, (2007), investigate the impact of supply chain management strategies on the performance of SMEs. The organization's long-term supplier relationships. Strategic supplier partnerships were found to enable individual participating firms achieve considerable long-term benefits by leveraging their strategic and operational skills, according to the study. Supply chain partnerships, according to the survey, allow two or more supply chain firms to collaborate on one or more core value-creating activities such as research, product development, manufacturing, marketing, sales, and distribution. The goal of supply chain collaboration is to reduce the total cost of purchasing, possessing, and disposing of goods and services for all parties involved. According to the research, efficient supply chain management requires firms to develop strategic relationships with a few key suppliers who are prepared to share responsibility for the items' success.

Vereecke and Muylle (2016) conducted a study in Europe on improving performance through supply chain collaboration. Strategic collaborations between suppliers and manufacturers have a significant impact on supply chain performance and several areas of competitive advantage, according to the report. Large and small businesses can benefit from supply chain partnerships because they allow them to spread their products more widely without having to invest in a costly physical presence in the market, share risk and rewards, pool resources, reduce coordination and transaction costs, focus on core competencies, and respond quickly to market needs.

Monczka (2018) investigated the success determinants in strategic supplier alliances from the standpoint of the buying firm. Strategic supplier partnerships between retailers and vendors were found to boost supply chain efficiency and product replenishment, according to the study. In terms of minimizing excess inventory levels, cutting out of stocks at retail, and efficiently satisfying customer demand, strategic supplier partnerships have the potential to drive retailers and manufacturers far beyond continuous replenishment models. Supply chain management is the integration of business processes across the supply chain.

Supply chain management (SCM) is a major strategic aspect for boosting organizational performance and better realization of corporate goals such as greater competitiveness, better customer service, and increased profitability, according to the study. A solid partnership encourages joint planning and problem-solving efforts by emphasizing direct, long-term association. Shamsuddin (2013) as a moderating influence of regulatory pressure investigated the importance of cooperation and leadership in supply chain management strategies. The study found that operational partners are entities with whom a business might collaborate in order to outsource supply chain aspects. The supply chain management department is in charge of identifying such partners and defining the terms under which they will operate. Supply chain management determines whether the collaboration will be short-term or long-term. The study observed that the task of establishing the "capacity and placement" of various

operational activities and equipment falls to supply chain management (Simatupang & Sridharan, 2012).

The study found that operational partners are entities with whom a business might collaborate in order to outsource supply chain aspects. The supply chain management department is in charge of identifying such partners and defining the terms under which they will operate. The study further found that supply chain management determines whether the collaboration will be short-term or long-term. The task of establishing the "capacity and placement" of various operational activities and equipment falls to supply chain management. The study recommended that supply chain management should be responsible for identifying where production and storage facilities should be placed, as well as the operational capacity that these facilities should have supply chain management. Shin, Collier and Wilson (2020) studied Supply management orientation and supplier/buyer performance. The study discovered that participating firms' long-term relationships with their suppliers help them generate considerable long-term benefits by utilizing their strategic and operational strengths. According to the survey, supply chain partnerships allow two or more supply chain firms to collaborate on one or more core value-creating activities such as research, product development, manufacturing, marketing, sales, and distribution.

2.1.3 Customer Relationship

Moberg, Cuber, Gross, and Speh are the authors of this paper (2012). Identifying the points of origin for information exchange in supply chains. According to the study, the effectiveness of supply chain management is critical because each firm in a supply chain is both a supplier and a client, necessitating both downstream and upstream customer and supplier integration. The study further found that improved customer relationship management is crucial to a company's success in a competitive market. The study recommended solid working connection with firm partners, such as major clients, is crucial to supply chain management success. Frohlich and Westbrook (2010) studied Arcs of integration: an international study of supply chain strategies. The study found that customer relationship management is a critical internal component of a company's marketing strategy for increasing sales. The study further found that close customer relationships aid in differentiating products from competitors, keeping customers happy and loyal, and increasing the value delivered to customers.

Because of their intrinsic hurdles to competition, customer relationships were shown to be the most sustainable advantage. The rise of mass customization and personalized service has ushered in a new era in which customer relationship management is vital to a company's existence. Customer-facing firms are responsible for planning, developing, and assessing an appropriate link between the source and recipient of both upstream and downstream supply chain components, according to Lee (2014). As a result, in SCM, customer relationship management (CRM) is centered on both inbound and outbound client contacts. Customer relations refers to a company's ability to communicate with customers about supplying relevant products and services to customers locally and worldwide at the appropriate time, in the right quantity, and in the right quality. Giving customer's product information, customer relationship management includes processing customer orders, engaging with customers to moderate demand, communicating order status with customers on order scheduling, and the product delivery stage.

