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Electronic Communication and Supply Chain Performance of Large Retail Chains in Kenya

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ABSTRACT

Purpose: This study sought to establish the relationship between electronic communication and supply chain performance in Large Retail Chains in Kenya. The study was guided by disruptive innovation theory.

Methodology: The study adopted descriptive research design and positivist research paradigm. The study targeted 12 Large Retail Chains in Kenya. The target population for this study was 240 respondents. Census method was used in this study. The study used research questionnaires to collect primary data. Qualitative data was analyzed using content analysis and presented in prose form. Qualitative data was analyzed using descriptive and inferential analysis. Descriptive statistics such as frequency, percentages, and means were used. Pearson correlation coefficient was used for testing strength and direction between the independent and the dependent variables. A multiple regression model was used to test the significance of the relationship between the independent variables and the dependent variable.

Findings: The study findings revealed that electronic communication has a positive and significant effect on supply chain performance of Large Retail Chains in Kenya. The study concludes that electronic communication has a positive and significant effect on supply chain performance of Large Retail Chains in Kenya.

Unique Contribution to Theory, Policy, and Practice: Based on the findings, this study recommends that the management of large retail chains in Kenya should implement integrated Electronic Data Interchange (EDI) systems to enhance communication across their supply chains. The study contributes to theory by showing electronic communication as a strategic resource for supply chain performance, informs policy by highlighting the need for supportive frameworks to enhance digital integration, and guides practice by urging retail managers to adopt EDI systems for greater efficiency and competitiveness.

Keywords: *Electronic Communication, Supply Chain Performance, Large Retail Chains*

Background of the Study

In the world of challenging and competitive business ecosystem, the use of technological tools and services to drive innovation is a necessity for both public and private organizations. It is relevant in today's world for businesses to provide clients with a cost-effective overall solution and good clients satisfaction using innovation and new technology. The advent of Information and Communication Technology (ICT), industries were compelled in switching business operations from the old-style to the philosophy of electronic business, electronic procurement and electronic supply chain to ensure sustainability. The private and public sectors have used Information Technology (IT) over the past decade to enhance and improve purchasing and some business processes (Koorn & Mueller, 2019).

In automating the supply chain processes, electronic procurement offers diverse advantages that almost all competitive company have to consider to ensure efficiency. In the 2000s, the Internet has substantially made feasible and supported a key resource for the automation of the purchase process, with the added benefit of improving the processing capabilities of audiovisual aids. Supply chain (SC) practices by themselves will not deliver efficiency; efficiency can only be obtained by combining various supply chain practices. To imply, Dawe (2018) stated that in order to improve the supply chain's performance, extensive efforts should be made to improve all supply chain functions in an organisation, and by focusing on supply chain practices, moving away from a functional and independent system and toward a more enhanced and integrative system that is passed over to system. The result is that the effectiveness of every supply chain practice should be evaluated in terms of how the process impacts the efficient integration of the whole supply chain. Supply chain integration success may be accomplished by combining various supply chain methods and centralized organisational structures in a well-defined manner.

Electronic procurement is an important way of doing business to lower purchase prices and increase process efficiency. Collection management, e-tendering, e-auction, e-information, supplier management, order integration, catalog management, order status, dispatch notification, electronic bill, electronic payment of goods and management of contract constitute e-procurement value chain. Efficient performance of the supply chain is vital to companies to stay in business. This efficiency maybe achieved through ensuring that all actions along the supply chain system, from one end customer to supplier, are properly synchronized and coordinated. Global purchasing has shifted its focus away from day-to-day sourcing and toward long-term, value-added purchasing and supply chain initiatives. The COVID-19 pandemic crisis is the biggest threat to the global economy since the economic crisis in 2019, electronic procurement has obtained much attention especially with the emergence of new technology. Simultaneously, it is responding to the problems and opportunities of electronic procurement by using the Internet to trade for products and services.

