COVID-19 PANDEMIC AND SUSTAINABLE SUPPLY CHAIN MANAGEMENT IN NIGERIA

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ABSTRACT
The devastating effect of the yet-to-be-resolved COVID-19 pandemic permeated all spheres of human endeavor, basically every nation across the globe is still grappling with the solution to an exit plan from the global widespread cataclysm. The climax of the epidemic led to a global shutdown of all economic transactions globally in march 2020; leading to negative economic experiences such as depression and recession by many economies. Supply Chain Management (SCM) involves the layout, organization, execution, management and monitoring of the free flow of goods (raw materials, work-in-progress and finished goods) as well as services amongst individual or organization from origin to the final consumer. Empirical evidence has shown that the outbreak of the global COVID-19 pandemic is traced to Wuhan, China in late 2019. The main objective of this study is to examine the effect of the global pandemic on sustainable supply management in Nigeria. The foremost issues this study seek to clarify includes; shutdown in traditional export/import activities, increased demurrage on un-cleared goods and reduced capacity utilization. The study will elucidate on the basic conceptualization of Supply Chain Management, COVID-19 and Sustainability; specifically, the study will adopt the Network Perspective (NP) theory to comprehensively explain Supply Chain Management concept. Qualitative research methodology was adopted in conducting the study through comprehensive personal interviews to clarify SCM issues and the use of secondary data to obtain documented information as well. The outcome of the study will form the basis of the study discussion of the findings. Based on study objective and the discussion of findings, recommendations and conclusions will be deduced to ensure that all stakeholders make adequate input to eradicate terrorism in Nigeria.

Keywords: Supply Chain Management (SCM), COVID-19, Sustainability and Customers.

JEL classifications: H51: I15: R41: Q01

1. INTRODUCTION

The devastating effect of any trend that could drastically distort global supply chain could never have been imagined until the outbreak of the COVID-19 pandemic. In Nigeria, the hazard caused by the epidemic on the economy is still ongoing. The fundamental platform for the movement of goods and services in the country solely relies on existing supply chain industry network; this network had seriously challenges during the COVID-19 lockdown resulting in constant rise in product prices at the consumption end. Manufacturers could easily attribute spiraling prices to: difficulty in procuring raw materials locally and internationally, distortion in the supply chain and logistic processes, inability to effectively distribute finished goods through an organized value chain system and consequential effect of COVID-19 lockdown on the downstream distribution intermediaries (wholesalers and retailers). Documented evidence traces the origin of COVID-19 to have first been discovered in Wuhan, China, (Wassenaar & Zhou, 2020; Andersen, Rambaut, Lipkin, Holmes & Garry, 2020; Gan, 2020; Wall, 2020 & Ma, 2020 & Scripps Research Institute, 2020).

According to PWC (2020) outlook on COVID-19 impact on supply chain management. the outbreak of the pandemic at the end of December 2020, resulted in some huge supply chain driven GDP losses estimated at 6 trillion, a minimum of N900 billion loss in trade and a spiraling inflationary rate of 12.9%. Supply-chain management involves the process of creating, planning, implementation, supervision and management of SCM activities with the aim at creating added value to products, encouraging competition amongst intermediaries nationally and internationally, matching demand with available supply and evaluating accomplishment with global best practices. *(Kozlenkova, Hult, Lund, Mena & Kekec. 2015,* Wieland & Wallenburg. 2011 and Harland. 1996). SCM process is a multidisciplinary field of endeavor embedded in diverse academic disciplines, business, technology and developmental trends and approaches such as; industrial processes, hardware /software engineering, operational/cost management, planning, purchasing, Information and Communications Technology (ICT) and marketing concepts for product services from producer to end users. *(Lam, 2018 Ravindran & Warsing. 2017, Sadeghi, Mousavi & Niaki. 2016 and Sanders & Wagner, (2011).*

