EFFECT OF SUPPLIER ASSESSMENT ON SUPPLY CHAIN EFFECTIVENESS OF KENYA MEDICAL SUPPLIES AUTHORITY

[1*] **Oriato Stephen Otieno**
soriato51@gmail.com

[2**] **Aleri Odaya**
alieriodaya@yahoo.com

[3***] **Rose Kisia Omondi**
omondirk@yahoo.com

[1, 2, 3] *Jaramogi Oginga Odinga University of Science and Technology, Kenya*

Abstract: *The Kenya Medical Supplies Authority (KEMSA) has been receiving a considerably increased funding for over a decade now from the government of Kenya. However, risks in the health supply chain have seriously hindered supply chain effectiveness of the heath supply chain. This research purposed to find out how supply chain risk management affects the supply chain effectiveness of Kenya Medical Supplies Authority (KEMSA). Specifically, the research examined the effect of supplier assessment.*

Methodology: *36 KEMSA staff from six major divisions that interface uniquely with supply chain integration were targeted as respondents. The study used primary data which was collected using questionnaires.*

Significance: *The government of Kenya agenda to provide affordable health care to its citizens will get a boost if the study finds out that supply chain risk management positively affects effectiveness of supply chain since it will be implemented in KEMSA to achieve resilience and agility that will lead to better services.*

Findings: *The correlation analysis results revealed that supplier assessment and supply chain effectiveness positively and significantly correlates. The results bear the implication that enhancing supplier assessment practices enhances the levels of supply chain effectiveness in KEMSA.*

Keywords: *Supplier Assessment, Supply Chain Integration, Supply Chain Risk*

I. INTRODUCTION

Globalization of supply chains has brought some element of complication consequently making supply chains more exposed to risks. Moreover, the business environment has become more dynamic and the never-ending cat throat competition, climate change, trade wars, raw material shortages, short life cycles of products and recent pandemics such as Corona Virus, Ebola and Swine flu have heightened risks of global supply chains. Supply Chain Risk Management (SCRM) is the application of strategies like supplier assessment, supply chain integration and demand management to manage both every day and likely risks through the supply chain by conducting continuous risk assessment with a purpose of mitigating risk exposure and guaranteeing stability and effectiveness of a business (Carter & Rogers, 2008). Risk in supply chain can be inform of: Supply risks, legal and bureaucratic risks; demand risks; regulatory risk, infrastructure risks; and catastrophic risk.Chopra and Sodhi (2004) Identified risks that can lead to supply chain being vulnerable, which comprise delays, forecast failure, disruptions, inventory, procurement and supply risks. Exposure of Supply chains to these risks that could lead to disturbances and subsequently weaken supply chain effectiveness is too high and has become an issue of concern. Thus, without proper risk management strategies enacted to essentially mitigate these

risks, supply chains could be susceptible to interruptions and subsequently fail to meet financial and market expectations.

Organizations may condense supply chain risk by adopting strategies that can mitigate the likelihood of a disruption. It is worth noting that Supply chain risk management, thus, purposes to ascertain possible causes of risk, then device applicable measures to mitigate supply chain risk(Chang, Ellinger, & Blackhurst, 2015).Internal supply chain risk results from changes in the management of a business, key personnel, business processes such as the way procurement officers communicate to suppliers and customers . On the other hand, external risk is a probable risk exposure that can be as a result of external factors to the organization, for instance, pandemics such as the Corona Virus, Climatic changes, demand uncertainty or variability. Taking cognizance of the aforementioned facts, risk management in Supply Chains is becoming a fundamental area and strategy of ensuring the effectiveness of supply chains in most organizations.

The increasing risk exposure in Supply Chains creates the desire of inculcating a culture that makes supply chain risk management a concern of everyone. Having said that, Supply chain risk management must therefore be handled at a strategic level of management so that a dependable unified structure can be created. Globalization of Logistics and supply chains has unlocked new prospects and eased movement of products thus fashioning a significant bearing on supply chain strategies, the intrinsic complexity of the Logistic and supply chain networks enables failures in the system to emerge in unexpected ways that could lead to disruption of supply chains. The resulting risk is further compounded by the decisions to embrace lean supply chain strategy. According to Christopher and Rutherford (2004) reducing supply chain costs and the endeavor to increase efficiency by adopting lean strategies have made supply chains to become more susceptible to serious and perhaps more shocking disruptions that previously could have been considered minor impact. Globally, Supply chain management strives to enhance sourcing efficiency, procurement efficiency, material management efficiency and distribution efficiency to stay in business and maintain competitive advantage. Unfortunately, the reality is that most supply chain networks are designed to operate under normal conditions without factoring in how to manage risks in order to promote effectiveness in these supply chains.

