

Research Article

# Supply Chain Management Practices in Nigeria: Developing a framework for enhancement of SCM for organizational performance

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**Abstract:** Supply Chain Management is a field that had obtained increased interest for organizations and researchers. In order to survive, companies must be able to reduce cost, advance quality and offer quick answer to the consumers' need. One of the means to achieve that competitive edge is via the implementation of Supply Chain Management practices. There are streams of studies in supply chain management and the issues of performance have been studied. However, based on reading of the previous literature, it was found that previous model did not integrate some variables (trust enhancement, managing manufacturing flow, product development and commercialization, information technology, flexible supply chain management) that might be vital in enhancing performance in the organizations and leading to augmentation of profit. Hence, this current study will contribute by adding new variables to existing model. Furthermore, reading of previous literature show that supply chain management most particularly in Nigeria has not been sufficiently researched also in many developing African Sahara countries. The findings from developed countries might not be relevant to the majority of developing countries because of differences in infrastructure development and advance technology. In this regard, this present study could add to the limited literature in this field in Africa and Nigeria in particular. The main purpose of this study is to examine the supply chain-management factors that could enhance the organization performance in manufacturing companies. In order to achieve the objectives of this current study, quantitative approach is used in this research. The data for the present study is gathered by using a self-administered (face-to-face) method which is in line with many researchers. The population of this study comprise the employees in manufacturing firms in Nigeria. Basically, 400 questionnaires was distributed to the participants in order to get the required sample size. This present research is using the SPSS Version 21 and AMOS (i.e. the acronym for Analysis of Moments Structures) Version 21 in the data analysis process. The model in the present study is complex with multiple indicators, i.e. items in the questionnaire to measure each variable; hence, structural equation modelling or SEM, which is known as the second generation method of multivariate data analysis, would be used to analyze the inter-relationship among the latent constructs.

**Keywords:** Supply Chain Management; Organization Performance; Manufacturing Companies, Enhance; Employees

## About the Authors

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## Public Interest Statement

Supply chain management (SCM) is the dynamic management of supply chain activities for maximization of customer value s and for achievement of a sustainable competitive-

organizations. Have written books in the area of specialization. Among the books are Structural Equation Modeling, Quantitative Business Analysis, Business Statistics, Research Methodology & Data Analysis, and Guides in Writing a Research Proposal. Mufutau Olapoju Popoola is PhD Scholar in Faculty of economics & management sciences, Universiti Sultan Zainal Abidin working on supply chain management.

advantage. It signifies significant efforts by the supply-chain firms to advance and run supply-chains in the most effective and efficient manner. Supply-chain activities include everything from product development, sourcing, production, logistics and the necessary information systems to coordinate these activities.

## 1. Background of the Study

In the past decade, more attention has been paid on Supply Chain Management (SCM) in the organizations. Supply chain management is the management of materials and information flow in a firm to provide the highest degree of customer satisfaction at the lowest possible cost (Palmer, 2012). Supply Chain Management is a field that had obtained increased interest for organizations and researchers. Partly, this is because of the crucial effect that globalization has on manufacturing locally and internationally. Via expansion of the market place and increased competitions, globalization lead customers to put more demand on manufacturers to improve quality service and flexibility, while maintaining competitive cost (Laosirihongthong & Dangayach, 2005). Therefore, organizations are looking for ways to secure costs, improve quality, technology and consumers added-value as means to grow in competitive environment.

In order to survive, companies must be able to reduce cost, advance quality and offer quick answer to the consumers' need. One of the means to achieve that competitive edge is via the implementation of Supply Chain Management practices (Muhammad, 2004). Implementing supply chain activities might be a way to add value to customers. For that reason, a lot of companies are focused on their supply chain management practice (Goh & Pinaikul, 1998).

Supply chain management is vital in the practitioners' perspectives. The importance of Supply Chain Management is growing because 51% of the managers declared that their investments in SCM has increased significantly in the past three years (Accenture, 2010). One reason for the increased attention in Supply Chain Management is that companies are ever more finding themselves relying on competent supply chain, or network, to effectively compete in the global-market-economy (Lambert, 2008).

## 2. Research Gap

Supply chain management (SCM) had been steadily accepted as a proven-managerial-approach to achieve sustainable-profit and development in several organizations due to stern competitions in all businesses (Mamun, 2014). According to (Maruf, 2013), supply chain management practice has significant effects on the environmental and operational performance of organization This suggest that to compete effectively in present challenging business-environments, might need to focus on supply chain management components which have effect in enhancement of performance and thus profitability.

