International Journal of Management and Leadership Studies
2023; 4(3): 63-97
ISSN 2311-7575

SUPPLY CHAIN DIGITIZATION AND ORGANIZATIONAL PERFORMANCE IN KENYA: A CASE STUDY OF PHILAFE ENGINEERING LIMITED

1* Jonah Wafula Imbegah
2* Dr. Paul Machoka
[1]**MML Student**: Management University of Africa
[2] **Senior Lecturer:** Management University of Africa
Email: jimbegah@gmail.com; pmachoka@mua.ac.ke

ABSTRACT

This research aimed to identify determinants of supply chain digitization in the engineering, procurement, and construction industry in Kenya. The study examined the effect of finances, human resources, information technology, and management on organizational performance in the context of supply chain digitization. Institutional Theory and the Transaction Cost Theory guided the research. The study utilized a descriptive research design and collected primary data through structured online questionnaires administered to all 70 employees of Philafe Engineering Limited. Descriptive statistics and a multivariate regression model were used to analyze the data. The study found that adequate financial resources, skilled personnel, investment in IT infrastructure, suitable technologies, and strong management leadership are crucial for the success of supply chain digitization. The study recommends allocating sufficient financial resources, investing in the recruitment and training of skilled personnel, assessing the organization's IT infrastructure, and having strong leadership that supports supply chain digitization initiatives. The findings confirm the potential of supply chain digitization to revolutionize the industry by introducing new business models and increasing efficiency.

Keywords: *supply chain, digitization, and organizational performance.*

INTRODUCTION

A supply chain is a network of all players; individuals, organizations, resources, activities, and technology that participates in creating and sale of a product (Burt, Dobler, & Starling, 2003). It is a series of interconnected processes connecting producers and suppliers with end consumers and other stakeholders, such as businesses and government agencies. The supply chain drives economic growth by allowing producers and suppliers to exchange goods and services efficiently, thereby increasing economic output and efficiency. The

supply chain also connects people, ideas, and businesses, helping to facilitate the flow of information and ideas between them. It is therefore a key driver of the economy. It entails all processes and touchpoints from the delivery of the sourced material from the supplier to the manufacturer until the delivery of the product to the user at the end of the chain, and a possible return of the same, known as reverse logistics.

Digitization entails the revolution of the current business models, redesigning and transforming processes and operations of the supply chain. This entails changing processes and automating all manual activities. Supply chain digitization is possible by emerging technologies and innovation. It bridges the information gap and affords transparency in the entire supply chain (Dalenogare, Benitez, Ayala, & Frank, 2018). Supply chain digitization has enabled organizations to track, analyze, and plan more efficiently. It has made it possible to integrate demand forecasting and sales & operations planning (S &OP) in the supply chain's management, therefore, reducing operational and logistic barriers.

As organizations adopt digitization throughout industries globally, including the supply chain sector, it brings about unprecedented innovative technologies that transform the operations of supply chain networks, and other organizational business processes. In digitizing their processes, supply chains' main benefits are in terms of speed and cost. Technology-enabled processes significantly cut strategic decision-making time, while boosting operational efficiency. Digital processes see increased sales by improving pricing and optimizing operational costs (Gezgin, Huang, Samal, & Silva, 2017). Digitization has affected the supply chain sector in various ways: it has shortened supply chain distances, reduced the cost of transportation and communication, and increased the speed of delivery. However, digitization has also exposed supply chain companies to increased cybersecurity vulnerabilities and has caused supply chain inefficiencies.

In the United States, (Sarkis, Kouhizadeh, & Zhu, 2020), investigated the digitalization and greening of supply chains. This study provides insights into the role of traditional economics, digitalization and information technology in promoting the business environment, while considering the trade-offs and contradictions between digitalization and

environmental considerations. The authors use primary data and information from Industrial Management Data System (IMDS) studies published in this journal over the past 50 years. The authors provide a focused and detailed analysis of research directions, paving the way for related research questions and theoretical needs for examining the relationship between digitalization and green metal supply chain management. They combine the two concepts with best practices and conduct research on leadership, new information technologies and digitalization. Their reflections concluded with a summary and ways forward. Additionally, (Chauhan, et al., 2022) conducted a study on Digitalization of Supply Chain Management through Industry 4.0 Technologies: A Sustainable Perspective. This study explores the importance and application of Industry 4.0 to enable effective copy product (SCM) development by leveraging technologies such as IoT, AI, cloud computing, block chain, big data, and digital twins. Integrating these technologies facilitates real-time search, inventory optimization, digital marketing, demand analysis, and inventory management. The study recommends integrating technologies such as block chain, AI, and digital twins into SCM relationships. Furthermore, this article presents the limitations of sustainable SCM and directions for future research. The United Nations has highlighted the importance of future sustainability, and this study concludes that technologies supporting the 4.0 economy can play a key role in brand security success across multiple functions.

In Asia, (Chiu & Liu, 2021) presented a research model to study the relationship between supply chain digitalization, supply chain integration and market performance. An online survey was conducted among Chinese employees (N=264) working in the supply chain. Data were analyzed with a partial least squares model equation. Modeling using SmartPLS 3.0 (PLS-SEM). The results show that digitalization and product integration are good for business. The relationship is also partially restored by the integration of connected devices. Between digitalization of the supply chain and commercial operations. Digitalization has a positive impact on the relationship between supply chain integration and sustainability. These results fill a gap in current research. The information is relevant to the control of controls. More specifically, this study indicates that the drug brush can support the best resources in sight and the work provided.

In Europe, (Anosi, Brunetta, Bimbo, & Kostoula, 2021)studied how digital technology can be used to prevent food waste in the Greek food industry. The study includes interviews with a sample of companies operating in the Greek food industry to understand their use and knowledge of technology in their products. The findings reveal the challenges and drivers of collective efforts to prevent food waste in the food industry and reveal insight into how technologies have affected the organization of work within and across companies. This study highlights the need for collaboration among stakeholders with digital thinking and decision-making processes, shared expertise and vision, and trust. Digital tools such as big data analytics and block chain can help prevent food waste by promoting chain integration and traceability. These findings have implications for businesses looking to digitize their products and prevent food waste. Limitations include limited size and limited number of views.

In Kenya, (Makokha, 2017) studied the impact of the digitalization of delivery on employment in the public sector. The specific objective was to establish the impact of digital marketing-communication on organizational performance, to study the impact of digital order on organizational performance, to determine the impact of digital competition on organizational performance and determine digital effectiveness. The process to create management contract for the operation of the public sector Kenya Electric Power Company. The study adopts a descriptive approach to establish the benefits of supplier digitalization within the organization operating at Kenya Power. A large sample of 30% (162 respondents) was selected from the 10% target population of 540 suppliers and supply chain workers. Data was collected from the respondents through questionnaires. The collected data were analyzed using the Statistical Analysis System (SPSS) and presented in the form of tables and figures, and the descriptions were written in qualitative language.