Organizations that embrace risk management in supply chains tend to proactively respond to risks (Centobelli, Cerchione, & Ertz, 2020).This is because embracing supply chain risk management enables supply chains to become resilient. Resilient supply chains are able to survive, adapt and grow in a dynamic business environment. The adaptive ability permits the supply chain to pull through in case of an interruption, thus returning to its original state or achieving a more desirable state of supply chain operations.

One common cause of global Supply chain disruption is the pandemic outbreaks. Pandemic outbreaks epitomizes a distinct type of supply chain risks that is uniquely characterized by three components I.e. unpredictable scaling of a disruption which could be long term, the ripple effect of the disruption and the concurrent disruptions in supply, demand, and logistics set-up. Different from other risks, pandemic outbreaks start small but rapidly spread over a wide geographic area. For instance, recent pandemics like SARS, Ebola, Swine flu, and most recently, coronavirus (COVID-19/SARS-CoV-2) negatively impacted on the effectiveness of supply chains globally. SARS pandemic outbreak which occurred in 2002–2003 badly disrupted the airline industry, particularly in Taiwan causing the suspension of close to 30% of international flights (Chou et al., 2004). Ebola virus on the other hand adversely affected the global logistics bringing to a halt global freight transport, air transport and other intermodal transportation.

The recent coronavirus outbreak started in Wuhan area in China and immediately affected Chinas exports and severely reduced the availability of vital commodities such as pharmaceuticals in global supply chains.Araz (2021) Opines that the COVID-19 outbreak signifies one of the major cause of global supply chain disruptions ever encountered during the last decades. The general impact caused by the outbreak and the subsequent emergency measures on international trade resulting from COVID-19 is yet to be seen. It is however clear that firms have grappled with considerable business disruptions, which has involved quit a lot from reducing the effects of inadequate supply, to logistic disruption, and undeniably the challenges of full filing their own contractual commitments to clienteles (Sharma & Soederberg, 2020). Noteworthy, global supply chains risk is not just as a result of COVID-19 and other pandemics, many other external factors and government actions all over the world have adversely impacted supply chains, for instance, trends of protectionism and nationalism, sustainability issues, boiling business tensions between global superpowers, and the Ukraine and Russia war have all disrupted supply chains. It is against this backdrop that Managers have begun realizing the need to inculcate supply chain risk management culture in their organizations to minimize disruptions.

Ebola virus pandemic have been prevalent in Africa with the most recent being the one in the democratic Republic of Congo in 2018.In the wake of the outbreak, the surging rate of infection was shocking to a point that governments introduced tough measures to control the threatening rise of deaths and new cases. However, the measures introduced greatly had adverse consequences to supply chains resulting to a pronounced effect on the economy of West African countries. Some of the measures that were introduced included the closure of borders. For instance, in 2014 July, Liberia moderately closed her borders while Senegal completely closed its border with Guinea thus disrupting the flow of goods and services. Additionally, Liberia and Sierra Leon announced a state of emergency further amplifying supply chain disruption. Furthermore, the fast rate of infection caused fear in businesses and subsequently resulted into businesses partially, or in some cases totally, halting their usual activities (Bowles, 2016).Furthermore, British Airways and Emirates airlines cancelled their flights to Sierra Leone and Liberia while on the other hand international organizations such as Caterpillar Inc., Canadian Overseas Petroleum Ltd, Dangote, ExxonMobil and Chevron Corporation withdrew their staffs .