COVID-19 was coined out from the name Corona Virus by World Health Organization (WHO), to be a 'Public Health Emergency of International Concern in January, 2 21020 (Berkeley, 2020 & Adhanom, 2020). verifiable scientific research has shown that this pandemic was first discovered in Wuhan, China, (Wassenaar & Zhou, 2020; Andersen, Rambaut, Lipkin, Holmes & Garry, 2020; Sun, He, Wang, Lai, Ji & Zhai, et al. 2020; Gan, 2020; Li, Guan, Wu, Wang, Zhou, & Tong, et al. 2020; Good & Greicius, 2020; Wall, 2020 & Ma, 2020 & Scripps Research Institute.2020). COVID-19 is scientifically confirmed to spread mostly through personal contact, sneezing, breathing, coughing and infected surfaces. measures to prevent the spread of the diseases are as follows; where cases are confirmed, the patients have to be isolated for medical attention, thorough contact tracing should be made on whoever the patient came in contact with to ensure that such persons also self-isolate from the public, (Eshiett & Eshiett 2021: Smith, Thomas, Snoswell, Haydon, Mehrotra, Clemensen & Caffery, 2020; Ohannessian, Duong & Odone, 2020; Keshvardoost, Bahaadinbeigy &; Fatehi, 2020 & Ingram & Ward, 2020). Hence, once an infected patient is identified, the patient must have to self-isolate and

remedial treatments are administered to the patients, it could lead to death within a period of two weeks. (Cascella, Rajnik, Cuomo, Dulebohn, & Di Napoli, 2020; Brüssow, 2020).

Statement of the Problem

The upsurge in prices of goods and services experienced during the March, 2020 global lockdown was basically driven by the COVID-19 pandemic. Other countries across the globe had adjusted their supply chain system by adopting a 21st century approach which guarantees free flow of goods and services with minimal human effort or in some cases without human effort. In Nigeria, the situation was made worse by the continuous dependence on a singular seaport facility; as the existing traffic gridlock already experienced before the advent of the pandemic became worse. This study intends to suggest the need for a sustainable supply chain process that could withstand rigorous period such as the COVID -19 pandemic era. The anticipation of a sustainable supply chain approach is riddled with underlying challenges which this study intends to elucidate as follows;

The core basis of development is the adoption of new approaches, processes and methodologies that could improve the overall wellbeing of the society. The continuous dependent on traditional supply chain approaches has resulted in sub-optimal outcomes resulting in inefficiency, time wastage, pollution, reduced profitability to stakeholders and poor management of economic resources. Rather than considering sustainable approaches which integrates human impact and the preservation of the ecosystem as the product moves through the supply chain process of sourcing raw materials, production, packaging, warehousing, delivery, consumption and disposal.

Documented evidence has shown that, the landing cost of importation of goods into Nigeria is much higher than that of any Sub-Saharan African country. A critical assessment of this fact shows that; the increasing cost of imported goods is due to higher demurrage importers need to pay to the authorities due to delay in collection of imported goods. This problem is traceable to so many issues such as; bureaucratic bottlenecks, endemic corruption amongst port/security officials, obsolete infrastructures and poor management of supply chain facilities

The problem of capacity utilization is one of the bane of our supply chain system in Nigeria, most manufacturing companies are operating based on an average recorded capacity utilization of 54.58% (2009 - 2020); whereas, the normal range of capacity utilization should be between (85–100%). This has affected supply chain activities across all levels of production and distribution of goods and services Hence, the process of adopting sustainable supply chain management means; the adaptation of innovative technological infrastructural facilities and managerial approaches; that could counter the devastating effect of a COVID-19 pandemic era; and guarantee an uninterrupted supply chain process in the country.

The objective of this study is to examine the effect of COVID-19 pandemic and sustainable supply chain management in Nigeria. Other objectives to be examined by the study includes; i) the assessment of the effect of traditional supply chain approaches on sustainable supply chain management in Nigeria. ii) to examine the effect of increased demurrage on sustainable supply chain management in Nigeria and, iii) to evaluate the effect of reduced capacity utilization on sustainable supply chain management in Nigeria.