The study found that any independent change in supplier digitalization affects Kenya Power's organizational performance and therefore plays a vital role in Kenya Power's supply chain. The study found that for Kenya Power to benefit from a smooth process through faster digitalization of its suppliers' equipment, Kenya Power must ensure that its equipment is integrated and the consumer understands the benefits arising from the use of

technologies such as want to do. Suppliers are using digitalization for procurement processes that include digital tendering, digital fulfillment, contract management, as well as digital marketing communications to create efficiencies and business performance throughout the organization's supply chain. For employees, management should emphasize the importance of efficient payment through an online process that supports a transparent process.

GENERAL OBJECTIVE OF THE STUDY

This study's general objective was to identify the effect of supply chain digitization on organizational performance in Kenya with specific reference to Philafe Engineering Limited a player in the engineering, procurement, and construction sector.

Specific objectives

The following specific objectives guided the study;

i. To assess the effect of finance in supply chain digitization on organizational performance in Kenya.
ii. To assess the effect of human resources in supply chain digitization on organizational performance in Kenya.
iii. To examine information technology's effect in supply chain digitization on organizational performance in Kenya.
iv. To assess the effect of management in supply chain digitization on organizational performance in Kenya.

Research questions

i. How does finance in supply chain digitization affect organizational performance in Kenya?
ii. To what extent do human resources in supply chain digitization affect organizational performance in Kenya?
iii. What is the information technology effect in supply chain digitization on organizational performance in Kenya?
iv. How does management in supply chain digitization affect organizational performance in Kenya?

LITERATURE REVIEW

Institutional Theory

Goguen and Burstall established institutional theory in 1984. This theory focuses on the importance of an organization's environment in shaping its structure and actions and considers the process by which structures that include rules, norms, and routines become established as authoritative guidelines for societal behavior. It considers how to create and establish these factors over time to ensure a stable and organized environment and put in place processes that can resolve conflict, make reforms, amend, and ensure change in society (Jonge, 2015).

Institutional theory focuses on how institutions carry over being the same or change with time. Business environment changes force organizations to innovate and adapt. According to the theory, organizational decisions not only depend on the need for efficiency but also on cultural & social factors and the need to be accepted (Braton & Ahlstrom, 2015). Social, political, economic, and technological external factors, and decision-making within influence the organization's strategies to appeal to stakeholders. In this study, we adopt the theory in explaining changes brought about in organizations by social values and regulations that affect decisions on technological advancements. There is a consideration of what kind of role technology plays in the process of this change or persistence.

Transaction Cost Theory

(Andreea-Oana, 2021) Introduced the theory of transaction cost, which postulates that organizations expand to make some products in-house at reduced costs that are lower than when the same is outsourced. In reducing transaction costs, which are costs of participating in a market, Information Technology allows firms to obtain products at lower costs externally than in-house. Originating from Ronald Coase’s conceptual innovation, transaction cost theory describes a governance framework based on the difference between

internal and external transactions. Dealing with another entity will lead to costs, for example, information costs in finding a supplier, negotiation, and decision costs in purchasing a product, and costs of managing and enforcing the contract (Kaplan, 2021).

Thus, digitization can help firms increase revenue with reduced firm size. Traditionally, firms grew to cut transaction costs. In a modern digital firm, information technology lowers the cost for a given size of a firm. This implies a possibility of revenue growth with the same size of an organization or even on reduced firm size Information technology is a factor of production that can substitute capital and labor from an economic viewpoint. Information technology enables production process automation leading to lower capital and labor requirements for a particular output (Laudon & Laudon, 2006).

According to (Eronde & Muturi, 2020), demand for an increasingly complex range of products and services from customers is growing rapidly, and manufacturers are under increasing pressure to meet that demand. To do so, they are turning to digital technology and are as a result making significant changes to both their supply chain processes and the way their factories operate. The ability of technology to improve supply chain efficiency and its role in the supply chain has become a key point of focus for many in the global manufacturing sector. Digitization is having a significant impact on how supply chains operate. For example, digitization is improving the ability of the supply chains to respond quickly to disruptors. It has also led to process automation and improved decision-making with greater accuracy and efficiency. Technology is changing supply chain processes and how companies are managing those changes.

The transaction cost theory of the firm proposed by Coase in 1937 maintains that firms should internalize the transaction cost of all aspects of their business operations (Apwoka, 2018). An important aspect of internalization is the decision to “internalize” the exchange and transaction cost of a transaction by removing them from the transaction itself and charging customers a markup, or price markup, on that exchange cost. The exchange cost is the cost of the goods and/or services exchanged in the transaction, while the transaction cost is the additional cost of negotiating, performing, and closing the transaction. Other

fields, such as law and political science, use transaction cost theory to explain how regulations and laws affect the economy.

The study of the costs and benefits of economic transactions is known as transaction cost economics (Peter, 2020). Transaction cost economics focuses on the costs and benefits associated with the economic transaction, rather than on the raw economic value of the transaction itself. This perspective allows transaction cost economists to identify the factors that increase or decrease the economic value of a transaction. This knowledge can then be used to design policies that increase the economic value of transactions while minimizing the costs that impede transactions.

(Meru & Kinoti, 2022) Stated that the transaction cost theory provides an economic framework for understanding why some organizations, such as a business, can produce more goods or services with fewer resources than others can. The theory explains why a business can be profitable despite producing a product or service that is less desirable than those of its competitors are and why some organizations, such as nonprofit organizations, can produce large quantities of high-quality goods or services with small amounts of resources. The transaction cost theory also explains why, at certain times and in certain circumstances, it is more beneficial for an organization to produce a smaller quantity of high-quality goods or services with larger amounts of resources than to produce a larger quantity of low-quality goods or services with smaller amounts of resources.

(Mukkherjee & Chittipaka, 2021) Said that the transaction cost theory applies to many different industries, such as transportation and international trade. The transaction cost theory has had many threefold effects: it provides a theoretical framework for understanding the scarcity of resources in the marketplace, it raises awareness of the importance of the transaction cost, and it has led to the development of business practices that reduce the transaction cost. For example, when transaction costs are high, some firms may choose not to invest in the production process, such as by hiring additional workers, which can reduce the overall production and increase demand for consumer goods. The

transaction cost theory has also provided a theoretical framework for identifying the costs of business functions, such as the cost of collecting a paper bill.

According to (Awinja & Fatoki, 2021), the transaction cost theory of the firm transforms the way we rationalize and analyze the costs of doing business. It has advanced our understanding of how firms allocate resources to generate profit. The transaction cost theory of the firm is a branch of economic theory that studies the cost of doing business. The transaction cost theory of the firm proposes that firms incur transaction costs when performing various business functions.

The transaction cost theory has had a significant impact on the field of business, as it has led to the development of new business practices and ways of thinking about old ones. For example, the transaction cost theory has led to the development of the lean business, which seeks to reduce the transaction cost in the business. The transaction cost theory has also led to the development of lean manufacturing, which seeks to reduce the transaction cost in the manufacturing process (Song, 2021). Finally, according to (Song, 2021), businesses have begun to offer free shipping instead of charging customers a shipping fee. This reduces the transaction cost for customers, which has increased demand and increased the profit of the business.

