ISSN: 2384-537X, Volume 14, Issue 2, (October, 2022) pages 01 - 13

DOI: 27261456671421 www.arcnjournals.org



# The Moderating Role of Organizational Culture on the Relationship between Supply Chain Integration and Supply Chain Performance of Bottle Water Manufacturing Firms in Rivers State

# **Ikegwuru Mac-Kingsley (PhD)**

Department of Marketing, Rivers State University, Port Harcourt, Nigeria | ikegwuru.mac-kingsley@ust.edu.ng

# Harcourt Horsfall (PhD)

Department of Marketing, Rivers State University, Port Harcourt, Nigeria | harcourthorsfall@gmail.com
Adiele, Kenneth (PhD)

Department of Marketing, Rivers State University, Port Harcourt, Nigeria | adiele.kenneth@ust.edu.ng

Abstract: This study focused on moderating effect of the relationship between supply chain integration and supply chain performance of bottle water manufacturing firms in Rivers State of Nigeria. A causal outline research model was formulated to take on board the hypothesis formulated for the study. The population of the study was 79 bottle water manufacturing firms in Rivers State and the Taro Yemen's formula was used to sample 47 firms out of the population. The simple random sampling technique was adopted and five (5) respondents per firm were drawn making 235 respondents. A 5-point likert-scale questionnaire was administered to respondents, of which 227 copies of the questionnaire were returned, obtaining a 96 percent response rate. The study adopted descriptive statistics; multiple regressions and stepwise regression schemes to establish that organizational culture moderates the relationship between supply chain integration and supply chain performance. Therefore, the study concludes that, organizational culture moderates the relationship between supply chain integration and supply chain performance. of bottle water manufacturing firms in Rivers State of Nigeria, and recommends that Managers of bottle water manufacturing firms should improve on their organizational culture, develop strategic collaboration with its suppliers and customers, and encourage cross functional integration within the organization in order to enhance the relationship between supply chain integration and supply chain performance.

**Keywords:** Organizational culture Supply chain performance, Supply chain integration, Table water manufacturing firms.

### INTRODUCTION

In recent times, it has been recognized that competition has shifted from the midst of firms and domiciled in the midst of supply chains. As a result, to contend globally, it is imperative to consider all connections and estimate performance on supply chain level, for business sustenance by making it well-ordered and treasured (Basu, Jeyasingam, Habib, Letchmana & Ravindran, 2017). Ideally, performance is an indicator of a firm's wellbeing, Over the last decades, supply chain integration has been studied basically and its imperativeness to practitioners and academics has been ascribed with an extraordinary point of acknowledgment. However, notwithstanding major contributions of supply chain integration, firms are under pressure to realize competitive advantage as a result of abysmal supply chain performance. Firms are therefore required to reprioritize and distinguish enthralling supply chain integration programs that can cost-effectively and competitively situate them in the market place to realize significant supply chain performance.

In order to realize good organization and practicality, managers must introduce inclusive supply chain tactics that positively affect performance, such as supply chain integration (Seo, Dinwoodie & Roe, 2015). In contemporary competitive business backdrop, supply chain integration is imperative as a reasonable number of companies focus tenaciously focus on conveying value to the customer, by providing valuable goods and services to them, and in essence engendering competitive advantage. The overriding verdict amongst academics is that supply chain deliberates operational import that facilitates firms' growth to enhanced competitiveness (Yeung *et al.*, 2009). Accordingly, an assortment of scholarly queries reveal that supply chain integration positively influence firm's performance (Flynn *et al.*, 2010; Lee *et al.*, 2007; Narasimhan & Kim, 2002).

Some prior studies have investigated organizational culture, supply chain integration and supply chain performance. For example, HabiburRehman, Adeel, Kashif and Waqas (2016) explored the relationship between supply chain integration and operational performance of organizations operating in Pakistan, Cao, Huo, Li and Zhao (2015) examined the effects of organizational culture on supply chain integration (SCI) by studying the relationships between organizational cultures and supply chain integration, and Braunscheidel, Suresh and Boisnier (2010) investigated the impact of organizational culture on supply chain integration, Despite the fact that the concepts of organizational culture, supply chain integration and supply chain performance have been lengthily explored, little or none have been in print on the study of the moderating role of organizational culture on the relationship between supply chain integration and supply chain performance. Above and beyond, prior studies on supply chain integration and supply chain performance do not provide suitable information for bottle water manufacturing firms in the Nigerian context on how organizational culture moderates the relationship between supply chain integration and a firm's supply chain performance in the new normal economy.