Supply Chain Management (SCM) had been studied extensively, and its significance to practitioners and academics has received a tremendous level of recognition. However, despite major investments in SCM, current surveys suggest that organizations are struggling to attain competitive-advantage (Kabossa & Sitalakshmi, 2014). This implies that after investing hugely in components of SCM, many organizations are not gain more profits on their investment. Hence, it might be necessary to study more components of SCM which could enhance performance and this could be translated into profit. This is obvious in Nigeria context. For example, the findings of (Njoku & Kalu, 2015) showed that despite the fact that companies invested deeply in their supply chain components, it did not reflect considerably in their profits. This

implies that those organizations invested a lot in supply-chain; however their investment is not translated into profits or better performance. Their findings also suggest that those organizations do not have the knowledge of proper appropriate supply chain management components that could boost their performance.

The establishment of Food and Beverage factories in Nigeria was considered to be very vital to exploitations of local raw-materials and effectual and competent supply-chain-management and quality products that might provide satisfaction to consumers (National Bureau of Statistics, 2012). Regrettably, through the years, a combination of electricity problem, meager knowledge of Supply chain management, high cost burden and poor performance of businesses, poor consumer satisfaction and poor-infrastructure have resulted to the reduction of Food and Beverage operation and general manufacturing (NBS, 2012). Because of poor performance and low profits, many manufacturing firms have been extinct from the marketing environment (NBS, 2012). Therefore, studies on variables that could boost supply chain management and subsequently resulting to improvement in performance of the organization could assist in boosting the profit of companies most especially in Nigeria.

There are streams of studies in supply chain management and the issues of performance have been studied. However, based on reading of the previous literature, it was found that profound study of certain variables mutually (i.e. trust enhancement, managing manufacturing flow, product development and commercialization, information technology, Flexible supply chain management) are scarce. Thus new research is needed to introduce new variables to the existing model. This current study will contribute by adding new variables to existing model.

Previous literature (i.e. Njoku & Kalu, 2015) show there is tremendously limited number of study papers focused on supply chain management in the academia. Furthermore, supply chain management most particularly in Nigeria has not been sufficiently researched (i.e. Somuyiwa, 2012) also in many developing African Sahara countries. The findings from developed countries might not be relevant to the majority of developing countries because of differences in infrastructure development and advance technology. In this regard, this present study could add to the limited literature in this field in Africa and Nigeria in particular.

### **3. Problem Statement**

Supply chain management is vital to improve business performance and advance their competitive advantage (i.e. Mamun, 2014; Maruf, 2013). The aim of SCM is to integrate activities transversely and inside the companies in order to provide consumer values. For that reason several studies have been conducted in the domain of supply chain management (Burgess et al., 2006; Mentzer 2004; Lambert 2008; Croxton et al., 2001; Accenture, 2010; Arawati, 2011; Adebayo, 2012; Mamun, 2014; Maruf, 2013; Ondieki & Oteki, 2015).

Supply chain management is needed for diverse motives: improvement of operation, improved outsourcing, to increase profit, to enhance consumer satisfaction, generate quality outcome, tackle competitive pressure, increase globalization, increase significance of electronic commerce, and growing complication of supply-chain (Stevensson, 2002, Alexander et al., 2013; Charles et al., 2014). Most of the research concerning supply is operational in nature and has been based on case examples of particular companies. (i.e. Ondieki & Oteki,, 2015, Somuyiwa et al., 2012). Lamming et al. (2000) cited that the problem is that these researches concentrated on a particular industry, typically the automotive industry. This might result to managers in other industries to be deficient in theoretical foundation to manage their particular business because the network differs not only between organizations but in some other aspects. Similarly, most of the study that relate to strategic relationship describe mainly how two companies can improve their relationships, but it seldom includes an actual supply chain (Stock et al., 2010). There are many

previous studies on attributes of supply chain management performance. However, this present study seeks to add new variables to the existing model.

To be successful, companies ought to decrease costs, advance quality and offer quick responses to consumer need. For instance to achieve competitive advantage organizations need to implement supply chain management practices (Muhammad, 2004). Many previous studies (i.e. Mamun, 2014; Maruf, 2013) emphasize the importance of supply chain management as a way to assure success in organizations.

