

Building A Customer-Concentric Supply Chain in Africa: a Multiple Case Study Analysis

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Abstract

This study sought experts' opinions on the possible transformation strategies businesses in Africa can undergo to build a customer-oriented supply chain that competes favourably in this fast-paced, globalised business environment. The Delphi Technique approach was adopted to achieve this, involving 20 practitioners whose role spans logistics and supply chain-related operations. Findings were supported with case examples from world-class supply chains to aid insights about trends. Nine (9) areas to lead the supply chain transformation were identified. It is expected that medium to large companies in Africa consider evolving their supply chains along these lines as their business strategies evolve. Supply chain evolution, which does not reflect the company's changing business strategy, may not be worth it. Customer-focused companies are meeting customer needs for innovation within a progressively "nanosecond" response, little delivery volume and a shorter life-cycle. Responsiveness, resilience, reliability and realignment are critical drivers of competitive advantage.

Key Words: *Supply Chains, Customer-centred, Competitive Advantage.*

1.0 INTRODUCTION

Today's business environment is fast growing and characterized by turbulence, technological upsurge and other external sophisticated influential factors such as economic fluctuations, political landscape, legal differences, environmental awareness and more importantly socio-cultural dynamics. The level of competitiveness has risen more than ever before. The competition is no longer business vs. business but supply chains against other supply chains where they struggle to gain dominance. Suppliers are needed by organisations to help reduce supply chain costs and meet the desires of customers. Customers also need suppliers to provide quality innovative products at low cost. In the concept of supply chain management, the organization, customer and suppliers have strong representation.

Given the rising population, rise in wealth of Africa and the coming into being of the African Continental Free Trade Area which was calculated to enable unrestrained movement of goods, humans, finance and investment and giving a wide-array of access locus for mid-range market businesses that are giving thought to gain presence in Africa, the continent is expected to have an interesting story to communicate. Despite the enormous economic chances offered by emergent African consumer markets such as Nigeria, South Africa, Ghana and other sub-Saharan African countries, several companies both local and multinational tussle to do business productively in these markets due to badly off infrastructure, complex trade modus operandi, disintegrated retail markets and many more all of which culminates to less customer-centric supply chains and a meagre share of the local and world market. Study shows that in excess of 96 percent of businesses in Africa materialize in Small and Medium-sized

undertakings. These enterprises are struggling to make their businesses successful due to the numerous supply chain challenges they face. A study by [3] shows that poor inventory management, managerial inefficiency, lack of knowledge and skills of supply chain employees, poorly implemented organizational structures, business process and supply chain integration issues, poor technological infrastructures and little or no focus on sustainability issues affects businesses in Africa.

Customer service is at the core of building a customer-oriented supply chain. It encircles the fulfilment of the procurement rights- sourcing goods from the right place, making the right quality of goods available to customers in the right quantity, at the right price, at the right time and in the right state. Meeting these customer expectations may not be easy as it appears. It requires a strategic transformation and positioning of the supply chain from the traditional approach of mass production and storage to a more customer-centric approach. A number of factors driving this transformation include globalization, changes in business strategy arising from construction of supply chains and the increasing need to be responsive, adaptive to customer needs, innovative and efficient in supply chain management. Also driving this transformation within supply chains is the need for supply chain optimization, flexibility, execution of knowledge-led activities, overcoming the disruptions posed by external environment and integration of business process activities with requisite IT infrastructure. Demands on customer-led supply chains are significantly more acute and requires gradual transformation, robust plan and round-the-clock assessment of Achilles' heel.

2.0 REVIEW SUMMARY

Table 1. Africa Supply Chain Achilles' heel that Warrants Transformation

Businesses in Africa are still facing a number of supply chain challenges that deviates its customer focus. A number of these challenges have been drawn from literature and tabulated below.

Author and Year	Research Topic/ Area	Findings
[7]	An investigation into the challenges of effective SCM and its impact of business performance: A study of SME's in South Africa.	<ul style="list-style-type: none"> • Poor organizational structure • Technological challenges
[4]	This study was a cross sectional survey which assessed supply chains and inventory management practices of a care resource in Ghana.	<ul style="list-style-type: none"> • Long fulfilment time and uncertainty
[19]; [5]	An exploration of challenges of Procurement and supply chain management in South Africa.	<ul style="list-style-type: none"> • Lack of knowledge, skills and capacity of sales personnel in the supply chain
[22]	An investigation of SCM problems in automotive industry in South Africa.	<ul style="list-style-type: none"> • Less priority on quality • Integrating Technology with customers