Effect of finance on Supply Chain Digitization

(Be Nguema, Adom, Chen, Eze, & Song, 2020) investigated various internal financial and operational issues that strongly push firms to search for solutions that would sustain supply chain operations and effectiveness. The study aimed to propose how information sharing, external collaboration, digitization, and financial institutions enable manufacturing firms to adopt Supply Chain finance that, in turn, improves the supply chain effectiveness. The study administered questionnaires to 177 supply chain managers in Chinese manufacturing firms and found that all four factors positively related to the adoption of Supply Chain finance, which in turn enhances supply chain effectiveness. More so, supply chain finance mitigates supply chain risk, thus leading to improved supply chain effectiveness.

According to (Hofmann & Rusch, 2017), financial management entails planning for the future of a business enterprise to ensure a positive cash flow. Financial management involves planning, organizing, directing, and controlling financial activities such as the procurement and the utilization of funds of the enterprise. From an organizational point of view, the process of financial management is associated with financial planning and financial control. Financial planning seeks to quantify various financial resources available and plan the size and timing of expenditures.

(Roussy, Barbe, & Raibault, 2020) note that the Internal Control System resembles the human nervous system, which spreads throughout the business carrying orders and reactions to and from the management. In this concept, by measuring and evaluating the effectiveness of organizational controls, internal auditing, itself, is an important managerial control device, which links directly to the organizational structure and the general rules of the business. In today's business environment, internal auditors are now providing management with a far broader range of information concerning the organization's financial, operational, and compliance activities to improve the effectiveness, efficiency, and economy of management performance activities.

(Lessambo, 2018)explains that financial statements (or financial reports) are formal records of the financial activities of a business, person, or other entity. Financial statements provide an overview of a business or person's financial condition in both the short and long term. All the relevant financial information of a business enterprise presented in a structured manner and in a form easy to understand is a financial statement. Financial statements have different purposes: owners and managers require financial statements to make important business decisions that affect their continued operations. Financial analysis is then performed on these statements to provide management with a more detailed understanding of the figures. These statements are part of management's annual report to the stockholders. Employees also need these reports in making collective bargaining agreements (CBA) with the management, in the case of labor unions, or for individuals in discussing their compensation, promotion, and rankings. Government entities (tax authorities) need

financial statements to ascertain the propriety and accuracy of taxes and other duties declared and paid by a company.

Effect of Human Resources on Supply Chain Digitization

The exponential increase in data generated in the modern economy has made data the new currency, and organizations are increasingly dependent on having access to a sufficient amount of it. One of the primary ways organizations obtain data is by using their human resources, which has enabled them to leverage their existing workforce to complete digitization projects. However, the widespread adoption of technology has also led to a decrease in the need for people to handle traditional tasks such as data entry and processing (Wickramasuriya & Kurukulasuriya, 2021). The introduction of technology into the workforce has had a profound impact on how workers perform their jobs. In the past, human resources were the primary focus of a company when it came to staffing. Today, technology has enabled the automation of many human resources tasks. This has had a profound impact on how companies operate (Pamungkas, Abubakar, & Shalahuddin, 2021).

Human resources are a key component of any supply chain, and the ability of a company to recruit and retain talent is critical to its success. In today's competitive labor market, companies must invest in their employees to ensure they have the most skilled and committed workforce possible. At the same time, companies are increasingly looking to technology for improvement in supply chain efficiency, and investing in technology is often one of the best ways to increase labor productivity. Supply chain technology is in a position to improve the efficiency of freight movement and logistics networks, reducing the amount of energy and resources required to transport goods and enabling companies to understand their product supply chains better (Zhang, Li, Wang, & Yu, 2021, 10(1)).

In understanding the relationship between digitization, human resources, and supply chain performance, an analysis was done on how digitization affected both labor productivity and the supply chain management process. Data from the U.S. Bureau of Labor Statistics shows

that digitization increased the labor productivity of the supply chain. Whether it is optimizing freight movement by automating payments and disbursements or improving collaboration by enabling instant messaging, the impact of supply chain digitization on an organization's success is undeniable. Organizations face challenges in their quest to digitize their supply chain, and we discuss potential solutions to these challenges. During the pandemic, U.S. manufacturers were able to produce only about 5 percent of the raw materials they used before. China also faced challenges, with several factories closed. To meet demand, producers turned to other sources across the globe (Fuseini, 2021).

The role of business leaders is to create business value for their organizations by helping their supply chain be more efficient and effective, offer a better customer experience, increase profitability, and drive growth. Keeping with this, the role of HR in the supply chain has evolved to that of a strategic partner who helps drive business success by maximizing employee potential, accelerating talent development, and driving operational excellence. HR has always worked closely with supply chain executives to align the strategic and operational goals of the company with its human capital goals. The role of HR in supply chain planning, supply chain execution, and asset optimization is also evolving as companies seek to become more relationship-oriented and manage their people as a key input (rather than a cost) in the supply chain (Gupta, Batra, & Sachdeva, 2021).

Human resources leaders have a unique opportunity to create strong, long-lasting relationships with people by helping them maximize their potential and build a career path that makes them proud. In this era, the role of the chief executive officer of companies has evolved. It is no longer limited to managing a company's operations; rather, CEOs are also responsible for their employees, their stockholders, and their customers (Soni, 2021). Improving organizational effectiveness and driving retention is key. With this in mind, and with a proven record of accomplishment in helping companies realize the value of their people, it is natural for companies to turn to HR when they are looking for ways to improve performance, advance leadership, and enhance experiences for their people. During the pandemic, business leaders faced challenges in finding new ways to shield their supply chains from disruptions. As a result, businesses are re-evaluating their supply chain

strategies and looking to tech to help. To do that, they must first understand the entire supply chain and the ways to improve it. This requires that they not only know where their products come from but also who is producing them and how (Hassan, 2021).

Today's supply chains are in an information age. Organizations rely on the accuracy and availability of data for better planning and supply chain management, this leads to effective inventory management shipping and tracking, and even personnel management. Therefore, it is vital to digitize the supply chain for the organization's competitiveness. Organizations should therefore embrace new and developing technologies. The Internet of Things (IoT) has enabled connectivity in supply chain management. It has fostered more accurate, responsive, and accessible data management and analytics, in addition to connecting systems and solutions. Digitizing the supply chain through IoT leads to a wider range of collecting, sorting, and evaluating data that affords better decisions (Nikolic, Stojanovic, & Wirnsperger, 2018).

Several studies have found positive relationships between human resource management practices and different measures of company performance (Mira, Choong, & Alias, 2022). For example, a significant relationship was found between the organization's use of human resource staffing practices and both annual profit and profit growth across a cross-section of industries. Likewise, there is a link between systems of high-performance work practices and firm performance. Also, between recruitment training and firm performance, using a survey instrument for traditional human resource management activities (recruitment, selection, performance management, training, compensation, and employee relations) and using independently collected organizational performance data focusing on human resource management practices (Wang, Chen, & Lawler, 2021).

