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Global Supply Chain Management Future Challenges

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Abstract

Over the past decade, there has been an increasing emphasis on supply chain management as a vehicle through which firms can achieve competitive advantage in markets. The business environment has been continuously responding to the pressures of globalization. In every industry, networks of suppliers, manufacturers, trade intermediaries and customers have spread around the globe as companies strive to lower their costs, increase their profits and improve productivity in a highly competitive global marketplace. Further, the term supply chain management (SCM) has risen to prominence over the past 15 years, becoming such a significant topic. Nonetheless, little is known in the literature concerning the issues and problems currently arising in a global supply chain. This study sought to identify, key drivers of supply chain performance in a complex business environment, determine barriers which industries faced in the course of implementing new supply chain strategies. The study examined the global supply chain management future challenges. The study used a desk study review methodology where relevant empirical literature was reviewed to identify main themes. A critical review of empirical literature was conducted to establish the global supply chain management patterns and future challenges. Human collaboration theory was used to inform the study. The study grouped the challenges in four categories namely market dimension technology dimension, resource dimension and time dimension. The study established that the future of supply chain management influences the future of the business management since there will be no business that will not be part of a supply chain. The paradigm of business management will soon be converged to the paradigm of supply chain management. This therefore leads to recommendations on agility, adaptability and alignment on the future of global supply chain management. The supply chain should be agile enough in order to respond quickly to the dynamics of demand fluctuations and sudden changes of supply. The agility is a supply chain capability that handles the unexpected external disruptions smoothly and cost effectively. It enables the supply chain to survive the impact of the external dynamics and be able to recover from any initial shocks. The supply chain should have adaptability where it calls for organization and its supply chain to

embark on major strategic changes in technology, market positioning, radical skill upgrading and competence shift.

Keywords: *Global Supply Chain management & Challenges*

1.0 Introduction

The supply chain is commonly regarded as a sequence of material suppliers, production facilities, distribution services and customers which are linked together by the flow of goods and information (Chan, 2018). The term supply chain management (SCM) has risen to prominence over the past 15 years, becoming such a significant topic. Nonetheless, little is known in the literature concerning the issues and problems currently arising in a global supply chain (Lambert & Cooper, 2016). This study sought to identify, key drivers of supply chain performance in a complex business environment, determine barriers which industries faced in the course of implementing new supply chain strategies. In addition, identify potential unexpected disruptions to the supply chain complexity and the resilience required to overcome these disruptions. The issues raised on problems and practices of GSCM, provided essential information to researchers and practitioners on the challenges and opportunities in the global supply chain sourcing processes. This paper provides an insight into Global Supply Chain Management (GSCM) and examines related literature on issues arising within the business environment. Furthermore, it is supported by related literature which focuses on practical matters and the theoretical studies as well as their innovative combination in building up an understanding concerning the topic under discussion.

1.1 Background of the Study

Over the last three decades, the concept and theory of business management have undergone profound changes and development (Msimangira & Venkatraman, 2014). Many old ways of doing business have been challenged and many new ideas and approaches have been created, among them are business process re-engineering, strategic management, lean thinking, agile manufacturing, balanced scorecard and blue ocean strategy. Supply chain management is undoubtedly one of those new and well grown management approaches emerged and rapidly developed across all industries around the world (Croom, Romano & Giannakis, 2018).

Global supply chain management is directly linked to the growth of globalization, tracing back actual date in antiquity as the beginning of supply chain management is not possible because its beginning differs by company. According to Tiwari and Jain (2013), global supply chain management refer to design, planning, implementation, control, and monitoring of supply chain

activities with the objective of creating net value, creating a competitive infrastructure, influencing worldwide logistics, coordinating supply with demand and measuring performance globally.

Among the issues arising which poses challenges in the present day global supply chain practices are several which connect directly to the instability of market, economic shrinkages plus uncertain repossession phases, which either in a negative or positive way disturb the method firms manage their distribution system, manufacturing system, invoicing as well as obtaining resources (Mwangi, 2013). With so many numerous factors setting in, enterprises must enhance their supply chains strategies, just to remain competitive in this complex business environs (Swartz, 2013).