		<ul style="list-style-type: none"> • Capacity constraint due to availability of skilled labour • Too long lead-times etc.
[28]	An investigation into the Challenges and enablers of supply chain collaboration in Nigeria	<ul style="list-style-type: none"> • Lack of service responsiveness • Poor collaboration between supply chain partners.
[28]	An investigation into the Challenges and enablers of supply chain collaboration in Nigeria	<ul style="list-style-type: none"> • Poor retail network • Unsupportive supply chain structures
[21]	A study into challenges declining innovation activities in Africa.	<ul style="list-style-type: none"> • Weak innovation system - product and service: Product innovation, supply chain innovation due to weak institutional systems
[27]	The study investigates into sustainable SCM issues in the manufacturing sector in Nigeria.	<ul style="list-style-type: none"> • Less focus on implementation of sustainability initiatives in the supply chain
[20]	An exploration of supply chain cost. A case study of the South African mobile phone industry	<ul style="list-style-type: none"> • High rising cost of managing supply chain
[24]	An investigation into supply chain challenges in Africa.	<ul style="list-style-type: none"> • Long lead times, • data invisibility, • high prices, • supplier lethargy
[31]	Evaluation of challenges of Medical supply chain in sub-Saharan Africa.	<ul style="list-style-type: none"> • Inadequate customer service delivery

Until these supply chain challenges are curtailed, businesses in sub-Saharan Africa especially, the local businesses will remain far from their customers and continue to creep. [15] held that a customer led supply chain is one focused on removing waste, engineering production and demand synchronization, supplier alignment and ingenious participation of labour force in supply chain process improvement actions. The essence of this paper is to gather experts' view on how companies in Africa can build a supply chain that is customer-focused given that a lot of these businesses are large employers in Africa and reels for economic growth and therefore need these customers for continuing economic growth and development in Africa.

3.0 METHODOLOGY

Data in this study was collected through a Delphi exercise. The Delphi methodology is a system used to attain collective view or decision by investigating competent group of experts. In this methodology, cooperative results coming from expert respondents were used to determine how modern businesses can transition to a more customer-centred supply chain. Further, a five-point likert scale was used to shrink the

pool of results gathered from respondents with the view to determining and prioritizing evolvement strategies that help to build a customer-focused supply chain from the perspective of professionals with acknowledged experiences. Greater mean values means that those factors/strategies were to be considered crucial in evolving to achieve a customer-focused supply chain and vice versa.

Internal consistency of questionnaire was tested using the Cronbach’s alpha. The test obtained a co-efficient of 0.88 compared with an acceptable range of 0.7 [39] indicating that the scale adopted for this study is reliable. The procedure below was adopted for the study for the Delphi technique.