Most countries in Africa are importers of pharmaceutical and medical products, importing almost 100% of their pharmaceuticals. As a result, Pharmaceutical supplies across Africa are being affected adversely by export restrictions imposed by countries who are major suppliers of these products to Africa. The heavy reliance on imported pharmaceutical products have put African countries in a desperate position in their bid to access vital pharmaceutical products. In 2020, Kenya suffered a major setback in her fight against Covid 19 after India banned the export of anti-viral drug Remdesivir after a surge in Covid 19 infections in India caused the demand of the anti-viral drug to increase.((Banga, Macleod, & Mendez-Parra, 2021)

Global supply chain disruption as a result of Corona Virus have hit harder on the social, political and economic life of people in Africa, Kenya being one of the countries hard hit. The adverse impact can be attributed to the type of business model that is mainly focused on importation and also the inherent vulnerabilities in the region. Economic growth in Africa declined to between -2.1 and -5.1 percent by the end of 2021 as a result of global supply chain disruption by Covid 19. (Kassa, Njagarah, & Terefe, 2020).The economic impact was hardest felt through trade, due to the rare mix of global shocks in supply and demand. Trade is also vital to the solution, both in the direct measures to curb the spread of the virus and in reducing the economic fallout.

In 2020, Coronavirus pandemic uncovered the degree of susceptibility of supply chains across many industries globally. During that time, healthcare systems in a number of states offshored the production of PPE to low-

cost providers. In the United States (US), 90% of surgical masks and 80% of ventilators were being produced out of the country (Kniffin et al., 2021).In China, where the Corona virus started from, shutdowns of factories and ban on exports of medical equipment put considerable stress on health supply chains, while the surging cases of COVID-19 led to logistical challenges in supplying the PPEs to some counties that were in need . Just-in-time system of inventory management was adopted globally for basic materials needed for PPE production in a bid to increase the inventory management efficiency. However, this was not a perfect idea of solving the issue of inadequate PPEs, it subsequently caused more shortages of PPEs hence the world could not meet the growing demand of PPE during the Corona pandemic (Kniffin et al., 2021).

In a bid to curb the spread of Corona Virus and its adverse impact, Countries urgently executed actions that could assist companies multiply their production volume. The Government of the People Republic of China (PRC) announced actions to back face masks production by supporting the acquisition of raw materials and the contracting of employees besides offering tax relieves for manufacturers. By mid-2020, China could produce 150 million face masks a day—5 times more than what it was producing in the beginning of January 2020. In China, the government availed funding for firms to increase capital investment in production of face mask and also secured supply of over 800 million face masks per month (Baldwin & Tomiura, 2020).

Disruptions on the supply side could result from uncertainty related to suppliers. Having said that, assessing suppliers before procuring plays a pivotal role in ensuring that such risks are mitigated. It proactively prepares a company to swiftly react to the possibility of supplier failure, the cost of supplier failure, and to the output limitations of the suppliers. Supply risk sources are the uncertainties linked to suppliers which could make the supplier delay delivery or fail to deliver ,this factors may include physical delivery hitches (or non-delivery),adversarial relationship between the supplier and the buyer, or any risk associated with inbound logistics and product (or raw material) supply (Manuj & Mentzer, 2008).

Suppliers assessments and supply chain effectiveness

Feng, He, Zhu, and Amin (2017) Jointly did a study to assess risks on the supply side of the Supply Chain by looking at the supply chain of HUAWEI in China. In order to achieve the objective of the study, empirical data was collected by interviewing logistics managers of HUAWEI in China, and also by observing and scrutinizing official documents, annual business performance reports and dependable web pages of the HUAWEI. Theoretical framework was developed through peer reviewed journals, scientific articles, web-based documents, and textbooks. The data was then assessed and analyzed, conclusion and recommendations for the company was later arrived at. The researchers established risks related to quality and inbound delivery risks can be mitigated through supplier assessment and by establishing good supplier-buyer rapport. However, the study focused on the effectiveness of inbound side of supply chain. This study shall holistically look at the supply chain effectiveness by examining the effects of supplier assessment in both inbound side of the chain and outbound side of the chain.

In Africa, a plethora of studies on supplier assessment and its effects on supply chain effectiveness has been done by various scholars. To start with Elumalai, Brindha, and Lakshmanan (2017), jointly did a study that sought to determine the contribution of supplier assessment to procurement effectiveness of Rwanda Manufacturing firms by collecting and analyzing data from BRALIRWA Ltd. The objectives of the research were as follows: To find out the effect of tendering, pre-qualification, supplier relationship and the use of Information technology on the effectiveness of procurement at Bralirwa Ltd by using a Descriptive Research Design. The study had a target population of 550; comprising of contractors, shareholders, suppliers and

procurement employees of Bralirwa Ltd while the sample size adopted was 55 which represented 10 % of the target population. The researcher collected primary and secondary data and employed descriptive statistics to analyze the data. The results of the data analysis indicated that supplier assessment has an influence on procurement effectiveness. The study had some gap; it only examined the effects of supplier assessment on the procurement function of the supply chain and not the whole supply chain. To fill the gap, this research endeavors to examine the effects of supplier assessment on both upstream and downstream flow of the supply chain.