Many improvements have been made on the electronic information side: collecting and distributing purchasing information via internet technology from and to internal and external parties, and using internet powered devices to purchase products and services from a variety of known and unknown vendors has improved sales processes. E-Market-Sites: Creates value chains by extending web-based ERP. According to Jessop, (2016) buying communities may link to suppliers' supply chains and buyers' financial systems to acquire commodities and services from preferred vendors, add shopping carts, make enquiries and receive permissions, accept orders, and process electronic invoicing. E-procurement solutions have arisen during the previous two decades. Despite the technology industry's exponential expansion, It is estimated that organisations will only employ around 25% of their solution capacity, partially owing to a lack of technical expertise or financial resources, but also because solutions are likely misaligned with expanding purchasing demands. Regardless of the listed limitations, electronic procurement has apparent prospective benefits that may be used to make a business case for financial support, increasing usage, or new alternatives investment (Koorn & Mueller, 2019).

The government of Kenya, through the Vision 2030 medium term plan 2013 - 2017, considered retail sector among the six priority sectors projected to make up the largest part of the country's Gross Domestic Product (GDP) and to create approximately fifty (50) per cent of total formal employment. Indeed, the vision 2030 singled out retail sector as one of the economic pillars with potential to improve the prosperity of all Kenyans by achieving a 10 per cent GDP growth rate by the end of 2030. Further, the government expects the retail sector to be a key gateway to the market for goods from the manufacturing sector which is expected to contribute 15 percent of GDP by 2022 from 8.4 percent in 2017 (KAM, 2019). However, a closer look at the recent trends characterizing Kenya's retail sector reveals that the growth rate has been on the decline trajectory as a result of systematic failures of supply chain management (World Economic Situation Prospects [WESP], 2020). For example, the growth rate declined from 8.4 percent in the year 2017 to 3.6 percent in 2016 and by 2019, the growth rate stood at 3.9 percent signifying the inability of the sector to meet the Vision 2030. The decline in growth and other factors like mismanagement further led to the closure of a number of giant Retail Chains outlets (e.g Nakumatt, Ukwala, Uchumi, Tuskies) which has affected both the shareholders and the employees, who lose jobs adding to an already growing pool of unemployed in the country (WESP, 2020).

Procurement covers every stage of purchasing, from the initial identification of a requirement, through the tendering process, to the payment and potentially the contract management (Porter & Millar, 2017). According to Croom and Brandon (2018), adoption of e-procurement technology in an organization enables a firm to organize its interactions with its most crucial suppliers. Bryan (2018) argues that there is a direct relationship between performance contracting and corporate performance. This study therefore advances e-procurement practices as a possible solution to

supply chain performance gap with ICT infrastructure as a moderating factor in the retail sector in order to align the sector's contributions to the vision 2030.

According to the Kenya Retail Sector Report (2020) themed "E-commerce Shaping the Retail Sector" the Kenyan retail sector's performance dropped slightly with average rental yields declining by 0.3% points to 6.7% in 2020, from 7.0% in 2019, while the occupancy rates declined by 0.7% points to 76.6% in 2020, from 77.3% in 2019. In 2019, the retail sector performance in the Nairobi Metropolitan Area declined by 5.4% and 4.7%, respectively to record rental yields of 8.0% and occupancy rates of 75.1%, respectively (Kenya Retail Sector Report, 2019). In 2020, the retail sector performance recorded a decline of 0.3% and 0.7% points in average rental yields and occupancy rates, respectively, coming in at 6.7% and 76.6%, respectively (Kenya Retail Sector Report, 2020).

Retail Chains contribute immensely to the socio economic wellbeing of a country. Research shows that the potential economic impact of a new Retail is vast (Wisner et al., 2019). The most important is the new Retail Chains' ability to create jobs and income. National data shows that a new Retail Chains can have an employment multiplier effect on the economy. Furthermore, between 50 and 75 percent of directly created jobs are filled locally, helping to pump income into the local community (McConnell, 2019). Thirdly, opening a new Retail Chains has an immediate and significant effect on commercial and residential real estate. Data from the Pennsylvania Fresh Food Financing Initiative indicates that opening a new Retail Chains instantly boosts home values by between four and seven percent. The new Retail Chains acts as an anchor retailer, attracting smaller Retail Chains and spur economic development (Wisner *et al*., 2019).