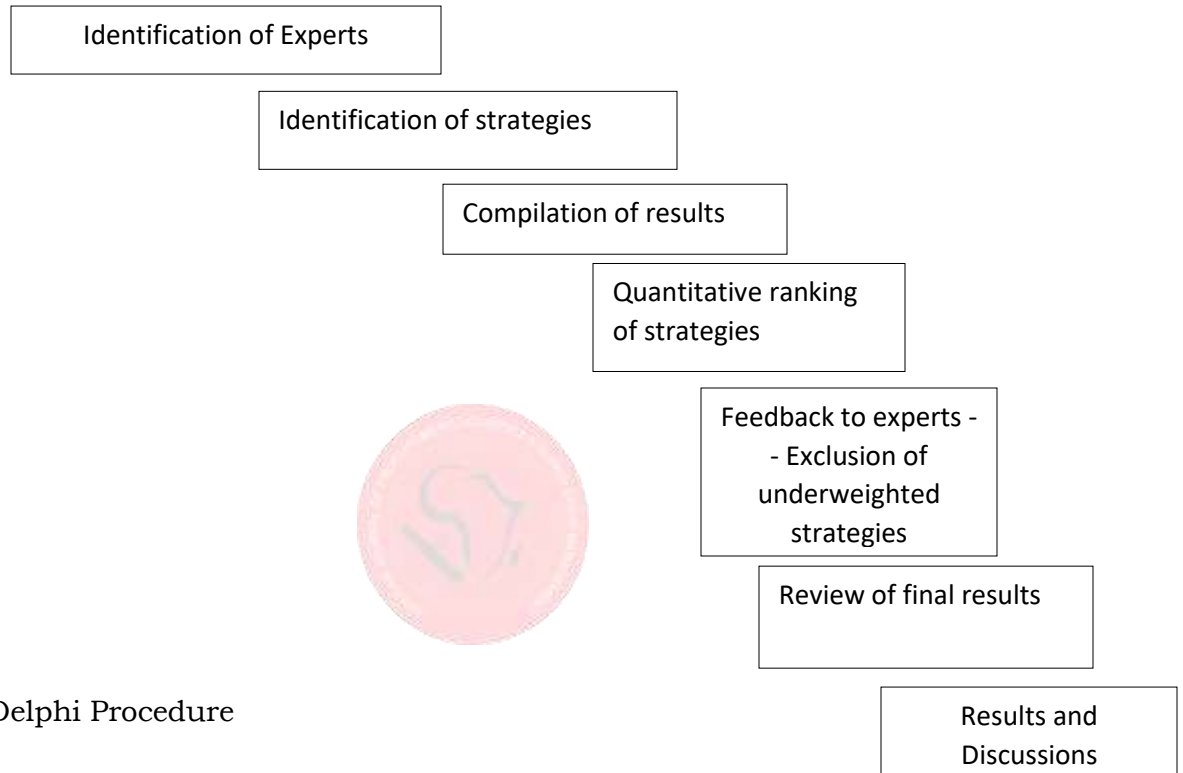


Figure 1: Delphi Procedure

Table 2: Respondents Profile Information

Experts	Qualification	Professional Experience	Supply chain Experience	Industrial sector
Expert 1	SCM, Msc.	15	10	Beverage/ Food
Expert 2	Administration, MBA	8	8	Telecommunication
Expert 3	Procurement & Supply	12	10	Technology
Expert 4	Marketing, CIM	7	5	Clothing
Expert 5	Commerce, Dphil	20	13	Fashion and Design
Expert 6	Industrial Engineering	10	8	Manufacturing
Expert 7	Economics	15	5	Consultancy
Expert 8	Banking and Finance	9	5	Banking
Expert 9	Agri. Business, Mphil	11	10	Agriculture
Expert 10	Computer Science, Dphil	25	18	Technology

Expert 11	Accountant, CIMA	18	9	Education
Expert 12	Business Communication	8	5	Retail
Expert 13	Chemical Engineer	12	6	Health
Expert 14	Engineer	15	15	Oil & Gas
Expert 15	International Trade, Msc.	10	8	Hospitality
Expert 16	Logistics and Transport	11	8	Manufacturing
Expert 17	Marketing	8	5	Retail
Expert 18	Msc. CIPS, CILT, CISM	20	20	Education
Expert 19	Finance	7	7	Banking
Expert 20	Accounting	19	13	Retail

4.0 RESULTS AND DISCUSSION

This section presents results of strategies compiled from literature reviewed. It further presents a sieve of these strategies based on respondents view and discusses results of the study.

Table 4: Strategies Drawn from Literature

Code	Strategies	References
A1	Organizational Structure	[23]; [13]; [7]
A2	Engaging skill personnel	[7]
A3	Training sales force regularly	[7]
A4	Focus on Quality	[34]; [29]
A5	strategic supplier partnership	[14]
A6	customer relationships	[1]; [11]
A7	Shut down of central distribution centres	[34]
A8	Focus on SC sustainability initiatives	[33]; [6]; [36]
A9	Tailored fulfilment	[10]
A10	Agile operations	[10]
A11	reduce lead times through efficient supply chain processes	[10]
A12	Cost reduction through economies of scale	[40]; [37]
A13	Close interaction with customers	[10]
A14	Review procedures regularly	[40]
A15	Expansion of retail networks	[10]
A16	Supply chain innovation	[36]
A17	Product Innovation	[29]; [34]; [10]

Table 4 shows the classification of strategies for building a customer-centered supply chain in Africa according to the level of significance consigned by a panel of experts particularly nominated for this study. Apparently, it is possible to notice that strategies present high averages, that is, most of the strategies got mean values above

4 (52.94%) in a scale ranging from 1 to 5, demonstrating that there is consensus about the effectiveness of the strategies in re-engineering supply chains in Africa to becoming customer focused.

4.1 Strategy Classification Based on Response from Respondents

Code	Strategies	Mean	Standard Deviation
A1	Organizational Structure	4.28	.691
A2	Engaging skill personnel	4.13	.595
A3	Training sales force regularly	4.10	.774
A4	Focus on Quality	4.07	.548
A5	strategic supplier partnership	4.05	.723
A6	customer relationships	3.97	1.377
A7	Shut down of central distribution centres	3.90	.705
A8	Focus on SC sustainability initiatives	4.78	.799
A9	Global leadership	4.26	.423
A10	Agile operations	3.73	.525
A11	reduce lead times through efficient supply chain processes	3.33	.960
A12	Cost reduction through economies of scale	3.30	.668
A13	Close interaction with customers	4.71	.433
A14	Review procedures regularly	3.19	.681
A15	Expansion of retail networks	4.21	.781
A16	Supply chain innovation	3.89	.698
A17	Product Innovation	3.88	.580

4.2 A customer-focused Supply Chain

Irrespective of the type of business, geographical location, size or market, contemporary globalized companies are directing their attention keenly towards one shared direction: search for customers, negotiate and close business deals with customers, exceed customer's expectation, close the relationship gap between the company and these customers, retain the customers and make them repeat customers. The goal is successful competition – thriving supply chains are those that have implemented essential change.