Claypool, Norman, and Needy (2015) evaluated risk factors in supply chain in the Nigerian pharmaceutical industry. They collected Primary data using a thematic questionnaires issued to 300 randomly selected registered pharmacies. Data analysis was done using probability-impact matrix. The findings highlighted 18 risk elements in the Nigerian pharmaceutical supply chain. The risk elements with the highest likelihood of occurrence were supply failure risks. The recommendation of the study was that comprehensive supplier assessments should be done to minimize disruptions along the supply chain. The research gap in this study is that the reseachers used probability –impact matrix to analyze data since it is designed around an event-oriented concept of risks. The current researcher proposes to fill the gap by analyzing data qualitatively and quantitatively.

A research with an objective to examine the influence of supplier assessment on procurement effectiveness in the ministry of defense in Rwanda was conducted by (Balakrishnan & Nadarajah, 2016). The study had a target population of forty respondents comprising procurement officers and suppliers of the ministry of defense of Rwanda. Questionnaires which were self-administered to the respondents were used in collecting Primary data. The researchers established that the financial capacity of suppliers positively and substantially effected the effectiveness of procurement in the ministry of defense. Financial capability of suppliers directly affected their ability to supply the right quantity of goods, the right quality of goods, and at the right price. Supplier quality assurance has substantial bearing on the effectiveness of purchasing in the ministry of defense of Rwanda. The level of quality commitment by the supplier directly defines the level of quality in products and services obtained through procurement activities. The study concluded that the competence of a supplier has a substantial influence on purchasing effectiveness in the defense ministry of Rwanda. The researcher recommended that assessing suppliers ought to be conducted by professionals who are well conversant and have know-how to carry out the exercise in a professional manner. The study focused on the effectiveness of the procurement function only, to seal this gap this study evaluated holistically the effectiveness of supply chain.

Mvubu and Naude (2020) sought to find out the main causes of disruptions in the supply chains of South African 3PL firms and also tried to find out the current strategies adopted by supply chain professionals to reduce supply chain disruptions in the 3PL industry in South Africa. The outcomes of the research indicated a comparison concerning South African 3PL supply chain professional understanding of Supply chain risk management in comparison with the literature, as the respondents were able to pinpoint only few principles of supply chain risk management with no single respondent broadly explaining SCRM according to the literature. External disruptions such as customers- and supply-side disruptions in the South African 3PL industry were established as the main causes of supply chain disruptions .Besides, it was established that the disruptions mainly stems from supply failure risks. However, the study concentrated on 3PL which is the outbound side of supply chain. To fill the gap, this study shall examine the effects of supplier assessment and its effect on both inbound and outbound sides of supply chain.

In Kenya, a study to find out the effects of supplier assessment on the effectiveness of supply chain in manufacturing companies in Nairobi County was conducted by (Biyogo & Miroga, 2018). The study objectives were as follows; Criteria for supplier assessment, methods of assessing suppliers and approaches of supplier assessments. The area of study was restricted to manufacturing companies in Nairobi County. Data was collected using questionnaires and analyzed using descriptive and inferential statistics. The findings of the study indicated that the four variables had a substantial effect on the effectiveness of supply chain of the companies. The recommendation of the study was that a related study needs to be done with an objective of exploring the effects of supplier assessment on supply chain effectiveness with other constructs or of other companies in other sectors, like the service industry in the Kenyan market. Therefore, the study recommendations are limited to manufacturing companies, thus, it was prudent to conduct a research on other sectors such as health supply chains with different variables. In order to fill the gap, this study explored the effects of supplier risk assessment on supply chain effectiveness in health supply chain by collecting and analyzing data from KEMSA.

Mwangangi and Achuora (2019) did a research to determine the effects of Supplier assessment on procurement effectiveness of Sidian Bank in Nairobi County. The study applied descriptive research design and primary data collected by administering questionnaires. The research concluded that Supplier assessment delivers a competitive advantage by identifying potential supply risks hence ensures smooth operation of supply chains. The study recommended that supplier assessment minimizes chances of supply failure that could result in supply disruption. The gaps in the research is that it was not anchored on any theory. To fill the gap, this study was guided by theory of constraints and supply chain operations reference model.

