External Integration and Sustainable Supply Chain Performance of Bottle Water Manufacturing Firms in Rivers State

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Abstract: **This study focused on external integration and sustainable supply chain performance of bottle water manufacturing firms in Rivers State of Nigeria; expressly to discover the influence of external integration on sustainable supply chain performance. A causal design research model was originated to take on board the two (2) hypotheses put together 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 mock-up 47 firms out of the population. The simple random sampling technique was adopted to select five (5) respondents per firm to arrive at 235 respondents. A 5-point likert-scale questionnaire was administered to respondents, of which 200 copies of the questionnaire were returned, obtaining an 85 percent response rate. The study adopted descriptive statistics; Pearson's Product Moment Correlation Coefficient, Simple regression and analysis of variance formats to establish that external integration dimensions; customer integration, and suppliers' integration were valuable in influencing sustainable supply chain performance of bottle water manufacturing firms in Rivers State of Nigeria. The results exposes that customer integration has a moderate, positive and significant influence on sustainable supply chain performance. The findings also, designates that suppliers integration has a moderate, positive and significant influence on sustainable supply chain performance. As such, the study recognizes external integration as a catalyst that predicts sustainable supply chain performance, and concludes that, external integration positively and significantly influences sustainable supply chain performance of bottle water manufacturing firms in Rivers State of Nigeria and recommends amongst others that, Managers of bottle water manufacturing firms should position strategically, suppliers integration to achieve definitive sustainable supply chain performance.**

Key Words: **Customer integration, External integration, Supplier integration, Sustainable supply chain performance.**

I. INTRODUCTION

Sustainability emanates from the background of exploration into state of affairs for most favorable supply chain performance fastened on the claim which demands for over and above intensification of good marketing strategies aligned with resource spread out. Sustainable supply chain performance can be described as the ceaseless flow of positive operational effectiveness of the existing company without compromising the ability of future operational effectiveness of the company, making sure that this potential is fastened on dependable utilization of accessible resources for enduring feat available for use by future generations. Sustainability is depositing technical, scientific, ecological and economic social resources so that the ensuing scheme can be upheld in a balanced state for all times. Sustainable supply chain performance can serve as a shock absorber for the harsh competitive environment.

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 sustainable competitive advantage. This is imperative since, it has been recognized that competition is no more in the midst of firms but in the midst of supply chains. As a consequence, to compete universally, it is important to take account of all linkages and calculate performance at supply chain level.

In today's competitive business scenery, external integration is crucial as a good number of the firms' major focal point is on conveying value to the customer. The focal point of these firms concerns how products and services that are valuable are provided to consumers. This notifies supply chains to be more alert and generate competitive advantage. The paramount conviction amid academics is that supply chain has premeditated and operational significance and lends a hand to firms to grow to be more competitive (Yeung *et al.,* 2009; Van der Vaart & Van Donk, 2008). Various intellectual investigations discovered that integration crosswise the supply chain positively influences firm's performance (Flynn, Huo, B & Zhao, 2010; Van der Vaart & Van Donk, 2008), at the same time others have revealed that integration has a positive influence on supply chain performance (Lee *et al.,* 2007; Narasimhan & Kim, 2002).

Over the last decades, external integration has been studied largely and its significance to practitioners and academics has been accredited with a high degree of recognition. However, notwithstanding major contributions in supply chain external integration, current investigations exhibits that firms are under pressure to achieve competitive advantage as a result of supply chain integration silos. It is certainly obvious that a firm with a healthier supply chain can maintain the business

by making it well-organized and valuable (Basu, Jeyasingam, Habib, Letchmana & Ravindran, 2017). In order to realize good organization and usefulness, managers must institute comprehensive supply chain approaches. There are assortments of approaches that definitely affect performance; the most effective being considered is supply chain integration (Seo, Dinwoodie & Roe, 2015).

Some prior studies have looked at external integration and supply chain performance. For example, Martinez, Aranda and Gutierrez (2010) explored IT integration, operations flexibility and performance in manufacturing firms, Maria-Garcia, Alfalla-Luque, and Medina-Copez (2013) considered supply chain integration scales validation and benchmark value across ten countries. Mose (2013) looked into the impact of supply chain integration strategies on performance of Pork processing industries in Rwanda, and Wong, Wong and Boom (2013) scrutinized the combined effects of Internet and external supply chain integration and product innovations of Automakers in Thailand. Despite the fact that the concept of external integration has been comprehensively investigated, little or none have been in print on its link with sustainable supply chain performance of bottle water manufacturers firms in Nigeria. Thus, with the view of filling the knowledge gap that has been identified, this current study investigates the influence of external integration on sustainable supply chain performance of bottle water manufacturing firms in Rivers State of Nigeria.