The study emphasizes the need of departments and functions from partnered organizations working together to review inventories, systems, procedures, training, work styles, equipment use, and a number of other ways to reduce operating costs and explore partnership options. Partnerships in the supply chain are resource-intensive enterprises with financial and strategic risks.

2.1.4 Information sharing

Prasad and Tata (2010) study on information investment in supply chain management. The study used both descriptive and inferential statistic. Information sharing has two dimensions, according to the study: quantity and quality. Both characteristics are important for SCM procedures and were previously treated as distinct constructs in SCM research. The level (quantity aspect) of information sharing refers to the amount of important and private information provided to a supply chain partner.

Simatupang and Sridharan, (2012) study on the collaborative Supply Chain. The study found that degree to which crucial and confidential information is shared with a supply chain partner is important for organization performance. The study also discovered that private data sharing between business partners allows them to track the progress of items and orders as they move through various supply chain operations. The study further found that organizations that share information with business partners may be able to make better judgments and take more action because of the increased visibility. Identifying antecedents of information sharing within supply chains, Moberg, Cutler, Gross, and Speh (2012). Sharing data on critical performance metrics and process data helps supply chain visibility and decision-making, according to the study. Only relevant, trustworthy, timely, and dependable data is useful in a supply chain. The study further observed that while information sharing is crucial, the type of information shared, when and how it is shared, and with whom it is shared determines the influence on SCM whom it is shared the study recommended that organizations should share information with business partners may be able to make better judgments and take more action because of the increased visibility.

Through competitive priorities in the Iran pumps company, Karimi and Rafiee (2014) investigate the impact of supply chain management strategies on the performance of Rwanda Biomedical Centre. The study discovered that as information travels down the supply chain, there are various examples of how erroneous delayed information might cause problems. Divergent interests and motivations among supply chain participants, as well as knowledge asymmetries along the supply chain, all have an impact on data quality, according to the study. They also discovered that corporations may intentionally distort information that reaches competitors, suppliers, and customers. This is due to firms' reluctance to share competitive and sensitive information with their partners, such as inventory levels and production schedules, because the information is typically perceived as providing a competitive advantage (power loss). While information sharing is important, the type of information provided, when and how it is shared, and with whom it is shared define the impact on SCM. Because they fear it will offer them an unfair edge, businesses are cautious to share competitive and sensitive information with their partners, such as inventory levels and production schedules (power loss). Data should be regarded as a strategic asset, with the least amount of delay and distortion possible, according to the report.

2.2 Research Gap

Because competition is no longer between firms, but across supply networks, effective supply chain management (SCM) has become a potentially beneficial technique of securing competitive advantage. Four dimensions of SCM practice were theorized and developed in this study (strategic supplier partnership, customer relationship and information sharing). Several researches on the impact of supply chain management practices on public institution performance have been undertaken. These studies have used different measures to quantify business performance such as operational performance, quality performance, financial performance, market share, productivity. Product quality failed to address the unique characteristics of services.

SCMP has been employed by many previous researchers to increase OP. Azmi *et al.*, 2018; Chavez *et al.*, 2013; Gimenez *et al.*, 2012; Liu *et al.*, 2013; Ramanathan, 2012; Sukati *et al.*, 2012; Janaki, *et al.*, 2018). The study by Suchanek, Richter, and Kralova (2014) was conducted in the United States and other Western economies. SCM approaches will boost an organization's market share and return on investment, according to Shin, *et al.* (2010). Outsourcing, supplier alliances, information sharing, cycle time, compression, and continuous process flow are all supply chain management strategies, according to Donlon (2016). Tan *et al.* (2018) gave quality, purchasing, and customer relationship management as supply chain management solutions. Five supply chain activities, according to Lee (2014), are crucial to supply chain responsiveness. Outsourcing, strategic supplier collaborations, consumer interactions, data sharing, and product modularity are all examples of these. In their research on supply chain management. Prasad and Tata, (2010), and overall competitive position while Stanley and Wisner, 2011 argues that the idea does not explain how SCM practices will improve performance of Rwanda Biomedical Centre.

Davenport, *et al.*, (2001) and Tathee, (2007) argues that organizations can make better judgments and take action based on more visibility when they share information with business partners, they all agree, but the concept did not explain how knowledge sharing might help firms make better decisions. Effective SCM procedures have been shown in several studies to have a direct impact on an organization's overall financial and marketing success (Shin, Collier and Wilson, 2010; Prasad, 2010). From this point of view, the researcher comments that the author does not explain clearly how the responsiveness in the logistic process is a key element in the in-supply chain management. Strategic alliances between suppliers and manufacturers, according to Vereecke and Muylee (2006), have a significant impact on supply chain performance and several areas of competitive advantage. Although the researcher agrees with the concept, the writers do not describe how strategic partnerships between suppliers and manufacturers affect many areas of performance of Rwanda Biomedical Centre.