According to (Juan, Zhang, & Jia, 2022), human resource management activities can influence an organization's performance through the improvement of employees' skills, selection and training, and the increase of employee motivation compensation. Human resource practices enhance organizational effectiveness and performance by attracting, identifying, and retaining employees with knowledge, skills, and abilities and getting them

to behave in a manner that will support the mission and objectives of the organization. Thus, the effectiveness of human resource management practices depends on how they create the appropriate attitudes and behaviors in employees, in addition to their implementation.

According to (Halbast & Atan, 2019), human resource management practices influence employee skills through the acquisition and development of a firm's human capital. "Human capital corresponds to any stock of knowledge or that contributes to his or her productivity. Recruitment procedures that provide a large pool of qualified applicants will have a substantial influence over the quality and type of skills that new employees possess. Providing formal and informal training experiences, such as basic skill training, on-the-job experience, coaching, mentoring, and management development, can further influence employees' development. Human resource management practices can influence employees using valid selection methods to hire appropriately skilled employees and through comprehensive training to develop current employees. Even highly skilled will not perform effectively if they are not motivated. Managers can use human resource management practices the motivate employees to work both harder and smarter (Dede, 2022).

Effect of Information Technology on Supply Chain Digitization

(Nashiruddin & Susanti, 2021), stated that Information Technology (IT) is a key growth area in this century, specifically in a dynamic and highly competitive business environment, which requires utilizing advanced IT tools to improve efficiency, cost-effectiveness, and deliver high-quality products and services to customers. It is a tool for marketing, contacting customers, and looking for possible customers, as well as presenting IT services as distinguished potential services for customers. According to (Kapelko, Lansink, & Stefanou, 2021), organizations are increasingly using information technology to develop solutions for business problems, to improve both the efficiency and effectiveness of the decision-making process, to enhance productivity and service quality, to achieve dynamic stability, and to compete for new markets. He noted that although information technology has evolved over a considerable period, it has emerged as an important tool in the management of organizational operations.

Many companies have turned to technology to improve their supply chains and increase efficiency. The most common use of technology in supply chains today is in logistics, which refers to the movement of goods from the point of origin to the point of consumption. The use of technology in logistics has had a positive impact on the efficiency of supply chains, mainly in reducing the time goods spend in transit and improving the accuracy of information about where goods are located at any given time (Kapelko, Lansink, & Stefanou, 2021).

(Kiratu, 2020), mentioned that the advent of information technology has revolutionized the way companies conduct business. One of the most significant advances in information technology is in the supply chain, which has been transformed by digitization. Supply chain digitization improves supply chain visibility, which in turn improves marketing, sales, and distribution outcomes. The digital age has had a huge impact on business operations. The benefit of digitization is that it allows supply chains to be more efficient and improves the speed at which we deliver products to customers (Kiratu, 2020). Supply chain digitization also opens new possibilities for supply chain management and, in particular, traceability.

Effect of Management in Supply Chain Digitization

(Kawiana, Dewi, Hartati, Setini, & Asih, 2021)argue that leadership is the ability to ensure subordinates cooperate and work productively to achieve goals. It is a process, a gradual and continuous activity meant to achieve some goal. It is about interacting with people, intended to achieve success. Strategic management practices include being familiar with the organization's strategic position choosing a strategy for the future and managing the strategy in action. The term "strategic management" underscores the importance of managers concerning driving or leading the strategy. From experience, strategies do not happen by accident. Strategies involve human resources in an organization that makes decisions, formulate, and implement strategy (Johnson, 2020).

Strategic management practices require managers at all levels of the firm to interact in planning, implementation, and evaluation. The process involves business, functional level planners, corporate, and support personnel. At every functional level, the strategic activities

are more narrow, specific, action-oriented, short-term, and with lower risk but few opportunities. (Kunc, 2019)'s definition reveals the following factors: determining the mission, developing an organization profile, appraisal of the internal and external environment, setting objectives, developing and choosing a strategy, and implementing and monitoring the strategy. The strategic decisions and actions require top management support, substantial allocation of resources, and are future-oriented. It considers both the internal and external environment and usually has multi-functional and multi-business consequences.

In his work, (Ekpen, 2017) set out to explore the consequences of the digital age on Leadership and management in general. At a conference held at Legon Accra, Ghana, they argued that the availability of information digitally causes people to quickly synthesize the kind of information and create new solutions. They countered that digitization also brings about challenges in the form of security, privacy, and social issues. The rise of digitization has created change in the workplace that requires the availability of technical skills.

Powerful, convenient analytical tools help in compiling large sets of data without predefined data models, extracting useful insights from them. Artificial intelligence applications can find performance problems and link them to their root causes without human intervention; they can predict declines and recommend corrective measures to decision-makers or managers. Action can be taken on critical decisions instantly, with integrated systems acting across functions, an example being from sales and operations planning (S&OP) into other functions and from the strategic level down to business-unit or operational managers (Gezgin, Huang, Samal, & Silva, 2017).

This means the latest digital technologies comprehensively transform organizational supply chain operations. Digital transformation entails employing artificial intelligence, analytics, the Internet of Things, robotics, and other advanced technologies in the organization to collect and process information without human intervention to enhance decision-making, support other activities, or automate the activities. A supply chain digital transformation entails establishing a vision of how digital applications improve service, agility cost, and

inventory levels and always implementing processes and organizational changes using these technologies for operational excellence (Gezgin, Huang, Samal, & Silva, 2017). Data integration ensures decision-makers can foresee and forecast scenarios and simulate situations critical for planning schemes for production programs. Advanced analytics and other technology-enabled reporting platforms make digitized supply chains a critical component for organizations with high volumes of veracious data in today's global supply chain.