The understanding is seamless: to run ahead of competition and become a global leader, there must be a change in how a company communicates with its clients and integrates its supply chain processes with other business processes to meet the increasing needs and expectations of customers. World Class companies are taking several initiatives to ensure that supply chain organizations evolve to meet company's evolving business strategy, goals and objectives. Here are a number strategies Africa companies and businesses can employ to shift to a more transformed supply chains and business processes.

4.2.1 Supply Chain Organization (4.28)

The era of absolute centralization or decentralization has become outdated with the present pace of globalization of supply chains. Companies can no longer survive solely on cutting cost or exclusively meeting the crucial needs of its customers. It unquestionably has to be a combination of both cost cutting and good customer service. Achieving this strategy would require an incremental or swift (depending on present position and the future plans of the company) transformation of supply chains. Given the present level of competition and technological innovations, inertia in this accelerated global business environment will not be adequate to meet customer needs. Winning companies have transformed from being centralized or decentralized and now to the hybrid supply chain organization benefiting from the use of more than one organizational structure. They combined both centralized and decentralized structure allowing for strategic or cost-inflamed functions to be performed by central body with operational functions being decentralized in order to meet customer needs.

Supply chains pursue this transformation by having a single point of global leadership for defining harmonised supply chain processes, including demand planning, procurement, manufacturing, logistics distribution and order delivery. In addition, companies also adopt SCOR® model to achieve common ways of working such as standardized language, processes and Key Performance Indicators. Part of this move is the consistency with which leading companies staff their overseas operations with local managers who have experience in leading localized manufacturing companies. These managers also retain the responsibility of hiring their local teams and develop local sales and distribution channels. Zara, a fashion designer and retail company in Spain adopts the hybrid supply chain organisational structure.

The company has retained control for the manufacturing of almost all of its products and has also in-housed critical activities and processes such as cutting, dying, labelling and packaging to enjoy a balanced cost savings accrued as a result of producing on a large scale. Meanwhile the company has a mesh of subcontractors who execute the finishing workings that cannot be done within. Besides practice, a number of empirical studies have also proved that hybrid structures offer numerous benefits for supply chains. According to [17], hybrid supply chain structure allows companies to enjoy the benefit of centralization and decentralization such as economies of scale, cost savings, value-added customer service, complete optimization of all processes of supply chain, mitigation of risk associated with supply chain operations and delivery of unique customer service.

This structure also makes a company leverage the benefit of becoming lean and agile- supply chain practices that have moved from being choices to necessities. It is important that supply chains planning to transform to the hybrid structural system perform thorough analysis of its current position, make right choice that suits it and take the necessary actions in order to maximize the full benefits of this supply chain structure. In essence supply chains must align their supply chain strategy with the choice of structure in order to achieve good results.

4.2.2 Shut Down of Central Distribution Centre (3.90)

Central distribution centres are places where stocks are received and kept to be later shipped to customers. Keeping central distribution centres leads to increase risk of experiencing damage or theft, increase cost of holding goods such as space, lighting and heating cost, personnel for management of these centres all of which increases the cost of managing supply chain. Best in class supply chains are beginning with the

decision of their CEO's to shut down central distribution centres with the aim of achieving a seamless movement of product from the factory all through to the customer so as to achieve zero inventory strategy. This approach to inventory management may be practicable by some businesses but the approach is facilitated by the current development and proliferation of technological innovations. This requires a drive back down the supply chain, thus shifting responsibility or liability of holding inventory to suppliers.

Supplier's role in achieving this approach to inventory control and management is critical. Providers must as a matter of necessity exercise excellence in their operations with sound efficiency in creating minute more periodic production turns. This means fulfilling orders placed by customers exclusively and transporting them straight headlong to customers based on negotiated terms. Excellent processes for ordering and delivery, effective and efficient technological infrastructure and people packed with requisite skills are needed to drive zero-inventory system. Equally essential is the need to maintain closer collaboration with suppliers and other supply chain partners. In the absence of active communication and supply chain collaboration, achieving a no-inventory strategy would be impracticable.

Zero inventory strategy is critical to reducing inventory holding cost and waste in supply chains as well as facilitating cash flows. Although it is argued that this system of inventory control cannot be completely operable as some supply chains may want to keep a certain minimum amount of stock to cushion against unforeseen circumstances such as delays in delivery caused by force majeure, and man-made disruptions to supply chains that risks customer service, pragmatic efforts can be made by businesses to get closer to eliminating inventory in the supply chain. Nevertheless, supply chains that have optimized their processes to support no inventory approach such as those classified as "best in class" are invariably cutting down cost excessively, freeing up working cash and eliminating a heap of inventory-related waste in their supply chains.