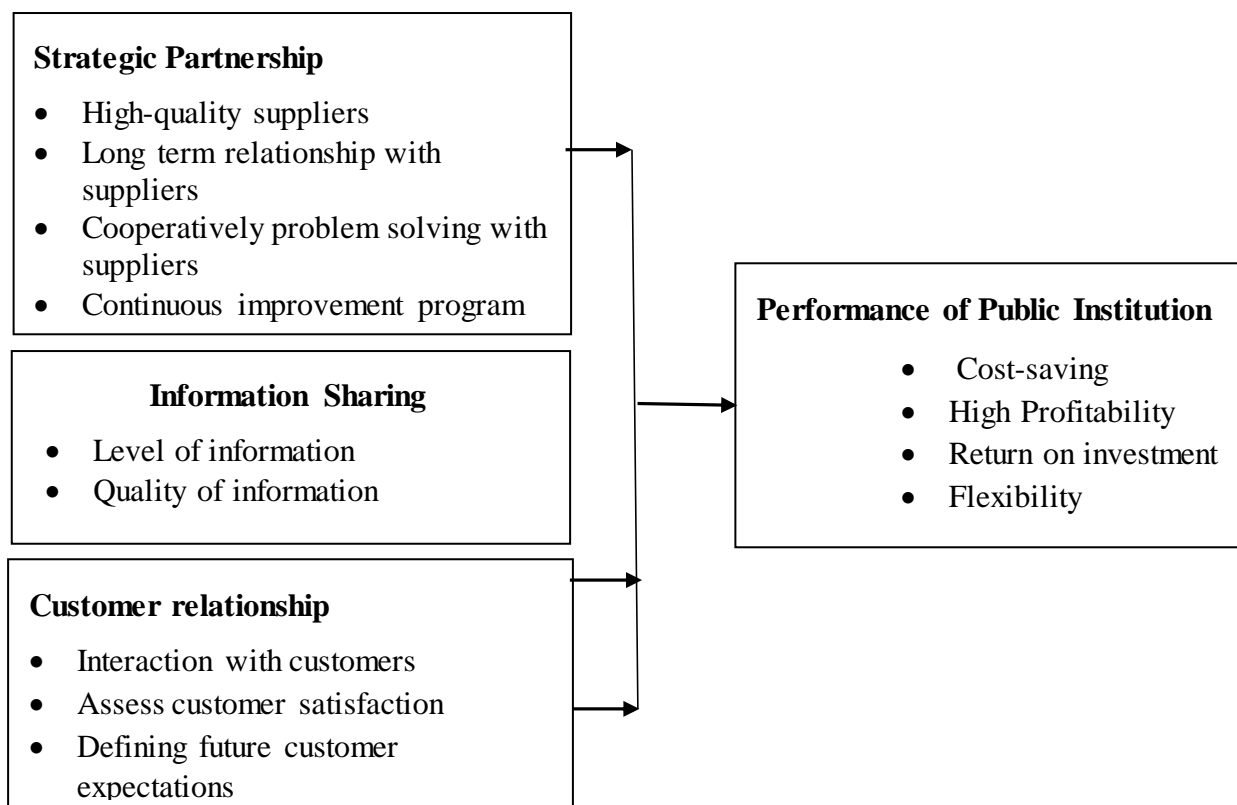
2.3 Conceptual Framework

The relationship between supply chain management practices and performance of public institution in Rwanda is depicted in Figure 1's conceptual framework.

Independent Variables

Dependent Variables

Supply chain management practices



3. Materials and Methods

The researcher used a descriptive survey design in the study. This design is excellent because the study required the collection and comparison of data from multiple occurrences at the same time. According to Mugenda & Mugenda (2012), descriptive survey design is ideal when the ultimate goal is to determine whether there is a meaningful association between variables at some point in time. The survey comprises the systematic gathering of significant information about the population, usually via the use of regularly used tools such as interviews or questionnaires presented to a sample of the population (Mugenda & Mugenda, 2012). The descriptive survey design was perfect since it aimed to define the characteristics of specific groups, estimate the number of people who shared those traits, and make predictions. The goal of this strategy was to minimize bias while increasing the dependability of the evidence collected. The study population comprised 450 staff of RBC including staff and managers (Rwanda Biomedical Centre Hr Record 2022) On the other hand, the staff members of Rwanda Biomedical Centre have been chosen because they are the ones who have enough information concerning the study as they are technicians. In this study, the researcher used Slovin’s sampling technique, which is stated by Ariola (2006) and from the calculation, the sample size of the research is 82 respondents from RBC headquarter staff. Stratified sampling was used for this study. The 82 respondents were selected; using stratified random sampling because they were categorized into staff and manager of Rwanda Biomedical Centre.