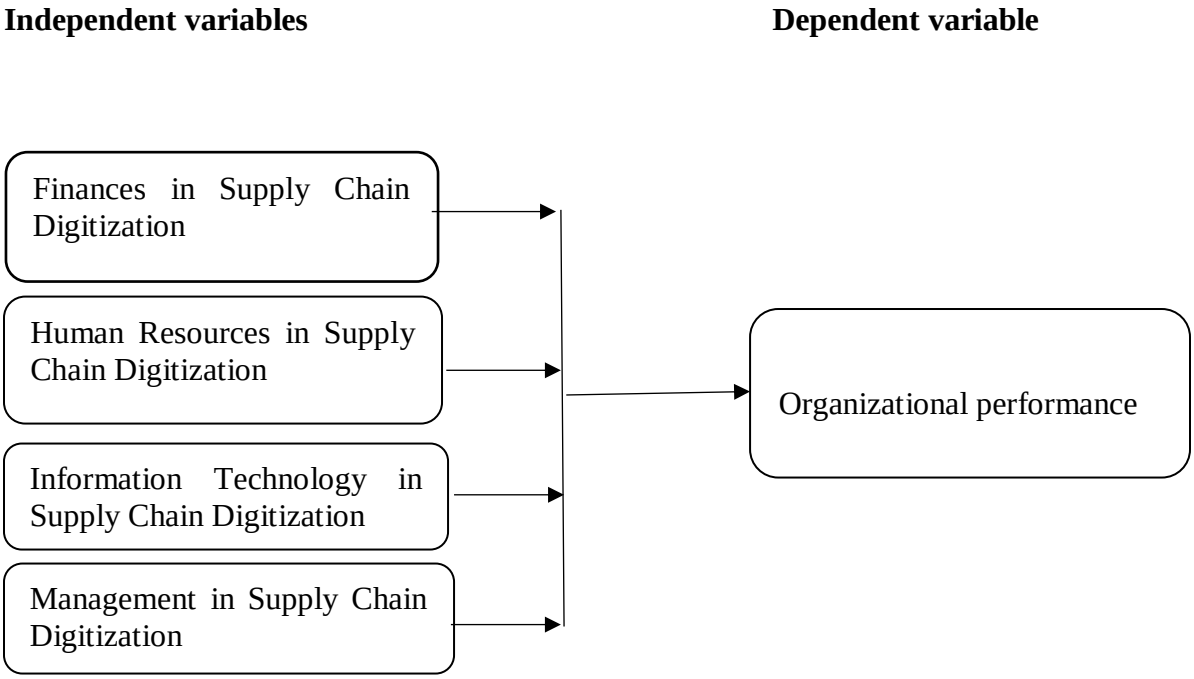

Figure 1: Conceptual Framework

METHODOLOGY

The study utilized a descriptive research design. Descriptive research describes characteristics about the population or phenomenon studied, answering who, what, when, where and how questions (Mugenda & Mugenda, 2003). The design enabled important data collection done using questionnaires and interviews from respondents. The descriptive design was adopted because it aims to gather data without any manipulation of the research context, thus describing various events and then organizing data collection (Kothari, 2018).

Descriptive research design visualizes phenomena in its natural state used to justify current practice, make judgments, and develop theories (Cresswell, 2008). The research design addressed important aspects relating to the research study such as purpose and scope of study, the type of investigation, the extent of researcher interference, the time horizon, and the unit of analysis (Sekeran & Bougie, 2010). The target population was Philafe Engineering Limited's staff divided into various departments.

Table 1: Target Population

Serial	Category	Population	Percentage
1	Executives	3	4%
2	Corporate Risk& Internal Risk	4	6%
3	Operations	38	54%
4	Marketing &Technical Sales	3	4%
5	Supply Chain	6	9%
6	Finance	6	9%
7	Administration &Human Resource	10	14%
	Totals	**70**	**100%**

Source: (Author, 2023)

The population is in one location and small (70 employees), therefore, a census was carried out targeting all the employees across the departments at Philafe Engineering Limited. The researcher used an online questionnaire to collect data for this study. According to (Mugenda & Mugenda, 2003), a questionnaire is a series of questions posed to obtain statistically useful information on a given topic. The study was based on primary data, and the questionnaire consisted of open and closed-ended questions. A five-point Likert Scale was used in measuring the level at which the respondents agreed on various statements. The scale was coded as follows: 1 = to No Extent, 2 = Small Extent, 3 =to a Moderate Extent, 4 = Great Extent, and 5 = Very Great Extent.

Data was analyzed using descriptive statistics by statistical package for social sciences (SPSS). A multivariate regression model was used to study the relationship between

finance, human resources, information technology, and management leadership in supply chain digitization and organizational performance.

The multi-regression model was as follows:

$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \varepsilon$ Where;

Y = Organizational Performance;

$\beta 0$ = Constant Term;

$\beta 1$, $\beta 2$, $\beta 3$, and $\beta 4$ = Beta coefficients; the regression coefficient or change introduced in Y by each independent variable

X1 = Finance in Supply Chain Digitization;

X2 = Human Resources in Supply Chain Digitization;

X3 = Information Technology in Supply Chain Digitization

X4 = Management in Supply Chain Digitization;

ε = Error term explaining other variables that affect organizational performance but are not part of the model.

FINDINGS

The study set out to use all the 70 employees of Philafe Engineering. Fourteen of the respondents were used in the pilot study and therefore were not included in the final study. Fifty-one (51) questionnaires issued to the remaining 56 employees were filled accounting for 91% return rate.

Table 2: Demographic Findings

Demographic Information		Frequency	% Percentage	Total	Total Percentage
Gender	Male	36	70.6		
	Female	15	29.4	51	100
Age	18-24 Years	6	11.8		
	25-30 Years	14	27.5		
	31-36 Years	15	29.4		
	37-42 Years	6	11.8		
	43-49 Years	5	9.8		
	50 Years +	5	9.8	51	100
Education	Craft/ Certificate	6	11.8		
	Diploma	12	23.5		
	Undergraduate	17	33.3		
	Masters	10	19.6		
	PhD	6	11.8	51	100
Service	0-2 Years	12	23.5		
	2-5 Years	18	35.3		
	5-8 Years	10	19.6		
	8-10 Years	6	11.8		
	Above 10 Years	5	9.8	51	100

Source (Author, 2023)

The research conducted on Philafe Engineering Limited in Kenya aimed to assess the demographic profile of respondents in terms of age distribution, education level, and length of service; it also looked to examine the effect of supply chain digitization on organizational performance.

Regarding the gender distribution, the study found that out of the total 51 respondents, 70.6% (36 individuals) were male, while 29.4% (15 individuals) were female. This indicates a larger proportion of male respondents in the study, suggesting that the research was primarily representative of male employees at Philafe Engineering Limited. However, the study also acknowledged the presence of female respondents and emphasized its gender sensitivity.

In terms of age distribution, the study categorized respondents into six age groups. The largest age group was 31-36 years, representing 29.4% (15 individuals) of the total respondents. This suggests a significant representation of individuals in their early to mid-thirties in the study. The age group of 25-30 years followed closely, accounting for 27.5% (14 individuals), indicating a substantial presence of young professionals. Other age groups, including 37-42 years, 18-24 years, 43-49 years, and 50 years & above, each comprised a smaller proportion of the respondents. This diverse age distribution allowed for insights from individuals at different stages of their professional journeys.

Regarding the highest level of education, the study found that 33.3% (17 individuals) of the respondents held an undergraduate degree, the largest proportion among the respondents. This was followed by diploma holders at 23.5% (12 individuals), individuals with a master's degree at 19.6% (10 individuals), those with a craft/certificate qualification at 11.8% (6 individuals), and individuals with a PhD at 11.8% (6 individuals). This indicates a wide range of educational backgrounds among the respondents, contributing to a comprehensive understanding of the research topic.

In terms of length of service, the study found that the largest proportion of respondents, 35.3% (18 individuals), reported having 2-5 years in the organization. This was followed by individuals with 0-2 years of service at 23.5% (12 individuals), 5-8 years of service at 19.6% (10 individuals), 8-10 years of service at 11.8% (6 individuals), and above 10 years of service at 9.8% (5 individuals). The diverse range of length of service among the respondents allowed for insights from professionals at different stages of serving in the company.