2. LITERATURE REVIEW

Concept of Sustainable Supply Chain Management

Sustainable supply chain management involves the consideration of human impact through the process of; (Planning, procurement, production, warehousing, distribution and disposal) as well as the effective management of environmental friendly information flow between the customer and the supplier on one hand, and also product flow from the supplier to the supplier. This process in supply should be entrenched within the framework of accomplishing the aspirations and vision of present generation without jeopardizing the dreams of future generation. (Okhankhuele, 2020; Kumar; Teichman & Timpernagel, 2012 &Sorkin, 2021). The dynamic nature of the 4th industrial revolution has impacted tremendously on human activities as products move through the supply flow chain. This involves the application/adaptation of state of the art digital/technological and human resources in ensuring the speedy movement of products from the point of raw materials procurement, production, packaging, warehousing, distribution, consumption to the point of product waste disposal. (Lasi, Fettke, Kemper, Feld & Hoffmann., 2014; Brettel, Friederichsen, Keller & Rosenberg., 2014; Vešić & Bosch, 2016; & Klingenberg, 2017).

Concept of Sustainability

The concept of sustainable development was established for the purpose of addressing the deleterious effect of human activities on the ecosystem through the process of extracting natural resources, thereby resulting in ecological damage that could jeopardize future generations from having access to these resources as well. These damages could be in the form of; destruction of human heritages and ancestral homeland; in recent years, tourist are known to involved in a forms of tourism tagged; 'Ancestry tourism' or 'Heritage Travel' this involves tourism based on DNA testing, which involves tourist visiting their supposed homeland where their ancestors are believed to have originated from, deforestation, old spillage, desertification, depletion of resources, environmental degradation and pollution that leaves behind lifelong damage to future generations (NBC News, 2019 & Hotelling, 1931). In resolving this challenge, all stakeholders could make enabling legislation which ensures that; any form of human activities affect the ecosystem should be sustainable enough to guarantee the aspiration, objectives and all-round development of future generations. (Okona, 2019; Ajibade, 2013; Pigou, 1920 & Shapiro, K, 2007).

The concept of sustainable development could as well be elucidated on the ambition of the present generation to attain a certain level of life standard, this is also premised on the social pressure the individual/group faces, based on the need to attain certain level of socio-economic status, this drive could lead to the urgent need for a comprehensive examination of the available resources within the environment be it natural or extractive (mineral resources, forest resource exploitation, aquatic resource exploitation and environmental degradation), and how it could be obtained to improve their status and empower them economically.(Hall, 2010; Tsiokos, 2007; Frew, 2008; Lemelin, Dawson & Stewart. (Eds.). 2013 & Salkin, 2007). Where tourism practices are not sustainable, it rightly fits into the terminology tagged 'Tourism of Doom', this connotes a process wherein tourism resources are threatened environmentally or by human activities such as; i) ice caps in Kilimanjaro Mountain, ii) Destruction of Religious sites and

Shrines due to wars and insecurity in Syria, iii) melting of glaciers in the artic regions and eventual rise in sea levels globally and iv) depletion of the ozone layer due to greenhouse Gas emission resulting in global warming.(Gannon, Baxter, Collinson, Curran, Farrington, Glasgow, Godsman, Gori & Jack, 2017; Jafari & Scott, 2014; Biagi & Claudio, 2014; Olsen, Koster & Youroukos, 2013)

The essence of this study is to ensure that such aspirations are accomplished sustainably without harm to the ecosystem as well as denying future generations from attaining set aspirations, goals and objectives. (Al-Roubaie, 2013). In recent years, there have been reported cases of destruction of tourism sites artifacts and cultural heritages tantamount to heinous crime against humanity, (Jafari & Scott, 2014; Olsen, Koster & Youroukos, 2013). From the foregoing, the ultimate objectives of all stakeholders of tourism resources should be that of ensuring the adequate provisions of security to safeguard the lives of tourist, properties of tourism facility owners, the environment, image of the host country and the aspirations of future generations.

Corona Virus Pandemic

Corona Virus pandemic is an ongoing ubiquitous disease with its devastating effects on human society. COVID-19 was coined out from the its name Corona Virus by World Health Organization (WHO), as a 'Public Health Emergency of International Concern (Berkeley, 2020 & Adhanom, 2020; Ajibo, Nwokoedia; & Onuoha, 2020; Hammanjoda, 2020; Ngutsav, & Ijirshar, 2020; & Okhankhuele, 2020) COVID-19 is a very contagious disease which spreads easily by; personal contacts, cough, sneezing, breathing and infected surfaces. Various scientifically recommended measures to prevent the spread of the diseases are as follows; where cases are confirmed, the patients have to be isolated for medical attention, thorough contact tracing should be made on whoever the patient came in contact with to ensure that such persons also self-isolate from the public.(Smith, Thomas, Snoswell, Haydon, Mehrotra, Clemensen & Caffery, 2020; Ohannessian, Duong & Odone, 2020; Keshvardoost, Bahaadinbeigy &; Fatehi, 2020 & Ingram & Ward, 2020).