A joint study that pursued to find out the effect of assessing suppliers on procurement effectiveness in Public Universities was done by (Mutai & Okello, 2016).The survey included Public Universities in the County of Kericho. The researcher used three hypotheses testing to achieve his objectives; quality assurance by a supplier does not have substantial influence on effectiveness of procurement in public universities, suppliers financial stability does not have any influence on the effectiveness of procurement in public universities and the competence of a supplier does not have substantial influence on the effectiveness of procurement in public universities in Kericho County. The study population comprised of university staffs of campuses in Kericho County while the sample population comprised staff in Accounts, Purchasing, stores and inventory divisions. Data collection was done by use of structured questionnaires which were self-administered and picked after a week. The study found that quality assurance by suppliers, financial capacity of suppliers and the know-how of suppliers have a substantial influence on the effectiveness of procurement function of public universities campuses in the County of Kericho. The gap in the study is the use of structured questionnaires that possibly made it difficult for the researcher to examine complex issues and opinions. This study filled this gap by using both structured and semi structured questionnaires.

A research to explore the importance of assessing suppliers on the Effectiveness of procurement within Manufacturing Industry in Kenya was conducted jointly by (Kepher, Shalle, & Oduma, 2015). The researchers used a descriptive research design with the study respondents comprising the employees of Kenya breweries and its suppliers. Pilot testing was carried out on 5 employees (1.25%) before doing the actual collection of data in order to ascertain the reliability and validity of the research instruments. The findings of the study pointed that 80% of variations in procurement effectiveness at Kenya Breweries can be described by four constructs, i.e. Supplier quality management, buyer supplier integration, collaboration and training of suppliers. In conclusion, the study recommended that Supplier effectiveness assessment was key to

procurement effectiveness. The study only looked at the effectiveness of the procurement function of the supply chain. This study filled the gap by looking at both the upstream and downstream effectiveness of the chain.

Kenya Medical Supplies Authority

Kenya Medical Supplies Authority (KEMSA) was founded as a state corporation through a gazette notice No. 17 of 2000 and Cap 466 of the Kenyan Law. It was formed with a mandate to: (a) Entering into partnership with County Governments with a view of providing procurement services, warehousing, distribution of drugs and pharmaceutical supplies (b) Storage, Packaging and distribution of pharmaceutical supplies to public health facilities (c) Collecting information and offering advice to the National and County Governments on the status and cost effectiveness of health supply chain (d) Supporting County Governments in establishing and maintaining suitable health supply chain systems for pharmaceutical supplies (Njagi & Ogutu, 2014).

Research has established that a robust health system cannot be achieved without a well-coordinated, well-managed, and well-designed supply chain management system. Kenya Medical Supplies Authority has been under increased pressure arising from devolved governments and development partners such as the United States Agency for International Development (USAID) and the World Bank to initiate reforms that could improve its supply chain effectiveness. Furthermore, the governments endeavor to achieve better and affordable health care which is one of its pet project has stirred the need for a responsive, agile and cost effective supply chain in public health supply chain. However, in spite of increased funding to KEMSA, the health supply chain still exhibits weak links which remain a hindrance in accessing essential health products (Njagi & Ogutu, 2014). Since the incorporation of KEMSA in 2000 there have been multiple attempts and initiatives to improve its effectiveness, but in spite of these efforts, KEMSA like any other organization in the public sector, continues to struggle to effectively deliver its mandate. This is despite the fact that the government, donors and policymakers are keen on each link in this supply chains to perform optimally. Recent stand-off between the biggest donors for ARVs drugs the USAID and the Kenyan government on who should be distributing the drugs raises questions whether the donors still have trust on the country's only health supply chain agency or not. The USAID wants distribution of the drugs to be done through a private American firm, Chemonics International, while the Kenyan government remains adamant that only KEMSA should be responsible for supply of the pharmaceutical products. This study finds the need to improve the supply chain effectiveness of KEMSA as a timely undertaking in order to win back the trust of the donors, reduce the reliance on India and China for pharmaceutical products and mitigate any other disruption in the supply chain.