Finances in Supply Chain Digitization

The study assessed the effect of finances in supply chain digitization on organizational performance. The respondents' perceptions varied, with the highest percentage (23.5% or 12 individuals) believing that a great extent of financial investment is required. This was followed by moderate extent (29.4% or 15 individuals), small extent (17.6% or 9 individuals), very great extent (17.6% or 9 individuals), and no extent (11.8% or 6

individuals). These differing perceptions provide valuable insights into how they perceive financial investments in relation to supply chain digitization and its impact on organizational performance.

Human Resources in Supply Chain Digitization

Approximately 27.5% of the respondents, comprising 14 individuals, believe that human resources have a moderate extent of influence on the supply chain digitization and organizational performance in Kenya. They perceive human resources as a factor that plays a noticeable role in driving improvements and optimizing the performance of the supply chain within organizations.

Furthermore, 25.5% of the respondents (13) expressed the view that human resources have a great extent of influence on the supply chain digitization and organizational performance. They attribute significant importance to human resources in driving positive outcomes and shaping the success of digitization efforts in the supply chain.

On the other hand, 19.6% of the respondents (10) stated that human resources have a small extent of influence on the supply chain digitization and organizational performance. While acknowledging some impact, they consider it relatively limited compared to other factors influencing supply chain outcomes.

In contrast, 17.6% of the respondents (9) believe that human resources have no influence on the relationship between supply chain digitization and organizational performance. They perceive human resources as having little to no effect on the effectiveness or performance of the supply chain in the organizational context.

Moreover, 9.8% of the respondents (5) indicated that human resources have a very great extent of influence on the supply chain digitization and organizational performance. They recognize the critical role played by human resources in driving significant transformations and achieving exceptional performance in the supply chain domain.

These findings highlight the divergent opinions among the respondents regarding the influence of human resources on the relationship between supply chain digitization and organizational performance. While a substantial portion of the respondents recognizes the importance of human resources, others hold differing views, ranging from small to no extent or a very great extent of influence.

Information Technology in Supply Chain Digitization

Approximately 29.4% (15) of the respondents believe that information technology has a notable influence on the supply chain digitization and organizational performance in Kenya, ranging from a moderate extent to a great extent. These individuals recognize the significant role played by information technology in enhancing supply chain processes and improving overall organizational performance.

On the other hand, 19.6% (10) of the respondents perceive information technology to have a minor impact on the supply chain digitization and organizational performance. They acknowledge the presence of some effect, but consider it relatively limited compared to other factors at play within the supply chain context.

In contrast, 11.8% of the respondents (6) expressed the view that information technology has no impact on the relationship between supply chain digitization and organizational performance. They believe that information technology does not significantly contribute to the improvement or transformation of the supply chain processes or the overall performance of the organization.

Furthermore, 9.8% of the respondents (5) indicated that information technology has a very significant impact on the supply chain digitization and organizational performance. They recognize the crucial role of information technology in driving substantial improvements within the supply chain, leading to enhanced organizational performance.

These findings highlight the divergent opinions among the respondents regarding the influence of information technology on the relationship between supply chain digitization and organizational performance. While a considerable portion of the respondents

acknowledges the significant impact of information technology, others hold differing views, ranging from minor to no impact.

Management in Supply Chain Digitization

Approximately 25.5% (13) of the respondents expressed a strong belief that management in supply chain digitization has a substantial influence on organizational performance in Kenya. They perceive effective management as a crucial factor in driving positive outcomes in the context of supply chain digitization.

Another 23.5% (12) of the respondents indicated a moderate extent of influence of management in supply chain digitization on organizational performance. While not perceiving management as a primary driving force, they still recognize its relevance and impact on the overall process.

Furthermore, 21.6% (11) of the respondents expressed a view that management in supply chain digitization has a very significant impact on organizational performance. They attribute a high degree of importance to strong leadership in effectively implementing and managing the digitization efforts within the supply chain, which subsequently leads to improved organizational performance.

In contrast, 17.6% (9) of the respondents indicated that management in supply chain digitization has a minimal impact on organizational performance. These respondents believe that factors other than management play a more significant role in determining the success of digitization efforts in the supply chain.

Lastly, 11.8% (6) of the respondents expressed the belief that management has no impact on the relationship between supply chain digitization and organizational performance. This group perceives management as inconsequential in driving the desired outcomes in the context of digitizing the supply chain.

These findings highlight the divergent opinions among the respondents regarding the role of management in the relationship between supply chain digitization and organizational performance. It suggests that while a significant portion of the respondents recognizes the importance of effective management, others hold differing views, ranging from moderate to no impact.

Table 3: Multiple Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df 1	df 2	Sig. F Change	
1	.996[a]	.992	.991	.84864	.992	1425.888	4	46	.000	1.848
a. Predictors: (Constant), Finance, Human Resources, Information technology, Management in Supply Chain Digitization										
b. Dependent Variable: Organizational Performance										

The study aimed to assess the impact of supply chain digitization on organizational performance, specifically focusing on Philafe Engineering Limited in Kenya. The researchers employed a linear regression analysis to model this relationship and evaluated the coefficients of Management, Human Resources, Finance, and Information Technology on Supply Chain Digitization and Organizational Performance. The regression model showed a high degree of predictability, with the independent variables accounting for 99.1% of the variation in the dependent variable.

The findings supported the idea that supply chain digitization has the potential to revolutionize the industry by introducing new business models and enhancing efficiency. However, the supply chain sector in Kenya remains largely paper-based, limiting the ability to digitally track and trace products, inventory, and logistics. The transformation from physical to digital supply chains has the ability to reduce costs, improve efficiency, and enhance the customer experience.

Table 4: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4107.617	4	1026.904	1425.888	.001[b]
	Residual	33.129	46	.720		
	Total	4140.745	50			

a. Dependent Variable: and Organizational Performance

b. Predictors: (Constant), Finance, Human Resources, Information Technology, Management in Supply Chain Digitization

The analysis of variance (ANOVA) further confirmed the significance of the regression model, with an F-statistic value of 1425.888 and a P-value of 0.001, indicating a strong relationship in between the independent variable and dependent variables. The ANOVA results showed a significant difference between the independent and dependent variables, supporting the predictive power of the regression model.

Table 5: Coefficient Determinants

Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**	**Collinearity Statistics**	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.165	.341		.483	.031		
	Finance in Supply Chain Digitization	.399	.169	.274	2.365	.022	.013	77.018
	Human Resources in Supply Chain Digitization	1.077	.134	.881	8.023	.000	.014	69.258
	Information Technology in Supply Chain Digitization	.523	.121	-.263	-4.318	.000	.047	21.384
	Management in Supply Chain Digitization	.151	.139	.100	1.084	.284	.021	48.524

a. Dependent Variable: Organizational Performance

The coefficients of determination showed that Finance, Human Resources, Information Technology, and Management had statistically significant effects on Supply Chain

Digitization and Organizational Performance. A unit increase in these variables corresponded to an increase of 0.094 units in the dependent variable. Therefore, implementing new strategies or technologies in Management, Human Resources, Finance, and Information Technology in Supply Chain Digitization could lead to improvements in Organizational Performance.