In Nigeria context, the results of the findings of (Njoku & Kalu, 2015) showed after investing heavily in their supply chain components, it does not reflect significantly in the profitability of the organizations. Their results also suggest that enormous costs and poor-performance of companies (manufacturing) in Nigeria resulted to the low-Profit in the organizations. And for that reason, many firms have gone extinct from the marketing environment in Nigeria.

The setting up of Food and Beverage-factories in Nigeria was also considered to be very vital to the exploitations of local raw-materials which the country had in abundance (National Bureau of Statistics, 2012), However, for many years, a combinations of power-problem, poor-infrastructure, and poor-knowledge of Supply Chain Management, importations of cheap but occasionally better substitute, policy inconsistency especially on taxes, poor consumer satisfactions, delay in lead time and response-time, poor-platform for microeconomic-efficiency and uncompetitive-business environments have resulted to the reduction of Food and Beverage operations and general-manufacturing (National Bureau of Statistics, 2012).

There are streams of studies on supply chain management. However, in previous studies (i.e. Chia et al., 2009; Adebayo, 2012), the investigation of performance is fragmented and vital variables that might advance SCM and boost organizational performance were not included in the models. For example, supply chain performance frameworks measure performance from supply chain stakeholders (Otto & Kotza, 2003; Chia et al., 2009); some earlier researches assessed performance across supply-chain processes at the operational-level (Chia, 2009) or scrutinized performance in the decision- making-levels (strategic, tactical and operational) (Gunasekaran et al., 2001; 2004). Previous model developed by Li et al. (2006) did not integrate some variables (trust enhancement, managing manufacturing flow, product development and commercialization, information technology, flexible supply chain management) that might be vital in enhancing performance in the organizations and leading to augmentation of profit. Hence, this current study will bridge this gap by enhancing existing model with addition of new variables to the existing model. The main objective of this study is to examine the supply chain-management factors that enhance the organization performance in manufacturing companies

#### **4. Objectives of the Study**

The purpose of this study is to enhance existing model of supply chain management by adding new variables that could boost the performance of supply chain management in Nigerian manufacturing companies. Specifically the objectives of this study are;

1. To improve the existing model by including new variables into the model.
2. To examine the supply chain-management factors that influence the organization performance in manufacturing companies.
3. To investigate the factors that determine the effectiveness of supply chain management in manufacturing companies.
4. To examine the supply chain-management factors that hinder the organization performance in manufacturing companies.
5. To determine the significant effect of the supply chain-management factors that influence the organizational performance in manufacturing companies.

6. To examine the relationship between the variables that could influence organization performance in manufacturing companies.
7. To provide policy recommendations based on the research findings to the companies.

## 5. Research Questions

- RQ 1: What are the factors that influence the performance of supply chain-management in manufacturing companies?
- RQ 2: What are the factors that determine the effectiveness of supply chain-management manufacturing companies?
- RQ 3: How significant are the supply chain-management factors that influence the performance of the organization in manufacturing companies?
- RQ 4: What are the supply chain-management factors hindering the performance of the organization in manufacturing companies?
- RQ 5: What is the relationship between the variables that could influence organization performance in manufacturing companies?

## 6. Scope of the Study

Nigerian manufacturing companies including small and medium scales are also part of the supply chain. They might be assemblers, sub-contractors or small-part-makers. However, SCM concept is necessary for all these companies to succeed.

This present study will be focused on the food and beverage industries in Nigeria. The flour mills and food manufacturing companies are sub-sectors of food and beverage industries. Specifically this study will focus on the flour mills, food manufacturing companies in the Western and Northern part of Nigeria because these regions houses the majority of the manufacturing companies in Nigeria. This study would use a quantitative method through survey using questionnaires.

The sample would consist of employees in the manufacturing companies in Nigeria. The data will be analyzed by using the statistical package for social sciences (SPSS) and structural equation model.

## 7. Literature Review

### 7.1. Benefits of Supply Chain Management

Supply Chain Management is a viable initiative to improve competitive-advantage (Tan *et al.*, 1998a). Several manufacturers and sellers have adopted the concept of supply-chain-management to advance product development, quality and delivery objectives and to get rid of wastage. It has facilitated companies to exploit suppliers' strength and technologies to support new products developments effort (Morgan & Monczka, 1995). Supply-chain-management is a management concept that expand traditional-internal-activities by accepting an inter-enterprise scope, getting trade-partners together with the general aim of optimization and effectiveness (Harwick, 1997). Manufacturers frequently add strategic-suppliers to contribute in their new products development effort. This lead to cost effective design options that usually result to innovation in processes and material and the capability to contend successfully in the global-markets (Tan *et al.*, 2002). By including suppliers early in the design-stages, manufacturers are capable of developing substitute conceptual solutions by selecting the most excellent components and technologies, and assist in designing assessments (Burt & Soukup, 1985).