4.3 A priority on Quality (4.07)

Companies evolve supply chains by evolving their strategies with focus placed on quality. Global leaders have come to the realization that to succeed in today's competitive globalized environment, it is critical to produce goods and services that are unparalleled in quality. A remarkable transformation companies are making towards this change is revamp of business model to embrace branding on the basis of superior quality. With priority placed on quality, best in class companies are bent on differentiating their products. The central theme is uniqueness. Sony is one among the good examples of companies that have competed on this basis. The company has a value belief known as Sony's Value- "to do what others are incapable of doing". This value system also called "Walkman" led to the development of Walkman Model in 1979 and 1981.

The brand was irresistibly strong that even when competitors tried to launch a fast follow up product in the market, Sony could not be beaten. Although Sony may have been outcompeted in present day's tech competitive environment, their past record is a legacy to reminisce and emulate. Another tech hulk which has used this product differentiation strategy to lead competition is the Apple Inc. Since 1980, Apple has fruitfully embraced product differentiation strategy to distinguish its products from its strong electronic competitors. Apple products such as Macintosh computers, ipod, ipad, and iphone though targeted at a certain market niche send a strong signal that their products are second to none when juxtaposed with current electronic brands. Apple's

differentiation strategy is implemented in several strategic activities such as product design, pricing, retail channel and brand loyalty.

In terms of product design, the company manufactures products whose physical features and functionality cannot be matched and imitated easily by its competitors. They have maintained this legacy over the years since their establishment. Apple store and iTunes vies with Google's play store and music. The former leads the market with about 63 percent of the total market share making it relaxed for apple to maintain its present share of the market and gain loyalty. Presently Apple Inc. is being strongly competed by Android who manufactures products with the same functions as apple but at a relatively lower cost although the company still sustains a robust presence in the consumer market. Irrespective of current market situation of Apple, the company's innovation and differentiation history are worth learning from by businesses in Africa.

4.4 Close interaction with customer (4.71)

According to [12] close communication with customers is a way to understand what customers need. Clear understanding of customer needs is a step in the right direction for present-day businesses. The significance of the customer makes supply chains pivot their survival around them. Flow of efficient communication in the supply chain fades transparency and trust issues while fostering close collaboration with supply chain partners [25]. 21st century customers' measure of satisfaction is not limited to the quality of goods and services bought but also with customer experience. Customers are increasingly expecting a seamless interaction, without restrictions and enabled by dynamic progressions.

With this in mind, Winning companies are undergoing supply chain transformational process by realising that quality alone is not sufficient. World Class companies are reinventing their business model around providing service responsiveness by engaging in close interaction with their customers which they believe would become their greatest source of differentiation. Businesses in the sub-Saharan Africa can consider achieving this strategy by setting up a computerised after sales service that allow their company to respond to customers as well as monitor its product performance.

4.5 Expansion of retail network (4.21)

Best in class companies are also evolving by expanding their retail networks informed by expansion of the customer base. As customer base increases, explosion of retail networks to the various areas where customers are located especially those in the rural areas becomes justified. In the sub-Saharan Africa, shoprite Holdings, a South African supermarket clutch is continually expanding its retail network to get closer to customers and amass its customer base. The company which gained presence in Zambia in the year 1995 has since expanded its retail infrastructure to gain presence in over 300 countries.

In addition, Companies can also achieve full coverage by linking its retail network with country's tier system where for instance, customers' in tier 1 and tier 2 can purchase from a bigger and well acclaimed retail stores. Customers in tier 3 get theirs from other smaller stores with tier 4 customers accessing the company's products at company's branded stores and those in villages access theirs from vendors in small kiosks marked by umbrella. The transformation of retail networks to reflect what have been described above will help home-grown African companies to be better positioned compared with their foreign competitors and also they become take-over targets or more

suitable for mergers and other supply engagements with multinational companies like the case of Walmart acquiring Massmart- a South African retail group.

4.6 Capability (4.13) and skill scaling of the people on the frontline (4.10)

Upskilling of workers has become very important especially in this era when covid-19 has caused a lot of unexpected disruptions to the African supply chain [30]. [28] on investigating the challenges of supply chain collaboration in Nigeria reckoned that the need to train supply chain members particularly the sales force has become decisive. Medium to large business need to train their sales force to use the technology and Internet of Things (IoT) architecture to market their products so as to match what foreign logistics businesses and supply chains today regard as new normal. Frontline workers are the countenance of businesses.