According to Soni and Kodali (2010), to increase a firm's performance the drivers of supply chain management should be considered as this are very essential. The key drivers of supply chain performance include facility and their locations, transportation, inventory, distribution and information management, sourcing and pricing (Otchere, Annan & Anin, 2013). The better the firm is able to manage all of these activities, the better it increase a firm's performance.

1.2 Statement of the Problem

Over the past decade, there has been an increasing emphasis on supply chain management as a vehicle through which firms can achieve competitive advantage in markets (Thoumrungroje & Tansuhaj, 2017; Mattila (2016). The business environment has been continuously responding to the pressures of globalization. In every industry, networks of suppliers, manufacturers, trade intermediaries and customers have spread around the globe as companies strive to lower their costs, increase their profits and improve productivity in a highly competitive global marketplace (Grover & Malhotra, 2013). A paradigm shift has occurred in which companies that once built domestically to sell internationally now look globally for raw materials, services and finished goods to sell into a defined marketplace (Hultman, Hertz, Johnsen & Johnsen, 2017; Kabossa & Clemence, 2014). Thus, many companies have made large investments to streamline their supply chains in order to improve customer satisfaction and increase their internal productivity. Further, management of supply chains in a business environment has a major financial impact on all parties involved in the chain. Due to that, research and implementation of supply chain management principles to improve the supply chain are of key importance to any global company today. As companies seek to integrate decisions across supply chain functions, across geographically dispersed facilities, and across time, the facts based supply chain management is crucial.

Therefore, this study sought to establish the global supply chain management patterns and future challenges.

1.3 Objectives of the Study

- i. To examine the patterns global supply chain management.
- ii. To analyze the challenges in global supply chain management.
- iii. To give recommendations on future challenges in global supply chain management.

1.4 Research Questions

- i. What are the patterns in global supply chain management?
- ii. What are the possible challenges affect global supply chain management?

2.0 Literature Review

2.1 Theoretical Framework

2.1.1 Human Collaboration Theory

The human collaboration theory by Clark and Wilkes-Gibbs (1986) suggests that there is strong evidence to prove that investment in supply-chain management have the largest impacts when they focus on enabling supply chain collaboration. This management theory focuses on the managers ability to invest in and promote human collaboration between employees throughout the global supply chain. Human collaboration is defined as the use of skills through harmonization of individuals, teams and organizations to achieve greater things not achievable by an individual person. The human collaboration theory/framework lays out four key components. The first component deals with the forces that drive change, the second focuses on people-technology-process assets that create network collaboration, the third deals with resisting forces which encourage people to resist collaboration, and the fourth component looks at the desired collaboration performance. The theory states that to implement and operate a successful global supply chain, a manager must understand and use these components (Clark & Wilkes-Gibbs, 1986).

The theory states that to implement and operate the best collaboration system, a manager must; build trust between the different players of the chain (supplier and manufacturer), establish a culture which supports decision making and work, implement a proper reward system, and use synergistic activities. According to the theories creators, a manager must follow four steps to transform their network into a more collaborative network. The first step is to recognize that to be

competitive the company will require innovations, which can be proposed by people outside the corporate boundary, and therefore to access these people they need to be more collaborative with external partners. They then must alter their views of achieving collaboration by acknowledging the different types of collaboration (transactional, co-operative, coordinated, and synchronized). Next, a manager must develop a collaborative plan that achieve the goals he/she sets out to achieve. Finally, a manager must develop the right controls to ensure the goals/mission can be met. If a manager follows the recommendations made by this theory, then they will have implemented a proper global supply chain that focuses on human collaboration which in turn will yield better results.