SCM attempt to improve performance by getting rid of waste and better use of internal and external suppliers' ability and technologies (Morgan & Monczka, 1996). The transportation and logistics function of the retail industries is focused on a diverse aspect of SCM. This could be traced to an attempt to manage



better the transportation and logistics function (Fisher, 1997). In this regard, supply-chain-management integrates logistics into the strategic-decisions of the firm (Carter & Ferrin, 1995).

### 7.1. Strategies of Supply Chain Management

The following strategies could enhance the performance of supply chain management:

#### 7.1.1. Information Sharing

Information sharing is defined as the accessibility to private-data among business-partners thus allowing them to monitor the advancement of products and orders as they pass over numerous processes in the supply chain (Simatupang & Sridharan, 2002; Alexander et al., 2013). Information sharing with business-partners allows organizations to make better decisions and take action on the basis of greater visibility (Davenport et al., 2001;). Lumnus & Vokurka (1999) state that to make the supply chain competitive, a necessary first step is to obtain a clear understanding of supply chain concept and be keen to willingly share information with supply-chain partners. In competitive environment currently, organizations need to develop their supply chain in order to obtain customers responses.

#### 7.1.2. Agile Supply Chain

The idea of agile supply chain has been introduced for transfer and application of the winning strategies of agility to supply chain (Harrison et al., 1999). Agility in the case of supply chain management focus on “responsiveness” (Lee & Lau, 1999; Christopher & Towill, 2000). Agility is collaboration to improve competitive advantage in the organisation. Agility is all about customers responsiveness, individuals and information, cooperation inside and between organizations and suitable for a company for change. In order to be truly agile, a supply chain must possess a number of distinguish characteristics which include: market-sensitivity, virtuality, process-integration and networking (Kisperska-Moron & Swiercze, 2008).

#### 7.1.3. Optimization

Recent market situations drive organizations to implement, utilize and practice new solutions, mostly in the area of supply chain. In order to withstand the market demand majority of the organizations focus on task meant to highlight the role of individual-approach to marketing-logistic actions focused on proper relations with customers (Raman, Wittmann & Rauseo, 2006).

Optimisation of all activities connected to the flow of resources in the entire supply chain. Optimization of supply chain is lean, manage costs and possibly most importantly, responds immediately to even minor fluctuation in demand.

#### 7.1.4. Trust Enhancement

Trust is cooperation, where by organizations exchange bit of vital information and engage some suppliers–customers in longer-term contract, has become the threshold level of supply-chain- interaction (Spekman et al., 1998). SCM is built on the foundations of trust and commitment (Lee & Billington 1992, Kumar, 1996).

Edelenbos and Klijn (2007) stressed that trust allows supply chain partners to congeal their commitments to their engagements and to decrease the uncertainties of action of the supply chain partners, thus decreasing the transaction-costs involved in the collaborations. When trust in supply chain collaboration is existing, partners could similarly simply address problem and issue that might arise, hence decreasing the conflicts between them (Beccerra & Gupta, 1999). All these suggest that trust might be viewed to be vital in SCM because it might entail sharing of sensitive of information and procedures.

### 8. Research Framework

The research framework developed in this study is based on the review of existing literatures. This present study adopts the SCM model of Li et al., (2006) because it includes some factors that are important in providing effective supply chain management practice which are relevant in this present study. However, this present study introduce manufacturing flow management, product development and commercialization, trust enhancement, information technology and flexible supply chain management as part of the factors that could influence supply chain and improve organizational performance. Therefore the constructs in this research include the followings: Supply chain management practice, Managing manufacturing flow, Product development and commercialization, Information technology, Trust enhancement, Flexible supply chain management, Organizational performance. The research model developed in this study is illustrated in Figure 1.