The most common diagnosis of COVID-19 is done by obtaining samples from the nasal path or saliva from the mouth or blood samples for test, results from the test are made available based on WHO published protocols and guidelines on how to mitigate the spread of Corona Virus. (Brueck, 2020, Anderson, Heesterbeek, Klinkenberg & Hollingsworth, 2020. Qualls, Levitt, Kanade, Wright-Jegede, Dopson & Biggerstaff et al. 2017 & U.S. Centers for Disease Control and Prevention (CDC), 2020). Additionally, this pandemic is also preventable with same protocols and guidelines on how best to mitigate the spread of this disease, scientifically recommended measures to prevent the spread of the diseases are as follows; where cases are confirmed, the patients have to be isolated for medical attention, thorough contact tracing should be made on whoever the patient came in contact with to ensure that such persons also self-isolate from the public.(Smith, Thomas, Snoswell, Haydon, Mehrotra, Clemensen & Caffery, 2020; Ohannessian, Duong & Odone, 2020; Keshvardoost, Bahaadinbeigy &; Fatehi, 2020 & Ingram & Ward, 2020). Other preventive procedures are; the need to wear face mask in public places, constant washing of hands whenever there is contact and use of alcohol-based hand sanitizers and social distancing in crowded places. (European Centre for Disease Prevention and Control (2020).

Meanwhile, stakeholders in collaboration with WHO have been working assiduously on a more sustainable measure on how to tackle this pandemic which is the production of a clinically acceptable vaccine, Clinical researches are ongoing at various phases in lined with who program, some medical research collaborations between the duo of BioNTech and Pfizer made some breakthroughs with their medical trials resulting in the discovery of Tozinameran vaccine to be manufactured and marketed by in November, 2020 (Thomas, LaFraniere, Weiland, Goodnough & Haberman, 2020; Campbell, 2020 & European Commission, 2020). The effective rate of this medication has resulted in various countries making orders for the procurement of the vaccination for its citizens. As at the close of December, 2020, countries across the globe have drawn up programs for the vaccination of its citizens against the COVD-19 pandemic. It is quite obstinate to state at this point that, as at the time of conducting this study, apart from 100,000 doses sent to Nigeria on WHO affiliate arrangement for developing countries, the nation is yet to make appropriate arrangement for the procurement of the vaccine.

EMPIRICAL LITERATURE

In conceptualizing sustainable effective supply chain management within the framework of a post COVID-19 pandemic era, existing empirical studies has been conducted on the as listed in Table 1 below: In a study by (Wong, Lirn, Yang & Shang. 2020, Wong, Lirn, Yang & Shang, 2020, Song, Chen & Lei, 2018 & Kaur & Singh, 2016). On SCM resilience and flexibility, Mapping, Dimensions, Robustness and Methods; *(Durach Kurpjuweit & Wagner. 2017. Kozlenkova, Hult, Lund, Wieland, Handfield & Durach, 2016; Mena & Kekec. 2015; Durach, Wieland & Machuca. 2015; Sanders & Wagner. 2011;* Ketchen Jr & Hult. 2006), SWOT analysis, (*Wieland, 2021;* McKenzie, 2020; Kraude, Narayanan, Talluri, Singh & Kajiwara. 2018; & *Todo, Matous & Inoue. 2016). Effect of pandemic on SCM, (*Paul & Chowdhury. 2020; Cyn-Young, Kim, Roth, Beck, Kang & Tayag. 2020; Alicke, Azcue & Barriball. 2020). On adaptation of blockchain in SCM, (*Durach.; Blesi; Düring & Bick; 2020; Iansiti & Karim, 2017* & Hackius, & Petersen, 2017), qualitative approaches on energy savings, (Dey & Saha, 2018; Chen, He, Guan, Lu & Li, 2017; Sabegh, Mohammadi & Naderi, 2017; Bazan, Jaber & Zanoni, 2015; & Kumar, Teichman & Timpernagel, 2012). Other studies include, sustainable SCM, (Goncalves, 2019; Cao, Li, Yang, Liu & Qu 2018; Kaur & Singh, 2016).