These findings align with previous studies that have highlighted the potential benefits of supply chain digitization, such as increased efficiency, cost reduction, and improved customer experiences. Digitizing the supply chain can transform how goods are delivered, shipped, and tracked, ultimately enhancing the overall supply chain process and customer satisfaction.

CONCLUSION AND RECOMMENDATIONS

The study conducted on Philafe Engineering Limited in Kenya yields several noteworthy conclusions. Firstly, the gender distribution among the respondents revealed a higher representation of males compared to females, indicating potential gender imbalances within the organization or differences in participation rates. This highlights the need for continued efforts to promote gender diversity and inclusivity in both research and organizational contexts.

Secondly, the study's age distribution shows a diverse workforce, with respondents spanning various age groups. The largest representation was in the 31-36 years age range, suggesting a workforce composed of individuals at different stages of their professional journeys. This diverse age distribution enables a comprehensive understanding of the relationship between supply chain digitization and organizational performance across different generations.

Thirdly, the respondents exhibited diverse educational backgrounds, with the majority holding undergraduate degrees. This finding indicates that Philafe Engineering Limited has a workforce with a solid foundation of higher education. The inclusion of individuals with

different educational levels provides valuable insights into the impact of education on supply chain digitization and organizational performance.

Additionally, the study incorporated respondents with varying length of service. The largest proportion had served 2-5 years at the organization, indicating a significant number of individuals who had been at the company for a significant length of time. This inclusion of respondents with diverse length of service allows for a comprehensive examination of the relationship between supply chain digitization and organizational performance, from the point of view of understanding company and its operations.

Lastly, the study revealed diverse perceptions regarding the extent of financial investment required for supply chain digitization and its impact on organizational performance. Respondents held varying beliefs, ranging from a great extent to smaller or moderate extents. These findings emphasize the importance of carefully evaluating the financial implications and considering the specific needs of the digitization efforts in the supply chain when allocating resources.

Based on the objectives of the study, one can draw the following conclusions:
The study indicates that finances play a significant role in supply chain digitization on organizational performance in Kenya. Adequate financial resources are crucial for implementing digitization initiatives and ensuring their success. Organizations should allocate sufficient funds and conduct cost-benefit analyses to evaluate the ROI of such projects. Additionally, the researcher recommends exploring external funding options and aligning financial strategies with long-term goals.

The findings highlight the importance of human resources in supply chain digitization and organizational performance. Skilled personnel with expertise in supply chain management and digital technologies are valuable assets. Continuous learning, professional development, and cross-functional collaboration should be encouraged to leverage the workforce's knowledge and skills. Establish clear roles and responsibilities to ensure effective implementation of digitization projects.

The study underscores the significant impact of information technology on supply chain digitization and organizational performance. Investing in robust IT infrastructure, suitable technologies, and seamless integration of information systems are essential. Organizations should collaborate with IT professionals or consultants to select and implement appropriate tools, such as ERP systems and data analytics platforms, to enable real-time visibility and data exchange across the supply chain. Effective management is crucial for successful supply chain digitization and organizational performance. Strong leadership that supports and champions digitization initiatives is essential. It is important to develop a clear vision, communication channels, and a supportive environment for innovation. Providing necessary resources, support, and training to managers is important in driving and leading the digitization efforts in the supply chain.

RECOMMENDATIONS

Based on the objectives of the study, the researcher recommends:

Organizations should allocate sufficient financial resources towards digitization initiatives. Conduct a cost-benefit analysis to evaluate the potential return on investment (ROI) of digitization projects.

Invest in the recruitment and training of skilled personnel with expertise in supply chain management and digital technologies. Foster a culture of continuous learning and professional development within the organization to keep up with advancements in supply chain digitization.

Conduct a comprehensive assessment of the organization's existing IT infrastructure and identify areas for improvement or upgrade. Invest in robust and scalable information technology systems that can support supply chain digitization initiatives.

Foster strong leadership that champions and supports supply chain digitization initiatives. Develop a clear vision and strategy for supply chain digitization, aligned with the organizations overall goals and objectives.

Suggestions for Further Research

Based on the identified objective of studying the effect of supply chain digitization on organizational performance in Kenya, with specific reference to Philafe Engineering Limited in the engineering, procurement, and construction sector, the researcher makes the following suggestions for further research:

Conduct a longitudinal study to evaluate the long-term impact of supply chain digitization on the organizational performance of Philafe Engineering Limited. This would involve tracking performance metrics over an extended period (e.g., 3-5 years) to observe any sustained improvements or changes resulting from the digitization efforts.

Compare the organizational performance of Philafe Engineering Limited with other players in the same sector who have implemented supply chain digitization. This comparative analysis would provide insights into the specific advantages and challenges faced by Philafe Engineering Limited and help identify best practices or areas for improvement.

REFERENCES

Andreea-Oana. (2021). *Transaction Cost Theory*. Retrieved from Researchgate Publications: https://www.researchgate.net/publication/349052968_Transaction_Cost_Theory

Anosi, M. C., Brunetta, F., Bimbo, F., & Kostoula, M. (2021). Digitalization within Food Supply Chains to Prevent Food Waste: Drivers, Barriers, and Collaboration Practices. *Industrial Marketing Management*.

Apwoka, S. (2018). Transaction Cost Theory: A Framework for Analyzing the Impact of a Firm's Capabilities on Short-term and Long-term Growth. *Journal of Business and Finance, 7(2),* 14-24.

Awinja, B. P., & Fatoki, O. (2021). An Empirical Analysis of Transaction Cost Theory and Firm Strategy. *Journal of Business Studies Quarterly, 13(1),* 29-36.

Be Nguema, A. L., Adom, L., Chen, L., Eze, U. O., & Song, Y. (2020). Digitization, Information Sharing, External Collaboration, and Financial Institutions: A Conceptual Model of Supply Chain Finance Adoption and Supply Chain Effectiveness. *Sustainability, 12(21),* 8837.

Braton, D., & Ahlstrom, D. (2015). Mission Imposible? The Enigma of Multiple Organizational Goals in Emerging Economies: The Modelling Role of Social Welfare Support and Institutional Development on Dual Social and Financial Goals in Chinese Microfinance Organizations. *Management and Organization Review, 11(1),* pp. 51-80.

Burt, D. N., Dobler, D. W., & Starling, S. L. (2003). *Worldclass Supply Management: The Key to Supply Chain Management.* New York: McGraw Hill.

Chauhan, S., Singh, R., Gehlot, A., Akram, S. V., Twala, B., & Priyadarshi, N. (2022, 12 29). *Processes.* Retrieved from MDPI: https://doi.org.10.3390/pr11010096

Chiu, W., & Liu, K. P. (2021). Supply Chain 4.0: The Impact of Supply Chain Digitalization and Integration on Firm Performance. *Asian Journal of Business Ethics*.