**Figure 1.** Research Model

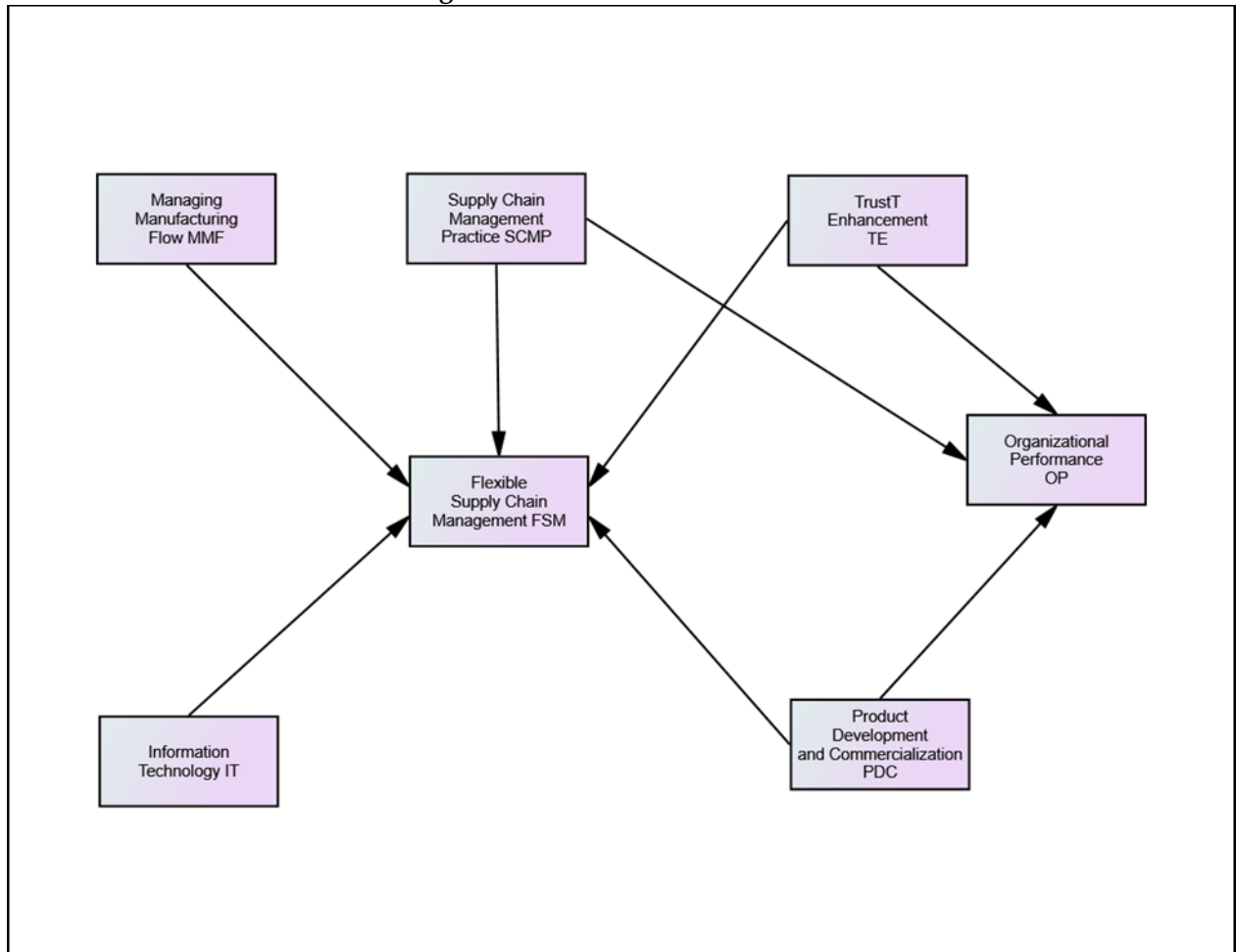
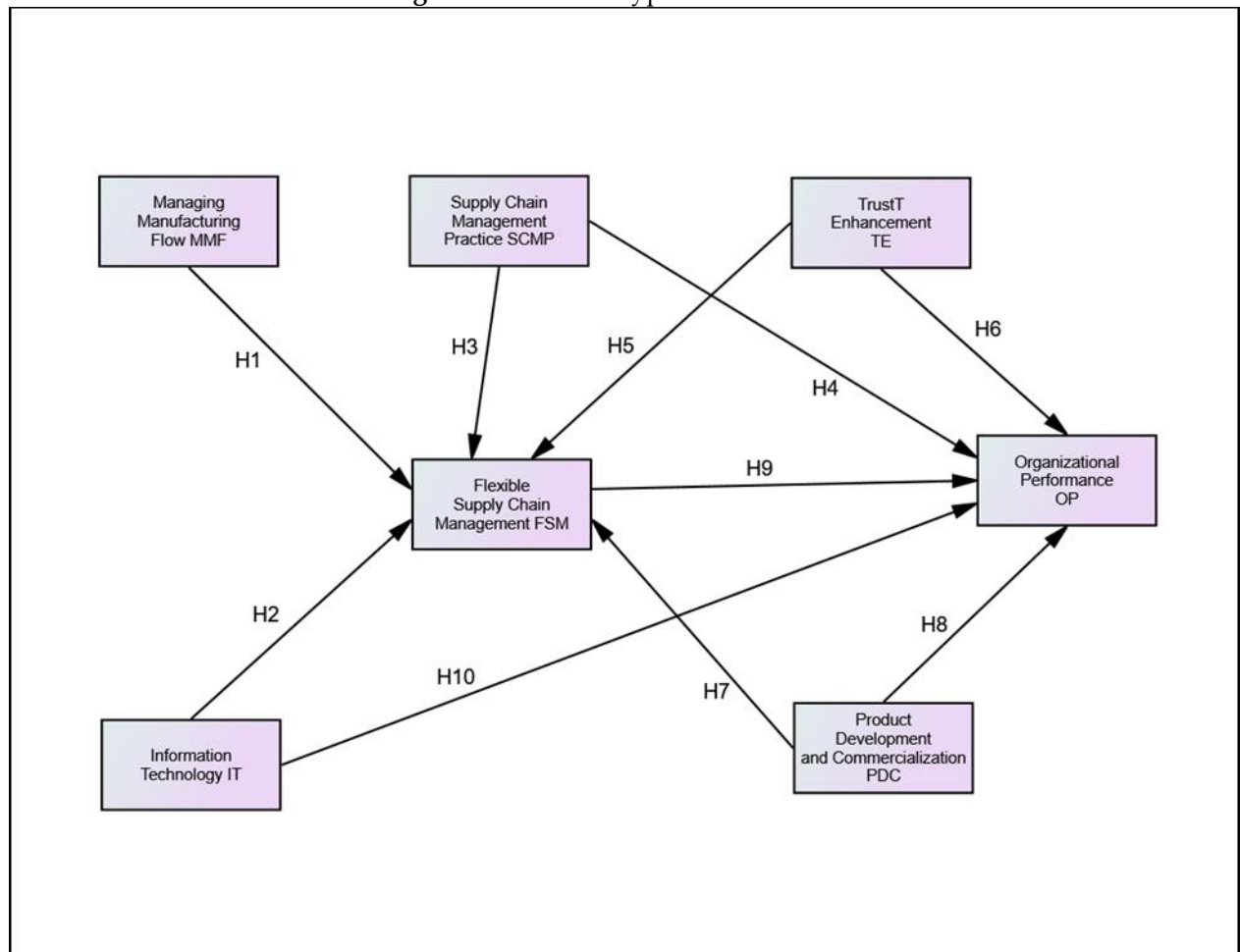