These foregoing studies are quite illustrative with complete deviation from the core essence of this study which intend to fill the gap in literature on the aftermath effect of COVID- on sustainable supply chain management in Nigeria, It must be noted that the current lull in economic activities and sharp increase in prices of goods and services is COVID-19 pandemic driven, hence this study objectively considers the need to adopt a technologically driven supply chain system that guarantees a sustainable marketing approach towards uninterrupted receipt and delivery of local and imported products across the country.

THEORETICAL FRAMEWORK – SUSTAINABILITY SUPPLY CHAIN MANAGEMENT THEORY

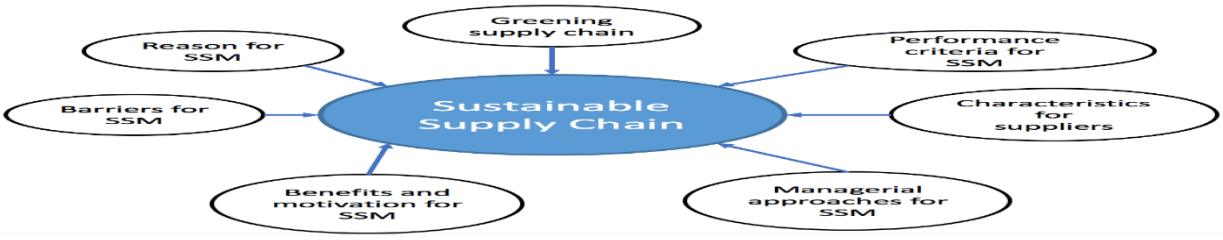
This theory emerged from the broad objectives of accomplishing sustainability in business potentialities, (Burgess, Singh, & Koroglu., 2006; Hall & Matos, 2010, Mentzer, Dewitt, Keebler, Soonhoong, NIix, Smith, & Zacharia., 2001). There has been tremendous

improvement in SCM researches in the last decade with wide ranges of systematic reviews in applicable theories in SCM, its effect in managerial performance, as well as ensuring sustainability impact on man and a balance on the ecosystem as product flow through the chain. (Carter & Easton, 2011, Sarkis, Zhu, & Lai., 2011; Preuss, 2009a; Seuring & Müller, 2008; Carter & Rogers, 2008; & Storey, Emberson, Godsell, & Harrison, 2006). As the chain becomes complex due to increase in activity levels, the need for augmentation of the the underlying theories becomes inevitable. (Krause, Vachon, & Klassen, 2009; & Pullman, Maloni, & Carter, 2009).

The challenge faced by SCM scholars in recent years has been the process of merging the theoretical concept of sustainability with SCM by testing and building the theory. (Ahi & Searcy, 2013 & Seuring & Müller, 2008; Colquitt & Zapata-Phelan, 2007; & Voss, Tsikirktsis, & Frohlich, 2002), in ascertaining q wider acceptability of any proposed theory; most scholars have proposed that the validity and reliability of such proposition must be backed up by empirical evidence on practical challenges within the field of study. (Alvesson & Kärreman, 2007; Colquitt & Zapata-Phelan, 2007, Hambrick, 2007, Van Maanen, Sorensen, & Mitchell., 2007). Hence the need to adopt the all amalgamated triple bottom line model of SCM posited by (Carter & Rogers 2008). which explains how firms can create competitive advantage by integrating stakeholders interest with sustainability concerns as product/services flow down the supply chain system. Other authors also made attempt to link sustainability with SCM theories. (Pagell & Shevchenko; 2014; Winter & Knemeyer; 2013; & Sarkis, Zhu, & Lai 2011).