Excellent results from this frontline sales force is of major significance. An unsatisfactory service delivery from these front liners will cause an instantaneous adjustment of customers to game changers without reconsideration. The era requires that sales executives are skilled to build intimacy with customers. For businesses that still operate on physical presence, several sales forces should be deployed to support their various retail customers and in return allow the company to enjoy an exceptionally high level of interaction with end customers. This goes a long way to give customers better buying experience while giving the company more information about what customers need. Best in class companies equip their sales force to provide information to the sales operation department to aid demand and production planning leveraging on technological capabilities. This is an appreciable way African business supply chains can achieve a supply chain strategy of reducing inventory and its associated cost while delivering value to the customer.

4.7 Product innovation (3.88) combined with supply chain innovation (3.89)

This finding is in line with [9], who contended that there is high gravity to lower supply chain cost while increasing innovativeness, customer service and responsiveness. Best in class companies achieve innovation in terms of the way they produce their products as well as how they manage their supply chains. One competitive strategy is the adoption of a made to order and made to commit operating models which enable companies build uniqueness into their products based on customer preference and on the basis of retailers' commitment to sell them. In terms of supply chain innovation, best in class companies have integrated supply chain considerations into design where modularization is used to speed up the design process and to facilitate the manufacturing and production process.

This helps companies to manage the end to end requirements of customers. To achieve innovative supply chains, control of in-bound and out-bound logistics by subsidiaries gives both retailers and end customers assurance of speedy delivery. Leading companies are also adopting a very robust inventory management approach that ensures that retail customers are paid in full before orders are shipped. This helps to maintain a good flow of working capital. Product and supply chain Innovations opens up employment opportunities and makes a company become more efficient in their operations (Okumu et al. 2019). With the bringing into being of products and technology that are unparalleled with what exist in the market, it means one can enjoy a superior share of the market, make profit and be advantageous in competition [32]; [5].

4.8 *Becoming a global leader (4.26)*

Businesses in Africa should focus on becoming a brand cherished by local customers, their business strategy must evolve to sell innovative products that differentiates them and makes them a trend setter. Localization is imperative here. To achieve this, the company can look to adopt a three in one approach- complete localization of design, manufacture and marketing to understand local requirements and satisfy them. This strategy works best for companies using *hybrid supply chain organization* where the company, whilst maintaining a single point of global leadership, for harmonizing its supply chain processes, including demand planning, procurement, and so on give the authority to local managers to make decisions concerning employing local teams as well as developing local sales and distribution channel.

4.9 *Commitment to Sustainability Initiatives (4.78)*

The significance of sustainability is clearly appreciated than the covid-19 plague and the associated impact of integrating sustainability processes in the supply chain is just beginning to contract exploration [18]. In addition researchers have recommended sustainability as one of key research programs in terms of managing supply chains under pandemic period [35]. More and more customers are increasingly becoming aware of the impact and impression businesses have on the environment, society and economy [8]. They are shifting focus to suppliers that have policies on sustainability- thus ensuring that activities and operations do not have adverse effect on the environment while also fulfilling societal needs and contributing immensely to economic growth and development [16].

In view of this, supply chains of medium to large companies in Africa must also design their business processes to take into consideration sustainability requirements. Promote trust between companies and their supply chain partners and consequently create a more profitable business relationship; satisfy the needs of customers who are increasingly becoming aware of sustainability concerns; achieve a cost-effective and efficient supply chain and enhance a company's reputation, branding and optimal valuation which are recipe for competitive advantage for businesses.

5.0 CONCLUSION

In order to develop a customer-oriented supply chain that competes favourably in this fast-paced, international business climate, this study solicited the opinions of experts on potential transformation initiatives that firms in Africa may implement. In order to do this, a Delphi Technique approach was used with 20 practitioners whose roles cover supply chain and logistics-related operations. There were identified nine (9) areas to guide the supply chain's transformation to one that is more customer-centered.

As their business plans change, it is envisaged that medium to big enterprises in Africa will consider these factors while updating their supply networks. Although this may not be the ultimate strategy as supply chain strategy evolvement depends on the evolving business strategy. World class companies did not get to their position by one-time implementation or evolving business strategy to reflect their supply chain strategy. Through succession of let-downs and struggles, companies continued to change, adapt and advance processes to give customers incomparable experience while fulfilling their objective.