Figure 2. Research Hypothesis



### 8.1. Research Hypotheses

- H1: MMF has a positive effect on FSM
- H2: IT has a positive effect on FSM
- H3: SCMP has a positive effect on FSM
- H4: SCMP has a direct positive effect on OP
- H5: TE has a positive effect on FSM
- H6: TE has a direct positive effect on OP
- H7: PDC has a positive effect on FSM
- H8: PDC has a direct positive effect on OP
- H9: FSM mediate the relationship between MMF, SCMP, IT, PDC, TE and OP
- H10: IT has a direct positive effect on OP



**Table 2.3:** List of constructs in the research model

Constructs		
1	Supply chain management practice	Independent variable
2	Managing manufacturing flow	Independent variable
3	Product development and commercialization	Independent variable
4	Information technology	Independent variable
5	Trust enhancement	Independent variable
6	Flexible supply chain management	Mediating variable
7	Organizational performance	Dependent variable

## 9. Methodology

### 9.1. Research Philosophy

It is very essential for a researcher to mention the philosophical standpoint or paradigm. Because it helps the audience to understand the viewpoint of analysis and the placement of the study findings in the context of the existing literature on the subject-matter of interests (Morgan, 2007). A research philosophy depicts the way in which individuals study their world. It is the way people see the world, interpreting what they had seen and take the right decision. Further, it specifies the way the research should be carried out, by who, and with what levels of involvements (Rubin & Rubin, 1995).