Statement of the Problem

The KEMSA procurement Review Report (2019) highlights concerns which represent deviations from their endeavor to achieve effectiveness of their fundamental supply chain functions. According to the report, KEMSA has been unable to come up with a framework that clarifies administration of contracts to improve delivery of orders both internally and externally. In addition, there are issues to do with the effective standardization and development of specifications due to conflicting interests from users, thus delaying the tendering process. The report further highlights suppliers assessments and evaluation reports as inefficient and are not conducted periodically. The corona pandemic has further exposed KEMSAs weak links and shortcomings like overreliance on long-distance suppliers and a rigid supply base where it banks on single-sourcing pharmaceutical products from India. To further compound the problems, PPRA report (2020) found that KEMSA has been initiating procurement without a procurement plan, lack of integration in the KEMSA

supply chain in both inbound and outbound flows flows and rampant corruption where tenders are given to politically connected individuals without assessing the underlying supply risks .Considerable research has been conducted on supply chain risk management in Kenya but with a focus on how supply chain risk management affects organizational performance (Ambayo, 2012; Nyang'au, 2017). This research study seeks to unearth the effect of supply chain risk management on supply chain effectiveness. The rest of this paper is organized as follows; Part II briefly highlights the research methodology while Part III discusses the research findings and finally Part IV has the conclusion.

II. RESEARCH METHODOLOGY

This study aimed to explore whether supply chain risk management would have any effect on supply chain effectiveness by collecting and analyzing data from Kenya Medical Supplies Authority between the months of May 2022 and July 2021. To achieve its objectives the study focused on both upstream and downstream flows of the supply chain by examining i.e supplier assessment. The metrics for measuring supply chain effectiveness was costs, responsiveness and agility .The study targeted a population of 36 employees of Kenya Medical Supplies Authority in Nairobi working in six different divisions (procurement, Finance, Operations, Warehousing, Distribution and Business Development) that interface by integration and have knowledge of matters supply chain management. The researcher used a census approach to collect data from the sample population hence no sampling techniques was used. The census approach involved collecting information from every member of the six divisions. This method was suitable as it reduced biasness in the study by involving all respondents from the divisions and giving them equal opportunity to participate in the study (O. Mugenda, 2003).

The study adopted a descriptive research design using a case study. A case study was used as it aids in gaining concrete and in depth knowledge about a specific subject under study (O. M. Mugenda & Mwangi, 2014). It allows a researcher to examine key characteristics and implications within a given context by using a combination of various data sources, thus, enhancing reliability of data collected (Yin, 2003).

The researcher collected primary data by administering questionnaire to the respondents who were required to fill the questionnaires. Questionnaires had closed ended and open-ended questions. Information on the variables were structured in a 5-point likert scale where 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree. Respondents were required to rate their level of agreement with the statements on each variable.

III. RESEARCH FINDINGS AND DISCUSSION

The researcher issued 36 questionnaires to the target respondents comprising employees from Business development department, Procurement department, Warehousing department, Distribution department, Finance department and operations department in KEMSA. 31 questionnaires were fully completed and returned. This represented a response rate of 86.1%. The response rate was sufficient and adequate for analysis since Mugenda and Mugenda (2013) a response rate exceeding 70% is excellent for analysis. The study achieved the high response rate by giving respondents enough time to respond to the questionnaires.

The objective of the research was to establish the effect of supplier assessment on supply chain effectiveness of Kenya Medical Supplies Authority. Table 1 describes the descriptive results. According to the results, respondents were in sync with the statements that the organization assesses the financial capability of the supplier (mean=4.51), that financial assessment includes aspects such as assets, debts, and financial statements

(4.21) and that the organization assesses the supplier's delivery capability (mean=4.01). Respondents further agreed with the statements that the organizations assesses the supplier's staff capacity (mean=3.89) and that the degree to which the organization applies supplier risks assessment determines the supply chain effectiveness (mean=4.67). On average, the respondents agreed with the statements on supplier assessment as shown by average response mean of 4.26 and average Std. Dev of 0.312.