Cresswell, J. W. (2008). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research (3rd Ed).* Pearson Education.

Dalenogare, L. S., Benitez, G. B., Ayala, N. F., & Frank, A. G. (2018). Industry 4.0 and its Impact on Supply Chain Management: Insights from the Literature. *Decision Sciences Letters, 7(4)*, 309-338.

Dede, E. (2022). How Human Resource Management Practices Influence Employee Performance: A Literature Review. *Journal Of Human Resource Management, 20(2),* 1-15.

Ekpen, S. (2017). A Conceptual Model to Determine the Factors Influencing Digital Transformation of Supply Chains. *Journal of Transportation Technologies, 7(4)*, 349-362.

Eronde, D., & Muturi, N. (2020). Managing Information Technology Project Risks: Application of Transaction Cost Theory. *Journal of Applied Computer Science and Mathematics, 24(6)*, 1-9.

Fuseini, S. A. (2021). Drivers for Supply Chain Digitization in the Pandemic Era. *Journal of Engineering and Technology Research, 13(1)*, 45-53.

Gezgin, Y., Huang, B., Samal, A., & Silva, E. (2017). The Impact of Industry 4.0 on the Supply Chain: A Dynamic View for Value Chain Management. *Computers in Industry, 95*, 29-40.

Gupta, S., Batra, Y., & Sachdeva, K. (2021). Human Resources Management as a Strategic Partner in Supply Chain Manageemnt. *Journal of Human /Resource Management, 19(1),* 23-31.

Halbast, A. P., & Atan, R. (2019). Human Resource Management Practices and Employee Skills: Evidence from Kurdistan Region. *Journal of Human Resource Management, 17(1),* 24-31.

Hassan, T. (2021). The Impact of COVID-19 on Supply Chain Management. *Journal of Business and Economic Research, 19(3)*, 89-97.

Hofmann, E. T., & Rusch, T. (2017). The Impact of Blockchain Technology on Finance: A Catalyst for Change. *Journal of Digital Banking, 1(2)*, 111-119.

Johnson, R. (2020). *Strategic Management Theory: An Overview.* Retrieved from Workfront: https://www.workfront.com/blog/strategic-management-theory-an-overview

Jonge, R. D. (2015). Institutional Theory and Educational Leadership: A Review. *Educational Management Administration & Leadership, 43(6)*, 924-941.

Juan, A. Y., Zhang, Z., & Jia, J. (2022). Integrating Human Resource Management Practices in the Digital Era: The Role of Employee Motivation. *Journal of Human Resource Management, 20(1)*, 45-53.

Kapelko, M., Lansink, A. O., & Stefanou, S. E. (2021). Information Technology, Productivity, and Supply Chains. *Applied Economic Perspectives and Policy, 43(1)*, 422-460.

Kaplan, F. (2021). Transaction Cost Theory. *The Social Science Journal, 58(1)*, 3-45.

Kawiana, I. G., Dewi, A. K., Hartati, N. S., Setini, W., & Asih, D. K. (2021). Leadership Management Concepts: A Concise Review. *International Journal of Innovation, Creativity, and Change, 14(3)*, 864-86.

Kiratu, K. (2020). The Strategic Impact of Supply Chain Digitization in the Global Context. *International Journal of Logistics Research and Applications, 23(4)*, 429-446.

Kothari, C. R. (2018). *Research Methodology: Methods and Techniques (4th Ed.).* New Age International.

Kunc, M. (2019). Strategic Management Theories and the Linkage with Firm Competitive Advantage from the Resource-based View. *European Research Studies Journal, 22(Special Issue)*, 139-145.

Laudon, K. C., & Laudon, J. P. (2006). *Management Information Systems: Managing the Digital Firm.* Prentice Hall.

Lessambo, F. (2018). Financial Management of Primary Schools. In F. Lessambo, *Financial Management of Primary Education* (pp. 3-14). Springer.

Makokha, C. K. (2017). *Effect of Supplier Digitization on Organization Performance in the Public Sector in Kenya.* Nairobi: KCA University.

Meru, G. D., & Kinoti, S. C. (2022). Transaction Cost Theory of the Firm and its Implicationsnfor Non-Profit Organizations. *Journal of Business and Finance*, 5-10.

Mira, S. A., Choong, C. W., & Alias, N. N. (2022). Organizational Use of Human Resource Management Practices and Company Performance: Evidence from Malaysia. *Journal of Business Research, 21(2)*, 34-43.

Mugenda, O. M., & Mugenda, A. G. (2003). *Research Methods: Quantitative and Qualitative Approaches.* Nairobi: African Centre for Technology Studies Press.

Mukkherjee, S., & Chittipaka, R. R. (2021). Transaction Cost Theory and its Relevance in Transportation and International Trade. *Journal of Economics, Management, and Trade, 27(3)*, 1-9.

Nashiruddin, M., & Susanti, T. F. (2021). The Role of Information Technology in Business. *Journal of Science and Business, 5(2)*, 57-66.

Nikolic, D., Stojanovic, V., & Wirnsperger, F. (2018). Internet of Things: Digital Transformation of the Supply Chain. *Journal of Information Technology Management, 29(1)*, 21-30.

Pamungkas, A., Abubakar, M. B., & Shalahuddin, M. (2021). The Impact of Digital Technologies on Human Resource Management Practices. *International Journal of Advanced Science and Technology Research, 11(1)*, 20-2.

Peter, J. P. (2020). Transaction Cost Theory. In J. F. Hair Jr, G. T. Hult, C. Ringle, & M. Sarstedt, *A Premier on Partial Least Squares Structural Equation Modeling (PLS-SEM) (2nd Ed.)* (pp. 321-33). Sage.

Roussy, A., Barbe, M., & Raibault, S. (2020). *The Role and Objectives of Internal Auditing: Handbook of Management Control.*

Sarkis, J., Kouhizadeh, M., & Zhu, Q. S. (2020). Digitalization and the Greening of Supply Chains. *Industrial Management & Data Systems*, 66-85.

Sekeran, U., & Bougie, R. (2010). *Research Methods for Business: A Skill Building Approach (5th Ed.).* John Wiley & Sons.

Song, C. (2021). The Impact of Transaction Cost Economics on Business. *International Journal of Business and Management, 16(5)*, 1-10.

Soni, P. (2021). The Changing Role of the CEO in the Digital Era. *Journal of Human Resource Management, 19(3)*, 45-53.

Wang, D., Chen, Y., & Lawler, J. (2021). Human Resource Management Practices and Firm Performance: A Survey Study Based on Organizational Performance Data. *Journal of Business Research, 12(1),* 12-21.

Wickramasuriya, S., & Kurukulasuriya, M. (2021). Human Resource Implications for Digitization. *Journal of Business Management, 22(1),* 34-42.

Zhang, L., Li, J., Wang, Z., & Yu, X. (2021, 10(1)). The Impact of Supply Chain Digitization on Supply Chain Management. *Journal of Industrial Engineering and Management Science,* 25-31.