The concept of quantitative research is to explicate a phenomenon via collection of numeric data and the usage of mathematical technique to analyze the research hypothesis or questions (Mujis, 2004). The focus of this study is to investigate the SCM factors that could boost performance in the organization. In this research, the objectives will be examined through a quantitative approach via a survey by using questionnaires for the employees in the manufacturing companies in Nigeria. Survey approach enables the researcher to describe the norms and relationship of variables and thus show noteworthy insights and detection (Atte & Rule 1991). Survey approach is well accepted method in the field of marketing and hence could be suitable for this study. Table 3.1 below depicts the characteristic of quantitative method and their criteria.

### 9.2. Sampling Technique and Population of Study

As mentioned in Section 3.4, this present study will use questionnaires through survey. This research will use a random sampling technique. In random-sample, everyone has a chance of being part of the sample. There are two approaches used in random-sampling: truly-random sampling or systematic-sampling (Tashakkori & Teddlie, 2003)). (In the previous sampling approach, a researcher chooses the subjects without consideration of any factor and selects the sample randomly while in the systematic random sampling, a sample is selected via some simple rules that might offer uniform-distributions. The uniform-distribution can be obtained via the systematic random sampling. The advantage of utilizing this type of approach is that this sampling-technique assures that the chosen samples represent the target population. Systematic random sampling method will be used in this study.

The population of this study will comprise the employees in manufacturing firms in Nigeria. The target respondents for this study will be the manufacturing companies employees since this study is focused on supply chain management and these employees will be suitable respondents for this study.

### 9.3. Sampling Size

The role of sample size is crucial in all statistical-analysis., According to Luck and Rubin (1987), the more sophisticated the statistical-analysis the bigger the sample-size required. Consequently, the sample-size requirement in this study will be based on the selected statistical analysis techniques used that is,

structural equation modeling (SEM). SEM, like other statistical-technique, needs a suitable sample size to get dependable estimates (Hair et al., 2006).

Gorsuch (1983) cited that at least five participant's per-construct and not-less-than 100 individual's per-data-analysis. Harris and Schaubroeck (1990) suggested a sample-size of 200 at least to provide assurance for robust structural equation modelling. Kline (2005) also suggested that a very complex path model needs a sample-size of 200 or larger. Additionally, Hair et al. (1998) mentioned that a sample-size of at least 200 and not exceeding 400 is considered suitable. Furthermore, they pointed out that when the sample-size exceeds 400 to 500 participants the SEM analysis becomes very sensitive and nearly any differences are noticed, make goodness-of-fit measure show poor-fit. Hence, as a common rule, a sample of minimum 200 is desirable to give parameter-estimate with any level of confidence (Gerbing & Anderson, 1993). In line with the above recommendation and assumption, the key concern in this study will be to attain a minimum of 200 usable-responses. Basically, 400 questionnaires will be distributed to the participants in order to get the required sample size.

#### 9.4. Data Collection Procedure

The procedure of data collection involved collection of opinions and valuable information from target participants about the research questions or topic (Churchill, 1987). Different approaches have been acknowledged in the literature to collect data such as usage of postal services, meeting face-to-face with participants, or make telephone calls, send electronic mail, and a combination of these methodology (Cooper & Schindler, 2001; Sekaran, 2000; Zikmund, 2000). The data for the present study will be gathered by using a self-administered (face-to-face) method which is in line with many researchers (Davis, 1989; Wang et al., 2003; Pikkarainen et al.; 2004), who used questionnaire survey to collect the data, and face-to-face self-administered method (Alsajjan & Dennis 2010; Abbasi et al., 2011).

#### 9.5. Data Analysis Procedure

The analysis procedures, in particular, the statistical methods carried out commensurate with the type of data collected, the objectives and hypothesis of the present research. The present research used the SPSS Version 21 and AMOS (i.e. the acronym for Analysis of Moments Structures) Version 21 in the data analysis process.

For a start, the demographic data will be analysed for respondent profiles. This will help to explain and describe the characteristics of the sample that is being studied and to compare with the sampling frame and check the representativeness of the sample. Besides the descriptive analysis on demographic profile, further analysis shall be carried out on each construct by looking at the mean score and standard deviation for each item in the construct.