In essence, the triple bottom line proposition of SCM as proposed by Elkington in 2002 connotes that investors should be able to look beyond the return on their investment ROI, but should also work very hard to integrate the threefold of; economic bottom line, social bottom line and the bottom line of the ecosystem; or otherwise known as; economic responsibility, social responsibility and environmental responsibility. This will entail a comprehensive balance as product/services moves along the supply chain funnel

Fig 1: Sustainable Supply Chain Management



Adapted: Sustainable Supply Chain Management conceptual model (Ageron,* Gunasekaran, & Spalanzani, *2012)

The above framework is embedded in Cater && Rogers (2008) proposition on the need for sustainable SCM to adapt the seven sustainability SCM framework based on; i) Managerial approach, ii) Performance criteria, iii) Anticipated benefits/motivation, iv) Existing barriers, v) Reasons for adopting SSM vi) Green SCM and, vii) Expected suppliers' characteristics, when firms keep to this maxim, sustainability could be said as achieved within the SCM process flow.

(Brandenburg, & Rebs, 2015; Amini, & Bienstock, 2014; & Ageron, Gunasekaran, & Spalanzani, 2012).

3. METHODOLOGY

The study adopted a qualitative research methodology with a primary data obtained through comprehensive/ extensive interview was also conducted from; Nigerian Ports Authority Apapa, Lagos State and Onne Rivers State, Other corporate and multinational organizations with comprehensive SCM architecture/resources such as; Nestle Nigeria Plc SCM unit, Nigerian Breweries SCM unit, SAAB Miller SCM unit, Indomie Nigeria SCM unit. The essence of this interview was to collect first-hand information for the study. Additional information were obtained from secondary sources such as; periodicals, journals, books, conferences and workshops.

4. RESULTS AND DISCUSSION OF FINDINGS

This part of the study presents results and discussions on the key objectives of the study and how they were actualized each of the hypotheses;

Sustainable SCM in Nigeria: Reforms of traditional SCM system

The current traditional SCM processes in which products has to be routed through the process of raw materials procurement, production, packaging, warehousing, distribution, consumption and disposal is riddled with a higher percentage of inefficiency, bureaucratic bottlenecks, time wastage and error. A sustainable SCM system could mitigate these problems through an efficient process that guarantees continuous supply, enhances international collaborations, increases business development opportunities, reduction in SCM driven environmental impact, ensure availability of necessary information. In recent years technological approaches has been adopted by countries of the world ; for example the adoption of Block-chain by Germany in 2020 to facilitate the processing and smart delivery of product services within the SCM framework has proven to be very successful.

Sustainable SCM in Nigeria: Reforms of Export /Import system

The establishment of a single operational port in Apapa, Lagos State has been the main source of traffic gridlock which has negatively impacted on man-hour wasted and its devastating effect on the nations' economic activities. The way out of this quagmire is the massive development of deep seaports across the southern coastal lines, this will end the regime of high demurrage on imported goods, increase economic activities and improve the GDP of the country. Hence, with increase in vessels berthing and discharging from the ports, this will help create employment for the unemployed in the country within the SCM value chain. Manufacturing firms' will benefit from this development since the country is heavily dependent on raw material and finished imported goods

Sustainable SCM in Nigeria: Effect on Capacity Utilization

The capacity utilization in Nigeria is estimated at 54% which is a far cry from the standardized anticipated 85 -100%. This situation has a critical negative impact on the SCM. A greater percentage of the problem lies in the existing infrastructural gap experienced in all sectors of the economy such as; roads, rail, pipelines, aviation, telecommunications, education, health. This vacuum affects the SCM system directly through delays in delivery of goods to customer from the point of production to the hinterland.

5. CONCLUSIONS AND RECOMMENDATIONS

First, the supply chain must be integrated to ensure a seamless transfer of goods from producers to consumers. Also, technological adoption in supply chain processes is indispensable to the survival of the supply chain industry. Lastly, upskilling of supply chain participants is critical at a time like this. For technological adoption to aid risk absorption in the supply chain industry, the people involved must be upskilled and equipped technology-wise.

Reacting to the effect of COVID-19 on the supply chain industry, participants across the value-chain have adopted efficient measures geared at sustaining production and delivery to final consumers. Some of the innovative measures include the use of technology to take up orders from customers, strategic partnerships between producers, intermediaries and delivery companies, innovative management of inventory to avoid stock-out, etc. Most of these measures have proved to be effective and should be maintained going forward.

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