A self-administered questionnaire was prepared to collect quantitative data basing on the relationship between supply chain management practices and performance of RBC. The data has been collected from RBC staff. In this study, the researcher used a questionnaire because it helps to cover a large number of respondents in a relatively short time. (Amin, 2005). Furthermore, questionnaires aid in the collection of accurate data because respondents fill them out in their own words, unaffected by the presence of the researcher. Secondary data is described as data that is collected by someone else other than the researcher who intends to use it, (Mugenda & Mugenda, 2012). This data is always stockpiled in different sources specifically in journals, webs, reports, newspapers and magazines. The researcher collected secondary data on the effect of supply chain management practices on performance in RBC. All filled questionnaires were entered in the Statistical Package for Social Sciences (SPSS) for analysis. Data was presented in frequency counts and score tables and figures. Drawing of interpretations was done according to the number of occurrences on each item. The table below shows how the researcher analysed each objective of the study using different methods. A multivariate regression analysis was used to determine the relationship between the dependent and the independent variables. The algebraic expression of the regression model took the following form Where: y = performance of public institution in Rwanda, β_0 = Constant, β_1 - β_3 = Model Coefficients, X_1 : Strategic Supplier partnership, X_2 : Customer Relationship and X_3 : Information Sharing and ϵ_1 = Random error assumed as normally distributed.

4. Research Findings and discussion

4.1 Evaluation of the role of Strategic supplier partnership on performance of Rwanda biomedical Centre

On evaluate the role of Strategic supplier partnership on performance of Rwanda biomedical Centre/RBC. The information pertaining this research objective was collected through questionnaires where research participant contributed in answering the questions provided to them. The information from them is reliable in this research based on facts of area of study. On a 5-point scale ranging from 5 = Strongly Agree to 1 = Strongly Disagree, the Likert-type scale was employed to score their responses. As a result, the information gathered is shown in Table 1.

Table 1: Respondents view on Strategic supplier Partnership

Strategic supplier partnership (SSP)	1	2	3	4	5	Mean	SD
Strategic supplier partnership ensure help Planning and goal setting with suppliers	0.0	0.0	23.2	4.2	72.6	4.38	1.390
Strategic supplier partnership ensure quality is number one criterion in choosing suppliers.	1.2	0.0	0.0	83.2	15.6	4.77	1.339
Strategic supplier partnership aid in solving Problems cooperatively with suppliers.	3.2	0.0	0.0	35.8	61.2	4.36	1.199
Strategic supplier partnership helps continuous improvement program with suppliers	0.0	0.0	0.0	37.6	67.4	4.31	1.260
Strategic supplier partnership help sustainable improvement Strategic supplier partnership Strategic supplier partnership help in cooperatively problem solving with suppliers	0.0	0.0	0.0	33.7	63.2	4.58	1.393
Strategic supplier partnership provides long term relationship with suppliers	0.0	5.3	0.0	57.9	36.8	4.38	1.390
Strategic supplier partnership provides high-quality suppliers	0.0		38.9	61.1	0.0	4.77	1.339
Overall Mean						4.50	1.33

Primary Data (2022)

Research findings showed that Strategic supplier partnership ensure help planning and goal setting with suppliers was strongly agreed by 72.6% of respondents 4.2% of respondents also agreed while 23.2% neither agreed nor dis agreed. When assessing to what extent Strategic supplier partnership ensure quality is number one criterion in choosing 15.6% of surveyed respondents strongly agreed 83.2% of respondents also agreed while 1.2% strongly disagreed. On Strategic supplier partnership aid in solving Problems cooperatively with supplier’s results showed that strongly agreed by 61.1of respondents while 35.8 % of respondents also agreed but only 3.2 of respondents were neutral.

The overall conclusion of this research objective was to assess role of Strategic supplier partnership on performance of Rwanda Biomedical Centre/RBC. Therefore, researcher concluded that with Strategic supplier partnership plays important role performance of Rwanda Biomedical Centre/RBC. The data analysis revealed that strategic supplier partnerships influenced Rwanda Biomedical Centre's performance in a positive and significant way.

This result was supported in the previous studies by (Dolo *et al.*, 2018) and (Khan & Siddiqui, 2018) and it was found that the participants of this study had a positive impact by supplier partnership and enhanced their performance of Rwanda Biomedical Centre. Similarly, this result was accomplished due to when the supply chain had a reliable partnership with their suppliers it meant that both parties had a shared desired goal to accomplish and it increased their performance.