According to Awang (2015), if many items are used to measure a variable, it should be reduced into a manageable number before further analysis can be carried out, and one of the methods normally used for data reduction is factor analysis. Using the data from the pilot study, exploratory factor analysis shall be employed to assess the dimensionality of items measuring the particular construct. Awang (2010; 2012) stressed the need to employ exploratory factor analysis (EFA) procedure for every construct to determine if the dimensionality of items has change from previous study. This is especially true when the existing study is different from the previous study in terms of the industry, the culture and socio-economic status of the population, and also the lapse in time (duration) between the two studies. In other words, the dimensions obtained by previous studies might not hold especially when the current study is conducted in the new environment (Awang, 2010; 2012).

The model in the present study is complex with multiple indicators, i.e. items in the questionnaire to measure each variable; hence, structural equation modelling or SEM, which is known as the second generation method of multivariate data analysis, would be used to analyze the inter-relationship among

the latent constructs. AMOS is the acronym for Analysis of Moments Structures and it is one of the most popular software used for structural equation modelling. The theoretical framework shall be converted into AMOS Graphic for analysis using SEM where the inter-relationship among the latent constructs can be modelled and analyzed effectively, accurately, efficiently and simultaneously (Awang, 2015).

Essentially, SEM is known as a confirmatory method of validating the measurement model of latent constructs through confirmatory factor analysis (CFA). CFA assists in evaluating the unidimensionality, validity and reliability of the constructs. In terms of unidimensionality for established items, which is the case in the present study since all the items had been adopted with slight modifications, the factor loading for every item should be 0.6 or higher (Awang, 2015).

In the case of validity, three types required are convergent validity, construct validity and discriminant validity. According to Hair *et al.* (2006), convergent validity assesses the degree to which two measures of the same concept are correlated, whereby, high correlations indicate that the scale is measuring its intended concept. To identify the presence of convergent validity, all items in the measurement model are statistically significant. Besides that, composite reliability (CR) and the average variance extracted (AVE) should be considered in assessing convergent validity.

According to Awang (2015), the CR indicates the reliability and internal consistency of a latent construct and a value of 0.6 or higher is required in order to achieve composite reliability for a construct. The formula to calculate CR is as follows:

Awang (2015) also stated that the convergent validity too could be verified by computing the AVE for every construct. The AVE indicates the average percentage of variation explained by the measuring items for a latent construct and a value of 0.5 or higher is required for every construct.

Construct validity, as described by Zikmund (2003), in its simplest form, means the instrument used in the research measure the construct that it is supposed to. In establishing construct validity, relevant fitness indexes must achieved the required level. Generally, these measurement types of model fitness could be grouped into three indexes, namely, Absolute Fit, Incremental Fit and Parsimony Fit. To show construct validity, these fitness indexes must be achieve to the required level, namely; GFI (Goodness of Fit Index) = 0.90 or higher, CFI (Comparative Fit Index) = 0.90 or higher, RMSEA (Root Mean Square of Error Approximation) = 0.08 or less, and the ratio of Chisq/df (Chi Square/Degrees of Freedom) is less than 5.0 (Awang, 2012). However, based on his practical experience, Awang (2014; 2015) revised the ratio to be less than 3.0.

Following the fulfillment of the relevant fitness indexes the assessment of normality of the data shall be conducted to see the degree to which the distribution of the sample data corresponds to a normal distribution. Hence, before moving forward to show the structural model, it is required to assess the distribution for every variable in the dataset in the final measurement model. For this purpose, the normality test shall be conducted by looking at the value of skewness i.e. the symmetry of a distribution and kurtosis which is the clustering of scores toward the center of a distribution. According to Awang (2015), the absolute value of skewness of 1.0 or lower indicates the data is normally distributed. As for the assumption of normality distribution of the dataset, the study only needs to show that the values of skewness for all items do not depart from normality (Awang, 2014; 2015). (Kurtosis does not reflect normality. It is about the height of bell shape).

## 10. Conclusion

The main objective of this study is to examine the supply chain-management factors that enhance the organization performance in manufacturing companies. In this study, the objectives will be examined through a quantitative approach with survey as a research tool. This current research will add new knowledge to the literature by modifying and improving the existing model of SCM. This new model will add some variable that is not included in the previous models.

This study hope to provide a new dimension of factors that explained the variance in the SCM performance. This study might provide more understanding to the factors that could enhance supply chain management performance. Given the fact that SCM is not well researched in Sub-Saharan Africa and most especially in Nigeria, this current study hope to contribute to the limited literature in this field of SCM in Africa and specifically in Nigeria. The findings in this present study might be useful for manufacturing companies. Extended knowledge of SCM performance could assist manufacturing companies to adopt proper steps to advance their performance and hence increase their profit.

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