6.0 REFERENCES

- [1] Afraza, M., Bhattia, S., Ferraris, A. and Couturier, J. (2021). “The impact of supply chain innovation on competitive advantage in the construction industry: evidence from a moderated multimEDIATION model”, *Technological Forecasting and Social Change*, Vol. 162, doi: 10.1016/j.techfore. 2020.120370.
- [2] Ambe, I.M., & Badenhorst-Weiss, J.A. (2011b). Grounded theory analysis of municipal supply chain management. *Afr. J. Bus. Manag.* 5(29):11562-11571
- [3] Blome C, Schoenherr T and Rexhausen D. (2013). “Antecedents and enablers of supply chain agility and its effect on performance: a dynamic capabilities perspective”, *International Journal of Production Research*, Vol. 51, No. 4, pp.1295-1318
- [4] Boakye, G., Gyedu, A., Stewart, M. (2021). Assessment of local supply chains and stock management practices for trauma care resources in Ghana: a comparative small sample cross-sectional study. *BMC Health Serv Res* **21**, 66. <https://doi.org/10.1186/s12913-021-06063-6>
- [5] Borowski, P.F. (2021). Innovation strategy on the example of companies using bamboo. *J Innov Entrep* **10**, 3. <https://doi.org/10.1186/s13731-020-00144-2>
- [6] Carter, C. R. and Easton, P. L. (2011). Sustainable Supply Chain Management: Evolution and Future Directions. *International Journal of Physical Distribution & Logistics Management*, 41, pp. 46-62.
- [7] Dubihlela, J. & Omoruyi, O. (2014) Barriers To Effective Supply Chain Management, Implementation, And Impact On Business Performance Of SMEs In South Africa, *Journal of Applied Business Research* 30(4):1019-1031
- [8] Dzah, M., Chikwere, G.U. & Dzandu S.S.K. (2021). Implementation Challenges of Sustainable Procurement in Ghana’s Public Sector. *African Journal of Procurement, Logistics & Supply Chain Management*, 3(9), 01-14, <https://damaacademia.com/ajplscm/>
- [9] Gualandris, J. & Kalchschmidt, M.G. (2014). Customer pressure and innovativeness: Their role in sustainable supply chain management, *Journal of Purchasing and Supply Management*, Vol. 20(2): Doi: 10.1016/j.pursup.2014.03.001
- [10] Hugo, W.M.J., Babenhorst-Weiss, J.A., & Van rooyen, D.C. (2002). *Purchasing and Supply Management* (4th ed.). Pretoria: Van Schaik Publishers
- [11] Huo, B., Haq, M. and Gu, M. (2021). “The impact of information sharing on supply chain learning and flexibility performance”, *International Journal of Production Research*, Vol. 59 No. 5, pp. 1411-1434, doi: 10.1080/00207543.2020.1824082.
- [12] Jankó, Á. (2002). Electronic Communication the Effects of the Internet and Technology on Enterprise Communication. *Periodica Polytechnica. Social and Management Sciences*, 10(2), 257-267
- [13] Laforet, S. (2013). Organizational innovation outcomes in SMEs: Effects of age, size, and sector, *Journal of World Business*, Volume 48, Issue 4, 2013, Pages 490-502, ISSN 1090-9516, <https://doi.org/10.1016/j.jwb.2012.09.005>.
- [14] Li, S., Ragu-Nathan, B., Ragu-Nathan, T.S., & Rao, S.S. (2006). The impact of supply chain management practices on competitive advantage and organizational performance. *Omega*, 34(2): 107-124.
- [15] Lysons, A. C., K. Vidamour, R. Jain, and Sutherland, M. (2013). “Developing an Understanding of Lean Thinking in Process Industries.” *Production Planning & Control* 24 (6): 475–494
- [16] Majumdar, A., Shaw, M., and Sinha, S. K. (2020). COVID-19 debunks the myth of socially sustainable supply chain: a case of the clothing industry in South