With the aforementioned significance of Retail Chains in an economy, Kenyan Vision 2030 considers Retail Chains as one of the most important retail sector in its achievement. The sector accounts for approximately 10 percent of the GDP and 10 percent of formal employment (ROK, 2007). KIPPRA (2017) adds that, the sector serves as an important tax collection point as value added tax (VAT) is gathered at the Retail Chains level in this country; and similarly contributes to the social welfare of consumers by offering goods at reasonable prices (ROK, 2007; KIPPRA, 2017). The vision emphasizes the need to improve performance and raise productivity in Retail Chains trade as the economy heads towards a 10 percent growth rate (Sire & Muturi, 2017). Nevertheless, unpaid suppliers (Mburu, 2017) have mired the retail sector with several challenges with a number of them enduring worrisome financial woes, accompanied by empty shelves, closure of branches both locally and regionally and complaints. As a result, the contribution of the retail sector to the GDP has been progressively declining; standing at 8.0 percent in 2018 and further declining to 7.5 percent as at 2017 (PWC, 2016) putting doubt on the sector's ability to effectively contribute to the realization of the country Vision 2030. This then calls for a new

approach with potential of improving performance of the Retail Chains in order to realize Vision 2030 milestones (GoK, 2007).

Statement of the Problem

In the dynamic and competitive landscape of the retail industry in Kenya, Large Retail Chains face the imperative of optimizing their supply chain performance to meet customer demands efficiently (Bryan, 2018). Research has shown that the supply chain performance of the Kenya retail industry has been on the decline. Juma, (2020) indicates that the Retail Chains industry's dominance structure has shifted dramatically, with the lesser companies of the past being leading players and the biggest actors of yesteryear either extinguished or struggling to stay afloat. For instance, Uchumi has become a shell of its past, shutting down Nakumatt, Ukwala, and Jack and Jill's shops. Several existing dominants have trouble staying afloat, primarily because of overheads (Kitheka and Ondiek, 2020). This has seen a steady decrease in Retail contribution to GDP from 8.0% in 2014 to 4.5% in 2017 (Mburu, & Njeru, 2019). Despite high business turbulence recently witnessed, Retail Chains are one of the crucial retail sector that contributes in achieving the Vision 2030 and the government's Bottom-up Economic Transformation Agenda for socio-economic development. At a minimum, the industry is projected to contribute to the achievement of Vision 2030 and the Government's Big 4 agenda by 10 % of GDP and 10% of total formal employment (GoK, 2020).

According to Croom and Brandon (2018), e-procurement in an organization enables a firm to keep an open line of communication with potential suppliers during a business process all of which contribute to the attainment and sustenance of competitive advantage. Bryan (2018) argues that there is a direct relationship between e-procurement and organization performance. It is therefore essential to establish the relationship between of e-procurement and supply chain performance of Large Retail Chains in Kenya. Top management support is essential for the successful implementation of electronic procurement systems. Supportive leadership ensures that the necessary resources, both in terms of finances and human capital, are allocated to facilitate the smooth adoption of electronic procurement practices (Mwiriki, 2017). The retail industry, like many others, often faces resistance to change when implementing new technologies. Top management support can mitigate this resistance by fostering a positive organizational culture that embraces innovation. A supportive management team can communicate the benefits of electronic procurement to employees and address concerns, facilitating a more seamless transition (Wisner *et al*., 2019).

Various studies have been conducted on electronic communication and organization performance. For instance: Kheng and AlHawandeh (2018) investigated the adoption of electronic communication in Singapore and presented stumbling blocks to this initiative from the point of

view of Singaporean firms; Metoh (2019) did a study on the factors affecting implementation of electronic communication in the public sector: a case of National Aids Control Council; Nevertheless, none of these studies established the relationship between electronic communication and supply chain Large Retail Chains in Kenya. To fill the highlighted gaps, the current study sought to the relationship between electronic communication and supply chain performance of Large Retail Chains in Kenya

Specific Objectives

This study was guided by the following specific objective:

i. To examine the relationship between electronic communication and supply chain performance of Large Retail Chains in Kenya

Theoretical Review

The Disruptive Innovation Theory

The disruptive innovation is probably one of the most important innovation theories of the last decade (Bird, 2009). The term disruptive innovation as we know it today first appeared in the best-seller The Innovator's Dilemma (Dai & Kauffman, 2010). In the book, Harvard Business School professor Clayton Christensen investigated why some innovations that were radical in nature reinforced the incumbent's position in a certain industry, contrary to what previous models would predict. Electronic communication is radical in nature and it reinforces the manual incumbent's communication position (Angeles &Nath, 2010). More specifically he analyzed extensively the disk drive industry because it represented the most dynamic, technologically discontinuous and complex industry one could find.