2.2 Empirical Review

2.2.1 Supply Chain Management Practices

Assessing supply chain management globally, Brühlhart and Trionfetti (2014) stated that the portion of public expenditure attributable to purchases of goods and services is the subject of significant attention. As with total public expenditure, this interest arises in part from the absolute scale of public procurement with between 8% and 25% of the Gross Domestic Product (GDP) of Organization for Economic Co-operation and Development (OECD) countries and 16% of European Union (EU) GDP being attributable to government purchases of goods or services. Knowing that the role of procurement in driving forward the corporate agenda is critical, given the position and its ability to influence external organizations in the supply chain (Seuring, 2013). This calls for the need to assess supply chain management practices for improved organizational growth.

Public services in many African countries are confronted with many challenges, which constrain their delivery capacities (Lienert, 2013). There is also the perennial problem of the shortage of financial and material logistics that are necessary to support effective service delivery. In South Africa, procurement is of particular significance in the public sector and is being used as a policy-making tool in view of the discriminatory and unfair practices of the past. In an effort to replace outdated procurement practices, South Africa government adopted policy to guide uniformity in procurement reform process in conjunction with provisional treasuries in the year 2003.

Adebayo (2016) carried out a study examining the level at which the Nigerian manufacturing companies are involved in SCM practices as well determine the effect of these practices on SCM

performance. With a total of 31 companies forming the sample size of the study, the data collected was analyzed using both descriptive statistics (tables, mean and standard deviation) and inferential statistics (correlation and multiple regression analysis), the result showed that SCM practices definitely impacts on SCM performance

In Germany Khalid *et al.* (2015) found that technological integration emerges as the core supply chain management practices frequently identified and is contingent with a number of other practices. Further, supply chain management practices including long-term relationship development, partner development, joint development, enhanced communication, learning, stakeholder management and innovation have regularly been referred to and are considered important in improving the performance of public institutions. In China, Lin (2014) argued that although agriculture sector was regarded as a mature sector, there remained significant inefficiencies in on-farm resource management that presented opportunities for environmental improvements through supply chain management practices like collaboration, adoption of information technology and enhancement of farm-supplier relationships.

Kimondo *et al.* (2016) conducted a study on Dynamics of supply chain management in the Kenyan construction industry a case study of national irrigation board. The study established that long-term relationships, working with certified suppliers, prudent supplier selection and few supplier policies, supplier involvement in product development, good interaction and internal, trust and commitment with partners, strategic purchasing, supply network coordination, external integration, logistics integration and effective communication affect the construction project performance at National Irrigation Board.

2.2.2 Challenges in Global Supply Chain Management

There are several key strategic challenges that have the long term and overall impact on the architecture as well the management process of the global supply chains. Those strategic challenges tend to be interrelated intricately and dynamically with one another. According to Lu (2011), the magnitude of those challenges varies from industry to industry and from time to time.

Market dimension

Continuing demand volatility across the world market has hampered many supply chains' ability to manage the responsiveness effectively. Demand fluctuation at the consumer market level poses

a serious challenge to the assets configuration of supply chain, capacity synchronization, and lead-time management. More often than not it triggers the ‘bullwhip effect’ throughout the supply chain resulting in higher operating cost and unsatisfactory delivery of products and services. The root causes of the demand volatility in the global market are usually unpredictable and even less controllable. Economic climate plays a key role in overall consumer demand. The recent worldwide economic downturn has made many global supply chains over-capacitated, at least for a considerable period of time. Geo-political instability around the world has also contributed to the market volatility to certain industries. Technology development and product innovation constantly creates as well as destroys the markets often in a speed much faster than the supply chain can possibly adapt. Emerging economies around the world are aggressively churning out products and services that rival the incumbent supply chains in terms of quality and price, which lead to huge swings of market sentiment.

Customer loyalty has significantly decreased over the last decade, adding to the concerns of market volatility. The development of internet based distribution channels and other mobile marketing medias has made it incredibly easier for consumers to switch their usual brands. A lack of robust forecasting and planning tools may have contributed to the problem, as companies and their suppliers frequently find themselves scrambling to meet unexpected changes in demand.