- Asian countries. *Sustain. Production Consumption* 24, 150–155. doi: 10.1016/j.spc.2020.07.001
- [17] Martínez-Olvera, C. (2009). Benefits of using hybrid business models within a supply chain, *International Journal of Production Economics*, Volume 120, Issue 2, Pages 501-511, ISSN 0925-5273, <https://doi.org/10.1016/j.ijpe.2009.04.006>
- [18] Meyer, A., Walter, B. & Seuring, S. (2021). The Impact of the Coronavirus Pandemic on Supply Chain and their Sustainability: *Frontiers in Sustainability*, 2, 3, <https://doi.org/10.3389/frsus.2021.631182>, ISSN=2673-4524
- [19] Migiro, S.O. & Ambe, I.M. (2008). Evaluation of the implementation of public sector supply chain management and challenges: A case study of the central district municipality, North West Province, *South African Journal of Business Management*, 2(12):230-242.
- [20] Mpwanya, M.F. & van Heerden, C.H. (2017). A supply chain cost reduction framework for the South African mobile phone industry, *South African Journal of Economics and Management Sciences* Vol. 20 (1). DOI: <https://doi.org/10.4102/sajems.v20i1.1464>
- [21] Mudombi, S., and M. Muchie. (2014). “An Institutional Perspective to Challenges Undermining Innovation Activities in Africa.” *Innovation and Development* 4 (2): 313–326. doi: 10.1080/2157930X.2014.921272
- [22] Naude, M.J. & J.A. Badenhorst-Weiss (2011). Supply chain management problems at South African automotive component manufacturers, *Southern African Business Review* Volume 15 Number 1
- [23] Nicolescu, O. (2009). Main features of SMEs organisation system. *Review of International Comparative Management*, 10(3), 405-413.
- [24] Nollet, J., Leenders, M.R. & Diorio, M.O. (2006). Supply Challenges in Africa. *Journal of Supply Chain Management*, 30 (1): 51 – 56. Doi:10.1111/j.1745-493X.1994.tb00266.x
- [25] Ogulin, R., Selen, W., & Ashayeri, J. (2012). Determinants of informal coordination in networked supply chains. *Journal of Enterprise Information Management*, 25(4), 328-348. <https://doi.org/10.1108/17410391211245829>
- [26] Okumu, I.M., Bbaale, E. & Guloba, M.M. (2019). Innovation and employment growth: evidence from manufacturing firms in Africa, *Journal of Innovation and Entrepreneurship*, 8(7), <https://doi.org/10.1186/s13731-019-0102-2>
- [27] Owie, E.T. (2019). Sustainable Supply Chain Management in the Nigerian Consumer Goods Manufacturing Sector. Walden Dissertation and Doctoral Studies, Walden University.
- [28] Oyedijo A., Adams K., Koukpaki S.A.F. (2021) Supply Chain Management Systems in Africa: Insights from Nigeria. In: Abugre J.B., L.C. Osabutey E., P. Sigué S. (eds) *Business in Africa in the Era of Digital Technology. Advances in Theory and Practice of Emerging Markets*. Springer, Cham. https://doi.org/10.1007/978-3-030-70538-1_8
- [29] Salmela, E. & Lukka, A. (2004). Value added logistics in supply and demand chains. Smile. Part 1. eBusiness between global company and its local SME supplier network
- [30] Schmidt, C.G., Wuttke, D.A. Ball, G.P. & Heese, H.S. (2020). Does social media elevate supply chain importance? An empirical examination of supply chain glitches, Twitter reactions, and stock market returns, *Journal of Operations Management* 66 (6), 646-669.

- [31] Schöpferle, A. (2013). Analysis of challenges of medical supply chains in sub-Saharan Africa regarding inventory management and transport and distribution, Project Thesis, University of Westminster, London Westminster Business School
- [32] Shankar, V. & Narang, U. (2020). "Emerging market innovations: unique and differential drivers, practitioner implications, and research agenda," *Journal of the Academy of Marketing Science*, Springer, vol. 48(5), pages 1030-1052, DOI: 10.1007/s11747-019-00685-3
- [33] Simchi-Levi, D. (2010). *Operation Rules - Delivering Customer Value through Flexible Operations*. Cambridge, Massachusetts: The MIT Press.
- [34] Sodhi, M, and Christopher S Tang. (2017). "Supply Chains Built for Speed and Customization." *MIT Sloan Management Review* 58 (4):58419.
- [35] Queiroz, M. M., Ivanov, D., Dolgui, A., and Fosso Wamba, S. (2020). Impacts of epidemic outbreaks on supply chains: mapping a research agenda amid the COVID-19 pandemic through a structured literature review. *Ann. Operat. Res.* doi: 10.1007/s10479-020-03685-7. [Epub ahead of print].
- [36] Van Bommel, H.W.M. (2011). A Conceptual Framework for Analyzing Sustainability Strategies in Industrial Supply Networks from an Innovation Perspective. *Journal of Cleaner Production*, 19, 895-904
- [37] Verhoef, P.C. & Lemon, K.N. (2013). Successful customer value management: Key lessons and emerging trends, *European Management Journal*, Vol.31(1): 1- 15, DOI: 10.1016/j.emj.2012.08.001
- [38] Vidoni, M., Cunico, L. & Vecchietti, A. (2021). Agile operational research, *Journal of the Operational Research Society*, 72:6, 1221-1235, DOI: 10.1080/01605682.2020.1718557
- [39] Vitale, J. M., Lai, K., & Linn, M. C. (2015). Taking advantage of automated assessment of student-constructed graphs in science. *Journal of Research in Science Teaching*, 52(10), 1426–1450. doi:10.1002/tea.21241.
- [40] Xue, L., Ray, G., & Sambamurthy, V. (2013). The impact of supply-side electronic integration on customer service performance. *Journal of Operations Management*, 31(6), 363-375. <https://doi.org/10.1016/j.jom.2013.07.010>