On the other hand contemporary availing of tender documents online and notification of (un)successful vendors among supply chain partners are seen as dynamic, technologically discontinuous and complex (Bendoly & Schoenherr, 2015). The theory resonated among supply chain practitioners in several industries and also resulted in influencing thinking and research in the areas of electronic expressions of interest and availing of tender documents online especially for internationally competitive tenders (Cagliano, Caniato & Spina, 2013).

Researchers consider disruptive innovations as a powerful means for developing and broadening electronic communication. Recently, scholars have conceptualized disruptive innovation such as electronic communication systems as a function of conflict between the entrants and incumbents business models, not only an outcome of technological change. Evolutionary theories generally depict a continuously changing business environment at times punctuated by discontinuous shifts (Eadie, Perera & Heaney, 2011).

Disruptive theory is a theory that illustrates how new technologies are disrupting the old technologies or the status quo. Disruptive theory is relevant in this study because it explains the types of disruptive technologies Retail Chains are adopting and using. The electronic communication technology is a disruptive innovation because it does away with traditional physical and manual mailing. Communication is quicker and lesser bureaucratic hence better relations with supply chain partners. The theory will therefore be useful in this study in explaining the influence of electronic communication on supply chain performance of Retail Chains.

Conceptual Framework

A conceptual framework is a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation (Neuman, 2013). Mugenda and Mugenda (2014) define a conceptual framework as hypothesized model identifying the model under study and the relationship between study variables. Figure 1 presents the hypothesized relationship between the independent variables and the dependent variable for testing in this study:

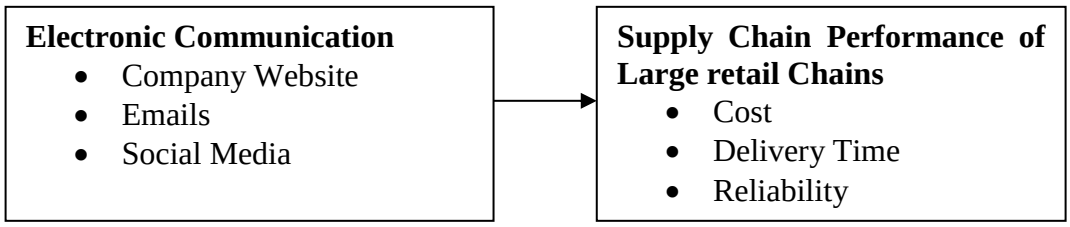

Figure 1: Conceptual Framework

Electronic Communication

Electronic communication refers to the transfer of information, messages, or data through electronic means. It is a vital component of modern business operations, enabling organizations to interact with stakeholders quickly and efficiently. Key forms of electronic communication include company websites, emails, and social media (Kheng, & Al-Hawandeh, 2018). Each of these tools offers unique advantages and challenges for businesses. A company website serves as the digital headquarters for an organization, offering a centralized platform where stakeholders can access information, interact with the business, and even make purchases (Kemei, Oboko, & Kidombo, 2018). The website also functions as a branding tool, showcasing the company's identity through design, content, and testimonials. Blogs, case studies, and multimedia content such as videos and images further reinforce a company's image and attract visitors. A robust website enhances credibility and trust, as potential customers often evaluate a business's legitimacy based on its online presence (Kemei, Oboko, & Kidombo, 2018).