Technology dimension

Technology and the level of the sophistication in applying the technology for competitive advantages have long been recognized as the key strategic challenges in supply chain management. This is even more so, with the supply chain development in a global stage. There are two key strategic challenges in the technological dimension. The first is the development lead-time challenge. The lead-time from innovative ideas to testing, prototyping, manufacturing, and marketing has been significantly shortened. This is partially due to the much widened global collaboration on technological development and subsequent commercialization and dissemination. The globally evolved technology development systems have created a new breed of elite group as the world technology leaders across different industries. They capture the first mover advantages and made the entry barriers for new comers almost impossible to overtake.

The second challenge lies in the supply chain network. The innovative ideas and new technologies usually emerge from a supplier or a contractor in the supply chain network. To convince the whole

supply chain of the value adding or cost reduction is not guaranteed. Each supplier and contractor will have its own value stream and will make technology adoption decisions based on the needs of its own customers. Innovative ideas that come up from subcontractors may be stifled due to the supply chain's inability to coordinate value contribution between individual members and the whole supply chain. The cost and profit structures in the value network can also limit the attractiveness of an innovation. If profit margins are low, the emphasis will be on cost cutting across proven technologies, rather than taking the risk of the new technologies.

Resource dimension

From resource based perspective, global supply chain development is both motivated by dinging new resources around world and by make better use of its own already acquired resources to yield economic outputs. It comes as no surprises that one of the key strategic challenges in global supply chain development is about resource deployment. The term resource in this context means any strategically important resources, including financial resource, workforce resource, intellectual resource, natural material resources, infrastructure and asset related resources, and so forth. Stretching supply chains' downstream tentacles around the world opens the door for making good (more efficient) use of internal resources, i.e. the same level of resources can now be used to satisfy much wider and bigger market in terms of volume, variety, quality and functions. However, the internal resource or competence-based strategy will also face more severe challenges on the global stage than in its own local or regional market. The challenges are not necessarily just from the indigenous market, but more likely, they come from equally competitive incumbent multinationals and possible emerging ones alike. In addition, more menacingly the internal based advantages can evaporate anytime when global business environment subjects fundamental changes

Stretching the sourcing-end (supply side) of supply chain to the global market is a great strategy to acquire scarce resources, or any resources at a much-lowered cost. The productivity and operational efficiency oriented strategy is often no match to the procurement focused strategy in measures of reducing the total supply chain cost. Many multinationals are actively debating on sourcing their workforce, materials and energy from overseas locations in order to significantly reduce the operation cost, which will then lead to more competitive market offerings. This resource sourcing strategy has been the prime drive for the surge of off-shoring and outsourcing activities

all over the world. However many long-term and short-term impacts of outsourcing and offshoring are difficult to be fully understood from the outset, if at all possible. Thus, it forms a key strategic challenge in global supply chain development.

Time dimension

Most of the key global supply chain challenges are time related, and it appears to be that they are becoming even more time related than ever before. Given that everything else is equal; the differences on time could make or break a supply chain. When the new market opportunity emerges it is usually the one who gets into the market first reaps the biggest advantages. Competitions on many new electronic consumer products is largely about who developed it first and become the industry leader. From the internal supply chain perspective, the cost and core competences are all largely measured against time. Inventory cost increase, if the materials do not move on quick enough; supply chain responsiveness is can be significantly influenced by the lead-time and throughput time.

One of the key supply chain management subject areas is about agility and responsiveness. That is defined as how fast the supply chain can respond to the unexpected and often quite sudden changes in market demand. Understandably, in the increasingly fast moving global market place, developing and implementing an agile supply chain strategy makes sense. However, the tough challenges are usually not on making the decisions as to whether should the supply chain be agile or not. They are more on balancing the 'cost to serve'. In order to maintain a nimble footed business model, the supply chain may have to upgrade its facilities with investment, having higher than usual production and service capacities, or having high level of inventories. Then the question is would the resultant agility pay for the heightened supply chain costs. There is no fixed answer to this question, and it remains as a key challenge to supply chain managers.

The time measures on many operational issues have also been the major challenges for supply chain managers. Customer lead-time, i.e. from customer order to product delivery, is one of those challenges. However, it could be a huge challenge, when the customers are all over the world and the productions sites and distribution logistics facilities are not well established.