Table 1: Descriptive Statistics on Supplier Assessment

Statements	Mean	Std.Dev
The organization assess the financial capability of the supplier	4.51	0.101
Financial assessment includes aspects such a assets, debts, and financial statements	4.21	0.211
The organization assess the supplier's delivery capability	4.01	0.431
Suppliers Staff capacity is assessed	3.89	0.702
The degree to which the organization applies supplier risks assessment determines the supply chain effectiveness	4.67	0.117
Average	**4.26**	**0.312**

Supply Chain Effectiveness

The study sought to assess how supply chain risk management affects various aspects of supply chain effectiveness. The results presented in table 2 shows that respondents agreed that supply chain risk management highly affects prompt attention to orders (mean=4.29), SCM costs (mean=4.12), Costs of goods sold (mean=4.15), Sourcing flexibility (mean=4.54) and Distribution flexibility (mean=3.92). Respondents however agreed with the statements that supply chain risk management moderately affects Complaint handling (mean=3.31) and Manufacturing flexibility (mean=3.44). On average, all respondents agreed with the statements on supply chain effectiveness as shown by average response mean of 3.97 and average std.dev of 0.588.

Table 2: Descriptive Statistics on Supply Chain Effectiveness

Statements	Mean	Std.Dev
Prompt attention to orders	4.29	0.316
Complaint handling	3.31	1.008
SCM costs	4.12	0.813
Costs of goods sold	4.15	0.312
Sourcing flexibility	4.54	0.331
Distribution flexibility	3.92	0.823
Manufacturing flexibility	3.44	0.512
Average	**3.97**	**0.588**

Correlation Results

A correlation analysis was conducted in the study aiming at evaluating the existence of correlation between the dependent and independent variables of the study. The findings presented in table 4.5 shows that there is a positive and significant correlation between supplier assessment and supply chain effectiveness. This is

depicted by a correlation value of .539 and significance value of 0.000. The results bear the implication that enhancing supplier assessment enhances the levels of supply chain effectiveness in KEMSA.

Table 3: Correlation Analysis

		Supplier Assessment	Supply Chain Effectiveness
Supply Chain Effectiveness	Pearson Correlation	.549**	1
	Sig. (2-tailed)	0.000	
	N	31	31

The coefficients of the model illustrated in table 4 shows that supplier assessment positively and significantly affects supply chain effectiveness in KEMSA. This is indicated by a beta coefficient value of 0.678 and sig=0.000<0.05. The finding imply that increasing supplier assessment practices with one unit increases supply chain effectiveness with 0.678 units.

Table 4: Model Coefficients

Predictors	Unstandardized Coefficients		Standardized Coefficients		
	B	**Std. Error**	**Beta**	**T**	**Sig.**
(Constant)	1.0014	0.125		8.0112	0.019
Supplier Assessment	0.678	0.146	0.598	4.64384	0.000

The optimal regression model becomes:

Supply Chain Effectiveness = 1.0014 + 0.678(Supplier Assessment)

IV. SUMMARY AND CONCLUSION

The study sought to establish how Supply Chain Risk Management affects supply chain effectiveness focusing on KEMSA. The study specifically sought to assess the effects of supplier assessment. The study targeted employees from Business development, Procurement, Warehousing, Distribution, Finance and Operations departments. The correlation analysis results revealed that supplier assessment and supply chain effectiveness positively and significantly correlates. The results bear the implication that enhancing supplier assessment practices enhances the levels of supply chain effectiveness in KEMSA. Additionally, the regression findings showed that supplier assessment positively and significantly affects supply chain effectiveness in KEMSA. This bears implication that increasing supplier assessment practices with one unit increases supply chain effectiveness with 0.678 units.

The study findings contributed to conclusion that supplier assessment has positive and significant effects on supply chain effectiveness in KEMSA. Additionally, supplier assessment practices such as assessing the supplier's Staff capacity, financial capability in areas of assets, debts, and financial statements, and delivery capability positively and significantly affects supply effectiveness in the organization. Remarkably, the degree to which the organization applies supplier risks assessment determines the supply chain effectiveness.

REFERENCES

Ambayo, P. J. (2012). Supply chain vulnerability and customer satisfaction on petroleum products in Kenya.

Araz, S. İ. (2021). Analysis of a Covid-19 model: optimal control, stability and simulations. Alexandria Engineering Journal, 60(1), 647-658.

Balakrishnan, K. K., & Nadarajah, G. (2016). Internal Process Risk Management: A Proposed Conceptual Framework for Electronic Design Industry Process Gap. Int. J Sup. Chain. Mgt Vol, 5(4), 68.

Baldwin, R., & Tomiura, E. (2020). Thinking ahead about the trade impact of COVID-19. Economics in the Time of COVID-19, 59.

Banga, K., Macleod, J., & Mendez-Parra, M. (2021). Digital trade provisions in the AfCFTA.