Email remains one of the most widely used and reliable forms of electronic communication in business. It facilitates formal and structured interactions with both internal and external stakeholders (Kamel, 2018). For instance, companies use email for marketing campaigns, sending newsletters, promotional offers, and updates to targeted customer groups. Internally, emails play a crucial role in collaboration, allowing employees to share information, files, and updates efficiently. One of the significant advantages of email communication is its cost-effectiveness (Juma, 2020). Sending an email is far less expensive than traditional forms of communication like physical mail. Furthermore, emails create a digital paper trail, enabling businesses to maintain records for future reference. This feature is especially beneficial for resolving disputes or tracking correspondence over time. Personalization is another key benefit of email communication (IvyPanda, 2020). Social media has transformed the way businesses communicate, offering a dynamic platform for real-time interaction with customers and other stakeholders. Platforms like Facebook, Instagram, LinkedIn, and Twitter allow companies to share updates, market products, engage with customers, and even address public relations crises (Chopra, Meindl, & Kalra, 2019). Social media enables businesses to humanize their brand by sharing behind-the-scenes content, employee stories, and customer testimonials, creating a more personal connection with the audience. One of the key advantages of social media is its vast reach. With billions of active users worldwide, businesses can connect with diverse audiences and expand their customer base.

Social media is also an invaluable tool for market research. By analyzing customer feedback, comments, and trends, businesses can gain insights into consumer preferences and industry developments (Brandon-Jones, & Carey, 2018). Furthermore, the immediacy of social media allows businesses to respond to customer inquiries, complaints, or compliments in real time, enhancing customer satisfaction. Despite its advantages, social media comes with challenges. Negative comments or posts can quickly spiral into public relations issues, damaging a company's reputation. Maintaining an active and engaging social media presence is also time-intensive, requiring regular updates, creative content, and prompt responses (Wong *et al.,* 2018).

Empirical Review

Electronic Communication and Supply Chain Performance

Wang *et al.,* (2018) investigated the electronic mailing system in state corporations in Sri Lanka and adopted a cross sectional research design. Specifically, the study assessed the concept of e-mailing as an instrument meant to modernize, simplify, and improve the existing manual communication process. Findings found that there is a positive relationship between e-mailing and procurement performance. The study was conducted in Sri Lanka and therefore presents a contextual gap.

Wong *et al.,* (2018) scrutinized the institutional responses to electronic mailing in the public sector in UK and employed cross sectional research design. Findings revealed that despite being very different in form and function, every organization had already adopted bankers automated communication system (BACS). Besides, the following activities were being conducted electronically: online expression of interest, availing tender documents online and online vendor notifications to suppliers to settle bills. The study found a positive relationship between e-mailing and procurement performance; and further revealed that all five entities were actively planning to implement the following: e-tendering; e-award; e-contract and e-catalogue systems, but none had any intention of adopting e-marketplaces or e-auctions. The study reveals a contextual gap since it was conducted in UK.

Mose *et al.,* (2017) investigated the factors affecting procurement performance in the large manufacturing firms in Kenya and adopted a descriptive research design. The findings indicated that there is poor communication characterized by delays in payments of suppliers; poor planning and management of contracts is being experienced; projects takes long to complete; lack of procurement professionals; lengthy procedure of document processing; lack of proper mechanism for contract evaluation and monitoring. The study concentrated on procurement performance and not profitability, thus presenting a conceptual gap.

Githumbi (2017) scrutinized e-mailing readiness factors in Kenya's public sector agencies with an objective of determining the extent of e-communication levels in public institutions in Kenya. Findings of the study revealed that e-communication in the public sector have been implemented, though not fully. The study also found that procurement performance of firms that have adopted e-procurement has been significantly enhanced. Further, it was revealed that integrated financial management information system (IFMIS) and SAP software are majorly the only ERPs used by public institutions to procure online.

RESEARCH METHODOLOGY

Research Design

Research design is the plan or framework that is utilized to create answers to examiners issues (Bryman & Bell, 2017). For this study, descriptive research design and explanatory research design were utilized to investigate and additionally clarify existing status of affairs pertaining the objectives of a research. The major purpose of descriptive research design is to describe the state of affairs as it is at the time, and as Cooper & Schindler (2018) observe, a descriptive research design is a process of collecting data in order to answer questions concerning the current status of the subjects in the study in their natural set up, as they occur.

Research philosophy is the foundation of knowledge and the nature of that knowledge contains important assumptions about the way in which researchers view the world (Saunders, Lewis, &

Thornhill, 2017). This study adopted a positivist research paradigm. Cooper and Schindler (2017) asserts that positivist research paradigm takes the quantitative approach and is based on real facts, objectivity, neutrality, measurement and validity of results.