It is based on this groundand with the view of filling the knowledge gap that has been identified that this study investigated the moderating role of organizational culture on the relationship between supply chain integration and supply chain performance of bottle water manufacturing firms in Rivers State of Nigeria.

### LITERATUREREVIEW AND HYPOTHESIS

## The Social Capital Theory

This study scrutinized the Social Capital Theory as the study's theoretical underpinning because of its that is relevance to supply chain integration. The Social Capital Theory (SCT) is a real-world reflection for appreciating the ways in which generous resources assist in growing inter-organizational connections; eventually nurturing competitive advantage (Lin, 2001). This theoretical underpinning is drawn into this study to cross-examine the inconsistence immersion of supply chain integration on supply chain performance in organizations. The capital is famed as an advantage to firms based on right to use to resources made reachable in the sequence of interfaces (Lawson, Tyler & Cousins, 2008). Supply chain integration can be engaged as a resource in cultivating the interactional benefits amongst companies to espouse supply chain performance through the moderating role of organizational culture. This present study is fixed firmly on the Social Capital Theory, and specified by the focal point on the social capital indications of organizational culture. In this study; social capital theory furnishes a decisive, hypothetical underpinning for analyzing the benefits of organizational culture on supply chain integration to offer an atmosphere for superior supply chain performance.

### **Organizational Culture**

The organizational culture structure was established by Denison and Spreitzer (1991) and based on Quinn and Rohrbaugh (1981), this structure centers on conflicts contained by a system, particularly the conflict between stability and change, and the conflict between the internal organization and the external environment. Copious definitions on organizational culture have been projected by an variety of intellectuals. For example, Schein (2010) defines organizational culture as "the implicit shape over how the world is, and organization as a group of individuals who share opinions, thoughts, feelings and plain behaviors" Zu, Robbins and Fredendall (2010) perceives organizational culture as the ethics or beliefs common to affiliates of an organization. This study sees organizational culture as a model of central norms learned or conventional recognized by a specified group as it gains knowledge of how to mix-up through with its problems of exterior adjustment and internal incorporation that has performed well adequately to be dignified pertinent and as a result to be taught to new members as the sanctioned mode to distinguish, picture and involved in relation to those problems.

Organizational culture therefore, plays a significant role in supply chain management (SCM) (Braunscheidel *et al.*, 2010; Dowty& Wallace, 2010), and proper organizational culture coaxes the behavior of internal workforce in terms of information sharing, teamwork and risk taking (McCarter *et al.*, 2005). Organizational culture in addition influence inter-firm performance in areas such as relationship skills and trust (Schilke& Cook, 2014). Therefore, organizational culture-related skills are imperious for the realizations of supply chain integration (Fawcett *et al.*, 2008; Whitfield &Landeros, 2006; McCarter *et al.*, 2005).

Given the enormousness of organizational culture for supply chain management, previous studies have systematically dissected the linkage between organizational culture and supply chain integration (Braunscheidel *et al.*, 2010; Zu*et al.*, 2010). A handful of these studies have engaged the competing value framework (CVF) proposed by Quinn and Rohrbaugh (1983) to embody organizational culture. The CVF encircles four dimensions, precisely, the development, group, hierarchical and rational culture

dimensions. Inquiries based on the CVF establish the association between this range of dimensions of organizational culture and the different dimensions of supply chain integration (Braunscheidel*et al.*, 2010; Zu*et al.*, 2010).

Previous literature on organizational culture and supply chain performance designate that organizational culture influence performance (Deal & Kennedy, 1997; Denison, 1990; O'Reilly III, 2017). Organizational culture is distinguished as a potential determinant of supply chain integration effectiveness (Yunus & Tadisina, 2010). Based on the works of (Quinn & Cameron, 2011; Yunus & Tadisina (2010) conjecture that organizations with externally focused culture and an elastic coordination have a progressive degree of supply chain integration than those with other organizational qualities. Braunscheidel *et al.* (2010) investigated the effect of organizational culture, measured by the competing value framework (CVF) on two types of supply chain efforts: (i) internal integration and (ii) external integration with major suppliers and key customers, and found confirmation that a company's advocacy culture score is positively associated with external integration, whiles a company's hierarchical culture score is negatively associated with both internal and external integration practices.