These challenges are interrelated and even interdependent with each other. A supply chain strategist must have a sound system view to understand the intricate relations of all factors in the

whole supply chain and over the projection of long-term. Those strategic challenges have undoubtedly given rise to the risk level of global supply chain development.

3.0 Research Methodology

The study examined the global supply chain management future challenges. The study used a desk study review methodology where relevant empirical literature was reviewed to identify main themes. A critical review of empirical literature was conducted to establish the global supply chain management patterns and future challenges.

4.0 Discussion

The section discusses some of the global supply chain management practices.

Collaboration

Collaboration is a great deal of global supply chain management activities are not necessarily about competing against one another, rather it is more about collaboration and partnering. Inter-firm collaboration in supply chain management context is simply defined as working together to achieve a common goal. The content of collaboration varies from project to project and from business to business. There are a number of obvious reasons why collaboration is one of the most favorite supply chain management approaches;

Sharing resources: collaboration between two firms helps to share the complementary resources between them, thus avoiding unnecessary duplication of the costly resources such as capital-intensive equipment, service and maintenance facilities, and distribution networks and so on. Information, knowledge and intellectual resources are also very common resources that are shared during the collaboration.

Achieve synergy: collaboration of the two partnering firms will usually result in what is called synergy. Synergy, in general, may be defined as two or more things functioning together to produce a result not independently obtainable. In the context business collaboration or partnering, synergy is about creating additional business value that neither can achieve individually.

Risk sharing: a properly constructed collaboration can help to mitigate the company's market and supply risk significantly for both parties. Risk is the negative but uncertain impact on business, which is normally beyond control. By collaborating on investment and marketing, the negative impact of the supply chain risks can be borne by both parties and thus shared and halved.

Innovation: collaboration in technology development and R&D partnering is particularly effective way to advance their competitive advantages through innovation in the technological frontier. The logic behind is perhaps that when people from different business working to gather, they start blend their knowhow and experience together, sparkling new innovative ideas. In most of innovation training programs one can always recognize one of steps of generating innovative ideas is to have brain storming across a multifunctional team.

Supply chain integration

The nature of a supply chain is that it is usually a network which consists of a number of participating firms as its member. For a global supply chain the network stretches many parts of the world, and the participating member firms of the network can be an independent company in any country around the world. Supply chains are therefore voluntarily formed ‘organizations’ with fickle loyalties and often antagonistic relations in between the member firms. Communication and visibility along the supply chain are usually poor. In other words, supply chains are not born integrated.

Supply chain integration therefore can be defined as the close internal and external coordination across the supply chain operations and processes under the shared vision and value amongst the participating members. Usually, a well-integrated supply chain will exhibit high visibility, lower inventory, high capacity utilization, short lead-time, and high product quality (low defect rate). Therefore, managing supply chain integration has become one of the most common supply chain management approaches that can stand up to the global challenges.

However, there is no supply chain that is strictly 100% integrated, nor any one that is strictly 0% integrated. It is about how much the supply chain is integrated from a focal company’s point of view. The issue about supply integration is particularly important when the supply chain is formed by the members around the globe.

Pursuing world class excellence

To weather the global challenges and to achieve long lasting business success often calls for one fundamental feat and that feat is world class excellence. Almost all known world leading supply chains in all industrial sectors have somehow demonstrated that they have just been excellent in a

multitude of performance measures. The world class excellence defines the highest business performance at a global level that stand the test of time.

To become a world class supply chain one need to excel in four dimensions. The first dimension is the operational excellence. All world class supply chain must have optimised operations measured in productivity, efficiency, cost effectiveness, quality, high standard of customer service and customer satisfaction. The second dimension is the strategic fit. All world class supply chains must also ensure that excellent operations fit to the supply chain's strategic objective and stakeholder's interests; and the internal resources fit to the external market needs. The third dimension is the capability to adapt. World class supply chains must be dynamic and able to adapt into to new business environment in order to sustain the success. The fourth dimension is the unique voice. All world-class supply chains needs to develop its own unique signature practices that render positive market results. Such internally unique practice coupled with positive market result is called unique voice. This dimension goes beyond benchmarking on best-practices; it creates best-practices (Lu, 2011).