Target Population of the Study

Target population refers to the aggregation of elements from which the sample is selected (Rubin & Babbie, 2016). Retail chains in Kenya vary in size, ranging from large-scale operators to smaller, localized entities.

In this study, the target population was Large Retail Chains in Kenya. Large Retail chains typically refer to retail businesses that operate multiple stores across a region, country, or even internationally. In Kenya, 12 Retail Chains qualify to be in the category of large Retails. These include; Chandarana Retails, Eastmatt Retails, Carrefour Retail, Khetias Retails, Magunas Retails, Shivling Retails, Cleanshelf Retail, Woolmatt Retails, Jumaa Retails, Maathai Retails, Quick Mart Limited and Naivas Limited (KAM, 2023).

The large Retail chains formed the unit of analysis while the unit of observation was senior employees working in 4 departments including procurement department, logistics department, finance department, and ICT department. These employees included; (the head of department, assistant head, secretary and 2 lower management employees). Therefore, the target population for this study was 240 respondents as shown in Table 1.

Table 1: Unit of Observation

Category	Total population
Procurement Department	60
Logistics Department	60
Finance Department	60
ICT Department	60
Total	**240**

Sampling Frame

Sampling frame has been defined as the source from which the sample is drawn being the list of all the elements in the population (Noor, 2018). It is a list of members of the research population from which a random sample may be drawn (Kothari & Garg, 2014). For the current study, the sample frame incorporated the 12 Large Retail Chains in Kenya (Appendix IV) and their respective senior employees working in 4 departments including procurement department, logistics department, finance department, and ICT department (KAM, 2022). Therefore, the sampling frame

was a list of 240 respondents working in procurement department, logistics department, and ICT department from 12 Large Retail Chains in Kenya.

The Census Method is a research technique used to collect data from an entire population, rather than using a sample. In this method, data is collected from every individual or unit within the target population, leaving no room for sampling error. This study used census method hence all the 240 respondents participated in the study.

Data Collection Instrument

This study collected both primary and secondary data. Secondary data refers to information that has already been collected, processed, and made available for use by others (Mugenda & Mugenda, 2019). Secondary data in this study was collected from the annual reports of the Large Retail Chains in Kenya The study collected data for a period of 5 years from 2018-2022. For primary data, this study used semi-structured questionnaire. According to (Mugenda & Mugenda, 2018) questionnaire is a pre-formulated written set of questions to which the respondents record the appropriate responses as indicated and in accordance with the question's options provided if any.

Semi-structured questionnaires were structured into sections 1-3. Section one collected general information regarding the Retail Chains , while sections 2 collected information relevant to various study independent variable while section three targets information on Performance. The primary data was collected using a self-administered semi-structured questionnaire (Appendix II). The questionnaire contains both open and close ended questions based on the study objectives. According to Mugenda and Mugenda (2019), a questionnaire is appropriate for data collection from a large number of respondents as it helps to save on time spent in data collection. The researcher used semi-structured questionnaire as the primary data collection instrument for this study due to its practicability and applicability to the research problem and the size of the population. It is also cost effective (Denscombe, 2018).

Data Analysis and Presentation

Data analysis is the process where data is analyzed systematically and the process where the hypothesis is tested with the aim of acquiring some information. Because of difficulty in analyzing raw data collected from the field, cleaning, coding, entering, and analysing of the data was done first (Mugenda & Mugenda, 2018). Data from questionnaires will be coded and analyzed using the latest Statistical Package for Social Sciences (SPSS) computer software. SPSS software was used because of its ability to appropriately create graphical presentations of questions, data for reporting and presentation. The analyzed data was presented in the form of frequency distribution tables, pie charts and bar graphs where appropriate. The study employed mixed methods data analysis by applying the use of descriptive and inferential statistics.

The objectives of the study guided data analysis. SPSS was used to analyze the data collected from the field. To allow data to be entered into the software, the questionnaires were referenced, and the data coded. Both quantitative and qualitative data were collected. Quantitative data collected was analyzed using descriptive statistics techniques. Through descriptive analyses, correlational as well as experimental studies emerge; and they provide clues on the issues that require more attention which leads to further research (Mugenda & Mugenda, 2008). Qualitative data was analyzed using content analysis which was performed in SPSS. Before the data is analyzed, it was first coded, cleaned, and grouped as per their variables.