4.2.2 Assessment of role of Customer relationship on performance of Rwanda Biomedical Centre/RBC

In this research project, researcher was interested in knowing the role played by customer relationship on performance of Rwanda Biomedical Centre/RBC. The Likert-type scale was used to rate their responses on a 5– point scale ranging from 5 = Strongly Agree to 1 = Strongly Disagree

Table 2: Respondents view on Role of Customer Relationship on Performance

Customer relationship	1	2	3	4	5	Mean	SD
Customer relationship ensure regularly interrelate with customers to establish reliability, responsiveness, and other standards for us.	0.2	0.0	23.2	0.0	72.6	4.08	1.158
Customer relationship determine future customer expectations	0.0	0.0	0.0	65.3	34.7	4.60	1.230
Customer relationship help evaluate and measure customer satisfaction.	3.2	0.0	0.0	71.6	28.4	4.89	1.197
Customer relationship help to periodically evaluate the role of our relationship with our customers	4.2	0.0	0.0	12.6	84.2	4.70	1.395
Customer relationship facilitate customers’ ability to seek support from us.	4.2	35.8	0.0	60.0	0.0	3.1	1.422
Strategic supplier partnership provides long term relationship with suppliers		0.0	0.0	37.6	67.4	4.21	1.446
Strategic supplier partnership provides high-quality suppliers	0.0	0.0	0.0	33.7	63.2	4.43	1.308
Overall Mean						4.08	1.158

Primary Data (2022)

In regards, researcher was interested in knowing the role played by customer relationship on performance of Rwanda Biomedical Centre/RBC. On Customer relationship ensure regularly interrelate with customers to establish reliability, responsiveness, and other standards for us 72.6 % strongly agreed, 23.2% while 0.2% strongly disagreed. On if Customer relationship determines future customer expectations results collected for this were strongly agreed by 65.3% whereas 34.7% also agreed. In this research, 71.6% of respondents strongly agreed that Customer relationship help evaluate and measure customer satisfaction while 28.4% agreed. The research findings revealed that Customer relationship facilitate customers’ ability to seek support from us this was confirmed by disagreed 60.0% and also 35.8% agree while 4.2% strongly disagreed. As indicated, research findings showed that 84.2% of surveyed respondents strongly agreed Customer relationship help to periodically evaluate the role of our relationship with our customers were while 12.6% among also agreed while 4.2 strongly disagreed. Therefore, researcher concluded that with by customer relationship plays important role performance of Rwanda Biomedical Centre/RBC. The study also found that, customer relationship was positively and significantly influencing the performance of Rwanda Biomedical Centre.

This finding was reinforced by a recent study (AlWeshah *et al.*, 2019), which found that improving or increasing customer relationships has a significant impact on organizational performance. The employees chosen for this study were strongly correlated with the consumers, and they may have employed an acceptable communication technique to create the relationship, which influenced performance. Furthermore, the current result may be regarded as clients being extremely delighted when they receive reliable services and products. Customers may have been satisfied with the timely development of products and some innovation in these items, but they were also receiving feedback from the supply chain, which enhanced the relationship and improved Rwanda Biomedical Centre's performance.

4.2.3 To determine the role Information Sharing on performance in Rwanda Biomedical Centre/RBC

Table 3: Respondents view on role of Information Sharing on performance

Information Sharing	1	2	3	4	5	Mean	SD
Information Sharing help trading partners share proprietary information with us.	0.0	0.0	0.0	33.7	63.2	4.08	1.158
Information Sharing help trading partners to advance of changing needs.	0.0	0.0	0.0	65.3	34.7	4.79	1.291
Information Sharing help trading partners to share business skills of core business procedures with us.	0.0	5.3	0.0	57.9	36.8	4.64	1.216
Information Sharing help trading partners to fully informed about challenges that affect our business.	4.2	0.0	0.0	12.6	84.2	4.67	1.438
Information Sharing help each trade partner other informed about actions or modifications that may affect the other partners.	4.2	35.8	0.0	60.0	0.0	4.77	1.395
Information Sharing interchange information that helps establishment of business planning.	0.0	0.0	0.0	37.6	67.4	4.55	1.292
Information exchange between our trading partners and us is well timed.	4.2	35.8	0.0	60.0	0.0	4.57	1.382
The exchange of information between our trading partners and us is important.	0.2	0.0	23.2	0.0		3.77	1.339
						72.6	
Our trading partners and we exchange a great deal of information.	3.2	0.0	0.0	71.6	28.4	4.36	1.199
Information communication between our trading partners and us is appropriate.	4.2	35.8	0.0	60.0	0.0	3.31	1.260
Our trading partners and we exchange information in a consistent manner	0.0	0.0	0.0	65.3	34.7	4.46	1.10

Primary Data (2022)