Divergent product portfolio

A conventional wisdom says that 'don't put all your eggs in one basket.' It also makes sense in formulating a global supply chain development strategy. Translated into business management terminology, the wisdom is very similar to the 'divergent product portfolio' strategy. Then it may make even more sense when the global market becomes the stage for the supply chain. Two key characteristics of global market are volatility and diversity.

Develop divergent product portfolio will make the supply chain more capable of satisfying the divergent demand of the world market. Many leading multinational organizations have already been the firm believer of this strategy. They have developed a wide range of product or even business sector portfolio to cater for the market needs.

The divergent product portfolio strategy can also significantly mitigate the market risks that brought forth by the nature of global market volatility. If one product is not doing well, the supply chain can still be stabilized by others that do well. The shock of one single market at a particular time will not derail the overall business. In a long run, occasional market instabilities will ease off

with each other. Therefore, the divergent portfolio works like a shock absorber and risk-mitigating tool.

4.1 Future Challenges in Global Supply Chain Management

Climate Change

Physical climate risks from acute weather events and chronic climate patterns are disrupting the availability of raw material and energy supply, supplier operations, and local communities along the supply chain. From changing routes of supply, to resource scarcity and extreme weather events, climate change has huge implications for global supply chains. The transition to the low-carbon economy also presents policy and legal risks that result from several trends, including the pricing of greenhouse gas (GHGs) emissions, disruptions from new technologies like blockchain, market risks from growing customer demand for low-carbon and climate-resilient goods and services, and reputational risks to a company's brand equity and future business. By integrating climate risks and building the climate resilience of the communities on which supply chains depend, companies could increase the likelihood of fulfilling their supply chain objectives.

Terrorism

Another potential threat to a global supply chain management has been the ability to get their product to the customer comes from terrorism. Increased security measures as a result of attacks impose indirect costs on international trade and supply chains by disrupting the flow of cargo, particularly across borders, slowing the movement of freight and increasing shipping costs. Terrorist attacks in major cities and against key transportation nodes have triggered heightened security levels and emergency border controls across the continent, leading to significant commercial impact businesses.

Cyber Attacks

Cyber risk can have a significant business interruption impact on their day-to-day operations of the supply chain through data breaches. Businesses are focusing more on training staff who are in the front line against cyber attacks as well as looking at minimizing access that third parties have to their systems. It is critical that retailers identify who their critical suppliers are and get some reassurance as to their resilience when it comes to a cyber event.

Natural Disasters

Major disasters such as earthquakes, tsunamis and cyclones disrupt economies far beyond local damage, as the effects trickle through supply chains causing uncertainty and chaos. Raw materials, components, and consumer goods could be put on hold as local communities recover from the disaster especially when recovery can take years.

5.0 Conclusion and Recommendations

The future of supply chain management influences the future of the business management since there will be no business that will not be part of a supply chain. The paradigm of business management will soon be converged to the paradigm of supply chain management. This therefore leads to recommendations on agility, adaptability and alignment on the future of global supply chain management.

The supply chain should be agile enough in order to respond quickly to the dynamics of demand fluctuations and sudden changes of supply. The agility is a supply chain capability that handles the unexpected external disruptions smoothly and cost effectively. It enables the supply chain to survive the impact of the external dynamics and be able to recover from any initial shocks. The supply chain should have adaptability where it calls for organization and its supply chain to embark on major strategic changes in technology, market positioning, radical skill upgrading and competence shift. It helps the supply chain to survive the long waves of external dynamics. The supply chain should have an alignment that coordinates and balances the interests of all members. It addresses the supply chain's internal dynamics and ensures the supply chain to remain as a stable and cohesive whole. It also means to align all the complimentary resources and optimize the operational effectiveness and relationship to deliver the competitive advantage.

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