Pearson R correlation was used to measure strength and the direction of linear relationship between variables. The information provided initial achievement of electronic communication and influence on supply chain performance of Retail Chains. A large correlation implies a strong relation exists between the variables. The extent of the level of association between 2 variables is determined using correlation analysis (Levin & Rubin, 1998). Through correlation analysis, the researcher was able to detect if there exist any chances of multicollinearity. If the Correlation coefficient is zero, then it suggests the variables are not related, if the value is ±1 the variables are strongly associated (Hair et al., 2019). Small association is indicated by values ranging from 0.1-0.29, medium association is indicated by value ranging from 0.3-0.49, and strong association is indicated by value of 0.5 and above.

Multiple regression models were fitted to the data to determine how the predictor/independent variables affect the response/dependent variable. Multiple regression analysis was used in this study because it uses the predictor variables in predicting the response variable. It is a statistical tool attempting to establish whether some variables can be used together in predicting a particular variable (Mugenda & Mugenda, 2018).

The model was;

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where: β_1 is the regression coefficient of the predictor in the model

Y is supply chain performance of Large Retail Chains in Kenya.

X_1 is electronic communication

β_0 is a constant

ε is Error term (random variation due to other unmeasured factors)

ANALYSIS AND INTERPRETATION OF DATA

Descriptive Statistics Analysis

Electronic Communication and Supply Chain Performance

The first specific objective of the study was to examine the relationship between electronic communication and supply chain performance of Large Retail Chains in Kenya. The respondents were requested to indicate their level of agreement on statements relating to electronic communication and supply chain performance of Large Retail Chains in Kenya. The results were as presented in Table 2.

From the results, the respondents agreed that the use of electronic communication tools has enhanced their ability to meet delivery deadlines (M=3.957, SD= 0.875). In addition, the respondents agreed that electronic communication has contributed to cost savings in their supply chain (M=3.948, SD= 0.823). Further, the respondents agreed that they have seen a reduction in inventory discrepancies due to effective electronic communication (M=3.909, SD= 0.635).

The respondents also agreed that the speed of decision-making in their supply chain has increased due to electronic communication (M=3.804, SD= 0.671). Further, the respondents agreed that electronic communication has improved their supply chain's responsiveness to market changes (M=3.801, SD= 0.793). The respondents also agreed that the quality of their supplier relationships has improved due to better electronic communication (M=3.787, SD= 0.776). In addition, the respondents agreed that electronic communication has enabled better risk management in their supply chain (M=3.754, SD=0.823). Further, the respondents agreed that the integration of electronic communication tools has streamlined their supply chain processes (M=3.688, SD=0.867). The respondents also agreed that the organization has achieved higher levels of collaboration and information sharing with their supply chain partners through electronic communication (M=3.625, SD=0.753).

The standard deviations in these results provide insights into the consensus and variability among respondents regarding the impact of electronic communication on supply chain dynamics. Lower standard deviations, such as for the speed of decision-making (SD=0.671) and collaboration and information sharing (SD=0.753), indicate a strong consensus, suggesting these benefits are widely recognized and consistently experienced across the organization. Moderate standard deviations, like those for the quality of supplier relationships (SD=0.776) and responsiveness to market changes (SD=0.793), show general agreement but with some variability, indicating that while many respondents perceive improvements, their experiences may slightly differ. Higher standard deviations, such as for better risk management (SD=0.823) and streamlined supply chain processes (SD=0.867), suggest more diverse opinions, reflecting broader ranges of experiences or perceptions.