In regards, researcher was interested in knowing the role played by customer relationship on performance of Rwanda Biomedical Centre/RBC. On Information Sharing help trading partners share proprietary information with us. 63.23% of respondents strongly agreed while 33.7%. On Information Sharing help trading partners to advance of changing needs 65.3% of respondents strongly agreed while 34.7 % of respondents agreed. On the statement, Information Sharing assists trading partners in sharing essential business operations and

capabilities with us. 57.9% of respondents strongly agreed, 36.8% agreed, and 5.3 percent of respondents did not agree or disagree. On Information Sharing, help trading partners to fully informed about challenges that affect our business. 84.2% of respondents strongly agreed 12.6% of respondents agreed while 4.2% of respondents strongly disagreed Information Sharing help each trade partner other informed about actions or modifications that may affect the other partners.60.0% of respondents strongly agreed 35.8% of respondents agreed while 4.2% of respondents strongly disagreed. On Information Sharing interchange information that helps establishment of business planning 67.4% of respondents strongly agreed 37.6% of respondents agreed. Therefore, researcher concluded that with by Information Sharing plays important role performance of Rwanda Biomedical Centre/RBC.

Furthermore, the study discovered that the quality of information sharing had a positive and significant impact on the performance of Rwanda Biomedical Centre. This result was supported in the previous study by (Khan & Siddiqui, 2018) and stated that an increase the quality information sharing highly increased the performance of Rwanda Biomedical Centre. So, while sharing information was recognized as an important and necessary aspect, the main prospect was the sharing of quality information, in which these participants were heavily involved in sharing information regarding the various supply chain prospects that assisted in improving the performance of Rwanda Biomedical Centre. At last, further discussion would be like when the employees were involved in quality information sharing via other partners it was accomplished in the presence of high trust between them because it was important to have trust in sharing information so the partners had a great success in their processes, which eventually helped in performance of Rwanda Biomedical Centre increment. Furthermore, the study also found that quality of information sharing was also positively and significantly influencing the performance of Rwanda Biomedical Centre.

So, the main reason for achieving this result was that sharing information was recognized as an important and necessary aspect, but the main prospect was the sharing of quality information in which these participants were highly involved in sharing information regarding the various prospects of supply chain that helped in enhancing the performance of Rwanda Biomedical Centre. At last, further discussion would be like when the employees were involved in quality information sharing via other partners it was accomplished in the presence of high trust between them because it was important to have trust in sharing information so the partners had a great success in their processes which eventually helped in performance of Rwanda Biomedical Centre increment.

4.2.4 Performance as an outcome of adopting supply chain management practices in in Rwanda Biomedical Centre/RBC

Please indicate the extent to which the performance as an outcome of adopting supply chain management practices by using descriptors as follow: 1. Strongly disagree; 2. disagree; 3. Moderate extent; 4. Agree; 5. Strongly Agree

Table 4: respondents view on performance as an outcome of adopting supply chain management practices

Performance as an outcome of adopting supply chain management practices	1	2	3	4	5	Mean	SD
	%	%	%	%	%		
Supply chain management help in cost saving help cost saving	0.0	2.4	4.3	93.3	63.2	4.58	1.1406
Supply chain management help increase return on investment	0.0	3.8	1.6	94.6	34.7	4.38	1.1168
Meet Customer need and wants (correct on our forecasting)	0.8	6.4	0.3	92.5	0.0	3.93	1.230
Budget and optimization Plan is perfect	40	42	10	8	0.0	2.08	1.97
Supply chain practices lead to high profitability	0.0	0.5	2.7	96.8	0.0	3.98	1.1168
Overall						3.79	1.315

Table 4 shows that supply chain management helps save money for 2.4% of respondents who were neither agreeing nor disagreeing, 4.3% who agreed, and 93.3% who strongly agreed. 3.8 percent of respondents agreed, 1.6% disagreed, and 94.6% strongly agreed with the assertion that supply chain management helps increase return on investment.

The assertion that the budget and optimization plan suit the customer's needs and wishes (correct on our projections) is perfect. 40% disagreed, 42 percent were neither agreeing nor disagreeing, ten percent agreed, and eight percent definitely agreed. Finally, respondents disagreed 0.5 percent neither agreed nor disagreed, 2.7 percent agreed, and 96.8% strongly agreed with comments that supply chain procedures are profitable.

4.3 Inferential Statistics

This study assesses the role of supply chain management practices on performance of public institution in Rwanda. In a more summarized way, reports OLS results for study as follows:

Table 5: Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.816 ^a	.665	.657	.266

a. Predictors: (Constant), Customer Relationship, Information Sharing, Strategic Supplier Partnership

The coefficient of determination, or adjusted R squared, indicates the variation in the dependent variable due to changes in the independent variable. The corrected R squared value was 0.665, indicating that there was a 66.5% variation on the Customer Relationship, Information Sharing, and Strategic Supplier Partnership at the 95 percent confidence interval, based on the data in the above table. Customer Relationships, Information Sharing, and Strategic Supplier Partnership account for 66.5% of changes in public institution performance in Rwanda. The correlation coefficient, R, depicts the link between the research variables. The results suggest a strong positive association between the studied variables, as indicated by 0.816.