Prearranged by the nature of supply chain integration, this framework is considered as apposite for examining the moderating effect of organizational culture on the relationship between supply chain integration ad supply chain performance. This is because, organizational culture strategy emanates from the recognition of predilection of supply chain members to interact successfully This present study adopted organizational culture as the moderating variable on the relationship between supply chain integration and supply chain performance of bottle water manufacturing firms in Rivers State From the above discussion, the study expects organizational culture to moderate the influence of supply chain integration on supply chain performance. Specifically, the study posits that the four traits of organizational culture (involvement, consistency, adaptability and mission) can individually affect the supply chain external integration which will lead to the performance of firms. Hence, when the support of an appropriate organizational culture is absent, firms may not achieve their objectives.

## The Concept of Supply Chain Integration.

Supply chain emerges as new-fangled field deeply rooted in every single aspect of the organizations. In the past, supply chain was considered as logistic and its functions surrounding flow of goods, but with the track of time researchers and academicians add value such as, marketing, inventory management, finance, promotions, or even new product development. In contemporary times, businesses need to relate to cope with material, money, men, and information contained by and transverse the supply chain to maximize customer satisfaction and to acquire an advantage over competitors. Thus, for better understanding, it is essential to understand all member of supply chain that has either indirect or indirect effects on performance.

As the competitive environment is becoming increasingly challenging, firms are undertaking efforts to compete along multiple fronts. However, many firms find it difficult to compete in the market by relying on their internal resources and competencies alone. They have turned to collaborate with their customers and suppliers to obtain information and complementary resources, which they can deploy to build competitive advantage. This is supply chain integration.

Supply chain integration is defined as the magnitude to which all activities contained by an organization, and the activities of its suppliers, customers, and other supply chain members, are incorporated collectedly (Narasimhan, *et al.*, 1998). Supply chain integration has been delineated into internal, suppliers and customer integrations. Supply chain integration has also been pigeonholed into three levels, from functional integration to internal integration and to external integration(Stevens, 1989). The foundation of integration can consequently be categorized by cooperation, collaboration, information sharing, trust, partnerships, shared technology, and an ultimate transference away from managing individual functional processes, to managing integrated chains of processes (Pagell, 2004). Thus, fundamentally there is this conviction that supply chain integration (SCI) is an expedient scheme to advance innumerable measures of firm performance.

Mutual understanding in the focus of affiliating firms plays a leading role in supply chain interactions (Zhang &Huo, 2013; Nyaga *et al.*, 2010), and the stability of the supply chain. Zhang and Huo (2013) observe that it is of paramount importance for firms to form buoyancy in a trading partner's dependability and scrupulousness. The long term affiliations fastened on trust and mutual understanding intensifies the expectancy that the supply chain partner will not implicate in unprincipled behaviours (Zhao, *et al*, 2011). Supply chain players who accomplish mutual understanding will achieve a higher notch of satisfaction with their affiliation and will bestow solemnly resources to assure its continual existence (Prajogo & Olhagor, 2012). According to Nyaga *et al.* (2011), such dedication of resources to weather an affiliation will implicate high obligation from trading partners. High levels of commitment cannot be accomplished excepting there is the presence of high trust and mutual understanding in the standing liaison (Zhang & Huo, 2013). Supply chain integration therefore, is a fusion of the entire activities domiciled in an organization, as well as activities of company's suppliers, customers, and various supply chain affiliates built-in serenely to achieve a desired goal.

# The Concept of Supply Chain Performance

Performance is "A set of metrics applied to compute the proficiency and efficacy of supply chain processes and relationships, traversing manifold organizational functions and manifold firms and empowering supply chain instrumentation (Maestrini, Luzzini, Maccarrone & Caniato, 2017). The aim of every organization is to enrich performance but for upgrading, they must need to measure it precisely first (Gunasekaran & Kobu, 2007). An all-inclusive review revealed that for the good performance measure, all the members should be considered, performance measure should ponder on both financial and non-financial items, all the levels of supply chain must be reflected and all process of supply chain should be incorporated in the operational measurement of performance (Shahbaz, Rasi, Zulfakar, Bin, Abbas & Mubarak, 2018).