Table 2: Electronic Communication and Supply Chain Performance

	Mean	Std. Dev
The use of electronic communication tools has enhanced our ability to meet delivery deadlines.	3.957	0.875
Electronic communication has contributed to cost savings in our supply chain.	3.948	0.823
We have seen a reduction in inventory discrepancies due to effective electronic communication.	3.909	0.635
The speed of decision-making in our supply chain has increased due to electronic communication.	3.804	0.671
Electronic communication has improved our supply chain's responsiveness to market changes.	3.801	0.793
The quality of our supplier relationships has improved due to better electronic communication.	3.787	0.776
Electronic communication has enabled better risk management in our supply chain.	3.754	0.823
The integration of electronic communication tools has streamlined our supply chain processes.	3.688	0.867
The organization has achieved higher levels of collaboration and information sharing with our supply chain partners through electronic communication	3.625	0.753
Aggregate	**3.808**	**0.780**

Test for Hypothesis One

The first specific objective of the study was to examine the relationship between electronic communication and supply chain performance of Large Retail Chains in Kenya. The associated null hypothesis was that Electronic communication has no significant relationship with supply chain performance of Large Retail Chains in Kenya. A univariate analysis was conducted in which supply chain performance of Large Retail Chains in Kenya was regressed on electronic communication.

The R-Squared depicted the variation in the dependent variable that can be explained by the independent variables. The greater the value of R-squared the greater the effect of independent variable. The R Squared can range from 0.000 to 1.000, with 1.000 showing a perfect fit that indicates that each point is on the line. As indicated in Table 3, the R-squared for the relationship between electronic communication and supply chain performance of Large Retail Chains in Kenya

was 0.241; this is an indication that at 95% confidence interval, 24.1% of variation in supply chain performance of Large Retail Chains in Kenya can be attributed to changes in electronic communication. Therefore, electronic communication can be used to explain 24.1% of changes in supply chain performance of Large Retail Chains in Kenya but there are other factors that can be attributed to 75.9% change in supply chain performance of Large Retail Chains in Kenya.

Table 3: Model Summary for Electronic communication

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.491[a]	.241	.239	.69655

a. Predictors: (Constant), Electronic communication

The analysis of variance was used to determine whether the regression model is a good fit for the data. It also gave the F-test statistic; the linear regression's F-test has the null hypothesis that there is no linear relationship between the two variables. From the analysis of variance (ANOVA) findings in Table 4, the study found out that that Prob>$F_{1,218}$= 0.000 was less than the selected 0.05 level of significance. This suggests that the model as constituted was fit to predict supply chain performance. Further, the F-calculated, from the table (2085) was greater than the F-critical, from f-distribution tables (3.884) supporting the findings that Electronic communication can be used to predict supply chain performance.

Table 4: ANOVA for Electronic Communication

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.87	1	45.87	2085	.000[b]
	Residual	4.735	218	0.022		
	Total	30.605	219			

a. Dependent Variable: supply chain performance of Large Retail Chains

b. Predictors: (Constant), freight management security

From the results in Table 5, the following regression model was fitted.

$Y = 2.069 + 0.433 X_1$

(X_1 is Electronic Communication)

The coefficient results showed that the constant had a coefficient of 2.069 suggesting that if Electronic communication was held constant at zero, supply chain performance would be 2.069 units. In addition, results showed that Electronic communication coefficient was 0.433 indicating that a unit increase in Electronic communication would result in a 0.433 improvement in supply

chain performance. It was also noted that the P-value for freight Electronic communication coefficient was 0.000 which is less than the set 0.05 significance level indicating that Electronic communication was significant. Based on these results, the study rejected the null hypothesis and accepted the alternative that Electronic communication has positive significant influence on supply chain performance of Large Retail Chains in Kenya.

Table 5: Beta Coefficients for Electronic Communication

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.069	.174		11.881	.000
	Electronic communication	.433	.045	.491	9.723	.000

a. Dependent Variable: Supply Chain Performance

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Electronic Communication

The first null hypothesis test was 'Electronic Communication has no significant influence on supply chain performance of Large Retail Chains in Kenya. The study found that electronic communication is statistically significant in explaining supply chain performance of Large Retail Chains in Kenya. The influence was found to be positive. The study concludes that electronic communication has a positive and significant effect on supply chain performance of Large Retail Chains in Kenya. Findings revealed that company website, emails and social media influences supply chain performance of Large Retail Chains in Kenya. This implies that a unit improvement in electronic communication would lead to improvement in supply chain performance of Large Retail Chains in Kenya

Recommendations

The study found that electronic communication has a positive and significant effect on supply chain performance of Large Retail Chains in Kenya. This study therefore recommends that large retail chains in Kenya should implement integrated Electronic Data Interchange (EDI) systems to enhance communication across their supply chains.

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