Table 6: ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.751	4	5.750	81.539	.000 ^b
	Residual	14.457	78	.071		
	Total	43.208	82			

a. Dependent Variable: Performance of Rwanda Biomedical Centre

b. Predictors: (Constant), Customer Relationship, Information Sharing, Strategic Supplier Partnership

According to the ANOVA statistics in the table above, the processed data, which represents the population parameters, had a significance level of 0.05, indicating that the data is suitable for drawing conclusions about the population's parameter because the p-value is less than 5%. The impact of supply chain management strategies on public institution performance in Rwanda. F (4, 78) 81.539, p.0018, demonstrates that the model was significant because the p-value was less than 0.05 without the interaction term. The model was statistically significant because the significance value was less than 0.05.

Table 7: Multiple Regression Analysis

	Beta	Std. Error	t-Stats	Sig.
(Constant)	1.076	0.333	3.233	0.001
Strategic Supplier Partnership	0.305	0.048	6.320	0.000
Customer Relationship	0.482	0.046	10.436	0.000
Information Sharing	0.183	0.037	4.953	0.000

Dependent Variable: Performance

Therefore, the equations used within the study in two variables, the researcher used regression model being illustrated as; $y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$

Where: performance of public institution in Rwanda = 1.076 + 0.305 Strategic Supplier partnership + 0.482 Customer Relationship + 0.183 Information sharing. From the above regression equation it was revealed that customer relationship, information sharing, strategic supplier partnership on are holding to a constant zero , performance of public institution in Rwanda would stand at 1.076, a unit increase strategic supplier partnership would lead to increase in performance of public institution in Rwanda by a factor of 0.305, unit increase in information asymmetry would lead to increase in performance of public institution in Rwanda by a factor of 0.482 , a unit increase in regulatory requirements would lead to increase in performance of public institution in Rwanda by a factor of 0.183.

Table 7 further show the summary showed that strategic supplier partnership (0.305, p < 0.05); customer relationship (0.482, p < 0.5) and information sharing (0.183, p < 0.05) were all significant affecting the performance of Rwanda Biomedical Centre.

4.4 Hypothesis Testing

Table 8: Hypothesis Testing

	Beta	Std. Error	t-Stats	Sig.
(Constant)	1.076	0.333	3.233	0.001
Strategic Supplier Partnership	0.305	0.048	6.320	0.000
Customer Relationship	0.482	0.046	10.436	0.000
Information Sharing	0.183	0.037	4.953	0.000

Dependent Variable: Performance

The first hypothesis, H01, stated that there is no link between strategic supplier partnerships and Rwanda Biomedical Centre performance. According to Table 8, strategic supplier partnerships have a P value of 0.00, which is less than 0.05, thus we cannot reject the null hypothesis and infer that strategic supplier partnerships have no significant relationship with Rwanda Biomedical Centre performance. The second hypotheses was that there is no significant relationship between customer relationship and performance of Rwanda Biomedical Centre.

According to Table 8 customer, relationship had P value of 0.00 which is less than 0.05 hence we fail to reject null hypothesis and conclude that customer relationship has no significance relation with performance of Rwanda Biomedical Centre. The third hypothesis (H03) Information Sharing has no significant relationship with performance of Rwanda Biomedical Centre in Rwanda Biomedical Centre/RBC. According to table 8 Information Sharing had P value of 0.00 which is less than 0.05 hence we fail to reject null hypothesis and conclude that Information Sharing has no significance relation with performance of Rwanda Biomedical Centre.

5.1 Conclusion

The goal of the study was to look into the impact of supply chain management methods on the performance of Rwandan public institutions, specifically the Biomedical Centre/RBC. The research's main purpose is to look into the impact of supply chain management on how an organization functions in the setting of a Rwandan government agency. This association has been assessed using a variety of criteria. It comprised strategic supplier partnerships, customer relationships, and information exchange, all of which aided in evaluating Rwanda Biomedical Centre's performance. The study found that strategic supplier partnership affects performance of public institution in Rwanda. It can be argued that by utilizing their strategic and operational strengths, public institutions can assist individual participating firms in achieving considerable long-term benefits. The purpose of supply chain collaboration for all parties involved in supply chain management is to lower the total cost of purchase, possession, and disposal of goods and services.