Meanwhile, researchers had used many ways to measure the effects of risk sources and supply chain practices with diverse means like firm or organizational performance (Cook, Heiser&Sengupta, 2011; Shukla, Garg & Agarwal, 2013), product performance, operational performance (Kauppi, Longoni, Caniato & Kuula, 2016; Sukati, Hamid & Baharun, 2013), logistic performance (Effendi, 2015), financial performance (Li, Fan, Lee & Cheng, 2015) or operational performance (Ahmad & Saifudin, 2014; Chen, 2012; Sukati, Hamid, Baharun & Yusoff, 2012; Sundram, Chandran & Bhatti, 2016).

However, indicators to measure performance are comparable, supply chain performance had been measured by operational performance and its indicators were quality performance, flexibility performance, customer service, delivery performance and cost performance (Kauppi *et al.*, 2016). Effendi (2015) has use logistic effect for SCM and its metric comprised order fill rate, order fulfillment lead time, operations flexibility, inventory turnover, and total logistics cost. It is important to reflect that the short term objectives of supply chain management are principally the intensification of productivity and minimization of inventory and cycle time, while long term objectives are to increase market share and profits for all partners in a supply chain (Tyleca *et al.*, 2011). Supply chain performance can thus be ascertained based on how well a company's short-term and long-term objectives are addressed in the market place.

# **Empirical Review**

Previous empirical literatures suggest well-heeled perceptiveness into the embedded scheme of supply chain integration (SCI) strategies for improving supply chain performance. Hence, this section borders on the review of previous related literature on supply chain integration and supply chain performance, which definitely led to the formulation of the study's hypotheses.

HabiburRehman *et al.* (2016) explored the relationship between supply chain integration and operational performance of organizations operating in Pakistan. Further study has investigated the moderating impact of organizational culture on this relationship. A theoretical grounded conceptual model is developed to organize a mechanism through which supply chain integration influences on operational performance with the moderating effect of organizational culture, and with the help of this model 2 hypotheses were developed. To analyze the hypothesized relationship, multiple statistical tools were applied with the help of SPSS. These hypotheses were tested with the help of data collected through questionnaires that were filled from a sample of 150 employees of 10 dominant firms prevailed in textile industry of Pakistan. Theory, and the data collected from employees verified the proposed hypotheses and te findings revealed that organizational culture moderate the relationship of supply chain integration and operational performance.

Cao et al.(2015) examined the effects of organizational culture on supply chain integration (SCI) by studying the relationships between organizational cultures and supply chain integration. The extant studies investigating the antecedents of SCI focus mainly on environments, inter-firm relationships and other firm-level factors. The study found that organizational culture has a significant effect on supply chain integration.

Braunscheidel *et al.* (2010) investigating the impact of organizational culture on supply chain integration, disputing that supply chain integration comprises the foremost thrust of supply chain inventiveness. The study considered the influence of organizational culture to establish the category of culture distinctiveness that are robustly allied with endeavors to integrate the supply chain and delivery performance.

Based on the review of literature, the following research model was developed:



**Figure 1:** Research Model of the moderating role of Organizational Culture on the relationship between Supply Chain Integration and Supply Chain Performance.

Source: Designed by the Researchers, 2022.

**Ho**<sub>1</sub>: Organizational culture does not significantly moderate the relationship between supply chain integration and supply chain performance.

# RESEARCH METHODOLOGY

The Population of the study is 79 and the study field is the Bottle Water Manufacturing Industry in Rivers State of Nigeria, 47 firms were sampled through the Taro Yamane's formula to obtain the study's sample size. A structured questionnaire was used for data gathering, and the key informants constitute five senior staff of each company. The accurate questionnaire sent out was235, from which 227(96) responses were received). The 227 questionnaires produced the functional response rate. All the variables in the model were evaluated with multiple-item scales, and were anchored on a five-point Likert-type scale format, ranging from 1 = strongly disagree to 5 = strongly agree. Supply chain integration (SCI) is measured by a five-item scale, Supply chain performance (SCP) is measured by a four-item scale, and organizational culture is measured by a five-item scale. The multivariate analysis by means of the Multiple Linear Regression Analysis through the aid of the Statistical Package for Social Science (SPSS version 22.0) was used for data analysis. The Cronbach Alpha technique was used to determine the level of internal consistency among the measurement items. The Cronbach alpha coefficient generated by the use of SPSS will be used to ascertain the reliability of the questionnaire. The value generated was compared with the threshold of 0.7 to confirm reliability.

Table 1: Shows the Reliability Analysis of the Research Instrument (n=227).