Biyogo, F., & Miroga, J. (2018). Effect of supplier assessment on supply chain performance among manufacturing firms in Nairobi County, Kenya. The Strategic Journal of Business & Change Management, 5(4), 1979-1993.

Bowles, S. (2016). The moral economy: Why good incentives are no substitute for good citizens: Yale University Press.

Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: moving toward new theory. International journal of physical distribution & logistics management.

Centobelli, P., Cerchione, R., & Ertz, M. (2020). Managing supply chain resilience to pursue business and environmental strategies. Business Strategy and the Environment, 29(3), 1215-1246.

Chang, W., Ellinger, A. E., & Blackhurst, J. (2015). A contextual approach to supply chain risk mitigation. The International Journal of Logistics Management.

Chopra, S., & Sodhi, M. (2004). Supply-chain breakdown. MIT Sloan management review, 46(1), 53-61.

Christopher, M., & Rutherford, C. (2004). Creating supply chain resilience through agile six sigma. Critical eye, 7(1), 24-28.

Claypool, E. G., Norman, B., & Needy, K. (2015). Design for supply chain: An analysis of key risk factors. Industrial Engineering & Management, 4(2), 156.

Elumalai, V., Brindha, K., & Lakshmanan, E. (2017). Human exposure risk assessment due to heavy metals in groundwater by pollution index and multivariate statistical methods: a case study from South Africa. Water, 9(4), 234.

Feng, Z., He, R., Zhu, W., & Amin, F. (2017). Supply Side Risks Assessment of the Supply Chain: A case study of the Supply Side Risks Assessment in HUAWEI's Supply Chain.

Flynn, B. B., Huo, B., & Zhao, X. (2010). The impact of supply chain integration on performance: A contingency and configuration approach. Journal of operations management, 28(1), 58-71.

Gligor, D. M. (2014). The role of demand management in achieving supply chain agility. Supply Chain Management: An International Journal.

Kassa, S. M., Njagarah, J. B., & Terefe, Y. A. (2020). Analysis of the mitigation strategies for COVID-19: from mathematical modelling perspective. Chaos, Solitons & Fractals, 138, 109968.

Kepher, B., Shalle, N., & Oduma, E. (2015). *Role of supplier management on procurement performance in manufacturing sector in Kenya: A case of East African Breweries, Kenya. International Journal of Social Science and Humanities Research, 3(4), 540-555.*

Kniffin, K. M., Narayanan, J., Anseel, F., Antonakis, J., Ashford, S. P., Bakker, A. B., . . . Choi, V. K. (2021). *COVID-19 and the workplace: Implications, issues, and insights for future research and action. American Psychologist, 76(1), 63.*

Mugenda, O. (2003). *&Mugenda A.(2003). Research methods: quantitative and qualitative approaches.*

Mugenda, O. M., & Mwangi, I. (2014). *Governance of Public Universities in Kenya. Governance and Transformations of Universities in Africa: A Global Perspective, 43.*

Mutai, J. K., & Okello, B. (2016). *Effects of supplier evaluation on procurement performance of public universities in Kenya. International Journal of Economics, Finance and Management Sciences, 4(3), 98-106.*

Mvubu, M., & Naude, M. (2020). *Supply Chain Risk Management Strategies: a study of South African third-party logistics providers. Southern African Business Review, 24(1), 1-24.*

Mwangangi, J., & Achuora, J. (2019). *Influence of Lean Supply Chain on Performance of Public Universities in Kenya.*

Njagi, M., & Ogutu, M. (2014). *Role of supply chain integration on supply chain performance in Kenyan State Corporations. International Journal of Current Business and Social Sciences, 1(2), 188-204.*

NYANG'AU, F. O. (2017). *INFLUENCE OF SUPPLY CHAIN RISK MANAGEMENT STRATEGIES ON PERFORMANCE OF FOOD AND BEVERAGE MANUFACTURING FIRMS IN KENYA. JKUAT COHRED.*

Otieno, J. O., & Odari, N. S. (2017). *Role of pull scheduling on supply chain performance in the manufacturing sector in Kenya: a case study of lake basin development authority. International Journal of Social Sciences and Information Technology, 3, 15591583.*

Sharma, S., & Soederberg, S. (2020). *Redesigning the business of development: the case of the World Economic Forum and global risk management. Review of International Political Economy, 27(4), 828-854.*