The study found that customer relationship affects performance of public institution in Rwanda. It can be concluded that the effectiveness of supply chain management is critical because each firm in a supply chain is both a supplier and a client, necessitating both downstream and upstream customer and supplier integration. Improved customer relationship

management is crucial to a company's success in a competitive market. A solid working connection with firm partners, such as major clients, is crucial to supply chain management success. Close customer relationships aid in differentiating products from competitors, keeping customers happy and loyal, and increasing the value delivered to customers.

The process of moving goods from suppliers to manufacturers and then to end users via distribution is referred to as logistics and distribution management. The study found that information sharing affects performance of public institution in Rwanda. It can be concluded that crucial and confidential information is shared with a supply chain partner. They can track the progress of items and orders as they move through various supply chain operations thanks to information sharing. Demand and prediction data, inventory status and location, order status, cost-related data, and performance status are all instances of data gathering, processing, storage, display, retrieval, and broadcasting. Sharing data on important performance metrics and process data, they go on to argue, increases supply chain visibility and decision-making. Only relevant, trustworthy, timely, and dependable data is useful in a supply chain. Organizations that share information with business partners may be able to make better judgments and take more action because of the increased visibility.

5.2 Recommendations

The current study is important in terms of supply chain management because it provided extremely useful information to help managers better understand this link and improve their performance. However, a few suggestions for managers are provided below. The association between Rwanda Biomedical Centre's strategic supplier partnership and its performance is positive and significant. As a result, managers are advised to increase the organization's performance through strengthening relationships with suppliers. The main purpose of this relationship is to have a common strategy and vision, thus managers should set such goals or visions and design plans that may be shared. Build partnerships with vendors who share the same level of trustworthiness and dependability.

The second suggestion is to invest an equivalent amount of money in achieving desired outcomes. Additionally, when attempting to achieve a shared goal, be aligned in your efforts, and having a shared strategy and details in a management system is highly encouraged. Managers must also establish a clear line of communication and collaboration between suppliers and customers in order to be effective. Finally, in order to build a smooth and successful long-term link between strategic supplier partnership and Rwanda Biomedical Centre performance, it is critical to track every risk and reward in the relationship. It means that if one party faces a danger or suffers damage, the other should share the burden and not jeopardize the partnership, and the reward system is no exception. In addition, there is a positive and strong relationship between customer relationship and Rwanda Biomedical Centre performance.

As a result, managers are instructed to cultivate positive customer relationships in order to boost their companies' performance. The first and most important suggestion is to establish a trustworthy and reputable relationship with customers by providing high-quality services that they will remember and return to. Create a platform that allows customers to contact the company and the Rwanda Biomedical Centre to improve its performance. Occasionally, strive to be productive and innovative by exceeding customer expectations in service delivery, as every customer expects better and enhanced service every time. Similarly, one of the key recommendations is to run a survey and solicit feedback so that consumers can easily express their concerns and discuss them with managers, stay connected to their products, and

contribute to the improvement of Rwanda Biomedical Centre's performance. Finally, demonstrate your thanks for customers by providing them with additional prizes, offers, and discounts so that more customers are attracted and Rwanda Biomedical Centre's performance improves.

Furthermore, there is a positive and significant relationship between the extent of information exchange and Rwanda Biomedical Centre's performance. Managers are advised to increase the performance of their organizations by raising the level of information exchange. The first rule is to communicate as much information as possible between the store and the manufacturer because the amount or quantity of information used in this process is extremely vital. Similarly, the second suggestion is to provide various platforms for knowledge sharing. Order and demand are two examples of information sharing layers. As a result, managers should share information with various supply chain partners, including suppliers, customers, retailers, and internal employees.

This strategy will help managers reduce inventory levels and total producer costs while also establishing a consolidated and consistent supply chain to support Rwanda Biomedical Centre's outstanding performance. Furthermore, the result of high-quality information sharing and the Rwanda Biomedical Center's performance is both favorable and notable. As a result, managers are urged to establish and increase the quality of information exchange in order to improve their organization's performance. Because quality is such an important aspect of maintaining a smooth supply chain, the first advice is to create and organize a platform on which information can be easily exchanged throughout the supply chain, as having only one or a few personnel to perform this task can quickly result in bottlenecks.

The second tip is to build trust among supply chain partners so that the receiving party can easily feel credible and reliable about the information because of the high level of trust among them. Furthermore, the current phenomenon is significant since it will aid in generating high customer satisfaction and maintaining relationships with them. Managers could, however, improve Rwanda Biomedical Centre's performance by prioritizing quality information sharing and providing incentives to staff who provide quality information. Another suggestion is to re-evaluate the training and hiring processes and to build long-term plans for high-quality information sharing by heavily investing in it. Finally, create a knowledge-based library where employees can quickly obtain information and share it with others, as well as design a method for sharing and incorporating knowledge, as long as it is managed correctly. As a result, management might simply improve the performance of Rwanda Biomedical Centre by implementing and acting on these recommendations.

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