Scale	Dimension	Items	Reliability
SCI	Supply Chain Integration	5	0.951
SCP	Supply Chain Performance	4	0.937
OC	Organizational Culture	5	0.952

Source: SPSS 22.0 Output, based on 2022 field survey data.

Table 1 recapitulate the reliability end result of tests, which also incorporates the individual item reliability test). Appreciably, all items are reliable and are employed to study the moderating role of organizational culture on the relationship between supply chain integration and supply chain performance of bottle water manufacturing firms in Rivers State. The level of the alliance between the variables can be operationalized by means of supply chain integration (.951) with 5-items measure; supply chain performance (.937) with a 4-item measure, and organizational culture (.952) with 5-items measure.

### **RESULTS**

# **Test of Hypothesis 1**

**Ho**<sub>1</sub>: Organizational culture does not mediate the relationship between supply chain integration and supply chain performance.

H<sub>1</sub>: Organizational culture mediates the relationship between supply chain integration and supply chain performance

### **Decision Rule:**

Reject  $\mathbf{Ho}_7$  if the p-value for the interaction term is less than 0.05. Otherwise, do not reject  $\mathbf{Ho}_7$ .

Table .2: Effect of Organizational Culture on the relationship between Supply Chain Integration and Supply Chain Performance (n=227)

1	2	3
Variable	Beta Coefficient	<i>p</i> -value
Constant	-591.354	0.000
SCI	0.738	0.000
ОС	0.851	0.000
SCI*SCP	0.757	0.000
R-square 0.4645	Adj. R-squared .46139	Prob(F-statistic) 0.0000

Source: SPSS Window Output, Version 22.0 (based on 2022 field survey data).

Table 2 shows the multiple regression results for the mediating effect of organizational culture on the relationship between supply chain integration and supply chain performance based on regression model. The log of supply chain performance is a linear function of supply chain integration, organizational culture and the interaction variable. The interaction variable (SCI\*SCP) is the product of supply chain integration and organizational culture. From table 2, the F-statistic is associated with almost zero probability, indicating that overall, the estimated supply chain performance model is highly significant. The Adjusted R-squared is .46139, indicating that the estimated model has a moderate fit; the model explains approximately 46% of the total variation in supply chain performance. Thus, factors not considered in the model jointly account for the remaining 54%.

As Table 2 further shows, the estimated coefficients have mixed signs, with SCI (= 0.738) and OC (= 0.851) associated with positive signs. The interaction term (= 0.757) is associated with positive coefficient. All variables are associated with zero probabilities. This shows that the main effect supply chain integration is significant at 1% level. The effects of organizational culture and the interaction variable are also significant at 1% level, suggesting that organizational culture mediates the relationships between supply chain integration and supply chain performance.

### **DISCUSSIONOF FINDINGS**

The study's finding shows that a moderate and significant effect of organizational culture on supply chain integration, whereas a very strong and significant effect of organizational culture on supply chain performance. When organizational culture is held constant, the influence of supply chain integration on supply chain performance becomes (r=0.465 pv 0.000< 0.05) hence the difference between the zero order correlation and the controlled correlation is significant we came to the conclusion that organizational culture do significantly mediates the relationship between supply chain integration and supply chain performance. A possible explanation to this is that virtually all the respondents used in this survey

understand their firms' organizational culture. This may have influenced the result. Also, in respective of organizational culture, supply chain integration needs high level of organizational culture to appreciate. This supports HabiburRehman *et al.* (2016) findings that reveal that organizational culture moderate the relationship of supply chain integration and operational performance.

### CONCLUSION AND RECOMMENDATION

This work focused on investigating the mediating effect of organizational culture on the relationship between supply chain integration and supply chain performance of bottle water manufacturing firms in Rivers State of Nigeria. It is clear from the outcome of the study that there is a contained mediating effect of organizational culture on the relationship between supply chain integration and supply chain performance, as the results of the statistical analysis deposits a significant outcome, depicting a moderate and significant effect of organizational culture on supply chain integration, whereas a very strong and significant effect of organizational culture on supply chain performance. The study therefore, concludes that organizational culture significantly mediates the relationship between supply chain integration and supply chain performance of bottle water manufacturing firms in Rivers State of Nigeria, and recommends that management of bottle water manufacturing firms should improve on their organizational culture, develop strategic collaboration with its suppliers and customers, and encourage cross functional integration within the organization in order to enhance the relationship between supply chain integration, and supply chain performance.

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