Research Questions

1. To what extent does customer integration relate with sustainable supply chain performance?
2. To what extent does suppliers' integration relate with sustainable supply chain performance?

II. LITERATURE REVIEW AND HYPOTHESES

The Concept of External Supply Chain Integration

Supply chain integration is defined as "the extent to which all activities within an organization, and the activities of its suppliers, customers, and other supply chain members, are integrated together" (Narasimhan, *et al.,* 1998). SCM has three independent variables in its original scale they are: internal, suppliers and customer integrations. Some also considers integration in two levels: internal integration and external integration (Tutuncu & Kucukusta, 2008). Finally, Stevens (1989) classifies supply chain integration into three levels, from functional integration to internal integration and to external integration. However, this study focuses only on external integration.

External supply chain integration concerns the integration of the company with its external environment encompassing customers and suppliers. According to Flynn *et al.* (2010:59), external integration is "the degree to which a manufacturer partners with its external partners to structure inter-organizational strategies, practices and process into collaborative, synchronized processes". The existing literature has investigated external integration from different perspectives. One aspect of research examined external integration in terms of integration of the focal company with its customers (Stank *et al.,* 2001; Zhao *etal.,* 2008). Another aspect examined external integration based on supplier integration (Ragetz *et al.,* 1997; Petrols *et al.,* 2013). This present study examines external integration based on both customer and supplier integration (Fohlick & Westbrook, 2001; Zhao *et al.,* 2011; Schoenherr & Swink, 2012; Prajogo & Glhagar, 2012).

External supply chain integration reveals two major areas of emphasis. They are: Customer integration (CI) and Supply integration (SI). Supplier integration also called "backward" integration (Frohlich & Westbrook, 2001) refers to the process of interaction and collaboration between an organization and its suppliers to ensure an effective flow of supplies (Zhao *et al.,* 2011). Customer integration, also called "forward" integration (Frohlich & Westbrook, 2001) refers to the process of interaction and collaboration between an organization and its‟ customers to ensure an effective flow of products and/or services to customers (Zhao *et al.,* 2002). This study chooses customer integration and suppliers' integration as the dimensions of external integration.

Sustainable Supply Chain Performance

Performance is "A set of metrics used to quantify the efficiency and effectiveness of supply chain processes and relationships, spanning multiple organizational functions and multiple firms and enabling supply chain orchestration" (Maestrini, Luzzini, Maccarrone & Caniato, 2017). Enhancement of performance in a supply chain is an interminable process that requires a methodical performance measurement system (Ikegwuru & Harcourt, 2018). Sustainable supply chain performance is the application of sustainable practices in businesses by managing them in a way that will benefit contemporary generations and upcoming generations. Sustainable supply chain performance meets the continuous flow of positive operational effectiveness of the existing company without compromising the ability of future operational effectiveness of the company. Sustainable supply chain performance is a pointer that ascertains how well an organization achieves its goals enduringly. It may embrace market orientation, customer satisfaction, financial performance etc. Earlier, performance has been calculated in several methods like firm performance, operational performance, and financial performance.

Empirical Review

Previous empirical literatures suggest well-heeled shrewdness into the entrenched design of external integration (EI) strategies for improving sustainable supply chain performance. Hence, this section borders on the review of previous related literature on the dimensions of external integration and supply chain performance, which definitely led to the formulation of the study's hypotheses.

Demester, Szasz and Racz (2016) examined a model showcasing the connection amid internal integration; external integration and operational performance using an international survey encircling data on 470 manufacturing subsidiaries to operationalize the constructs. Structural equation modeling was used to evaluate the positive influence of internal integration on performance. The study establishes that knowledge produced inside the internal manufacturing network can only be transformed into subsidiary-level operational performance, if it is shared and mingled with external supply chain partners. The utmost performance benefits can only be achieved if reciprocally, suppliers and customers are absorbed in this process.

He, Lai, Sun, and Chen (2013) surveyed the convoluted associations among supplier integration, customer integration and new product performance by means of the mediating roles of manufacturing flexibility and service capability underside the trust theory. The examination of data collected from International Manufacturing Strategy Survey (IMSS) reveals that equally supplier integration and customer integration had positive direct effects on new product performance. Above and beyond, the study found that supplier integration has a positive influence on customer integration through the mediating role of manufacturing flexibility. The studies above contribute to supply chain integration by investigating the elaborate association between supplier integration and customer integration anchored on the trust theory.

Fredricksson (2011) investigates how the production outsourcing transition from making to buying a product affects material supply. Empirical data were based on case studies which were principally gathered through interviews with staff working in the outsourcing companies. The study reveals that to guarantee materials supply, the entire outsourcing process has to be in focus i.e., from before physical transfer where the decision to outsource is made until a steady state is arrived at with a continuous supply from the new source.

Based on the review above, the following operational framework was designed:

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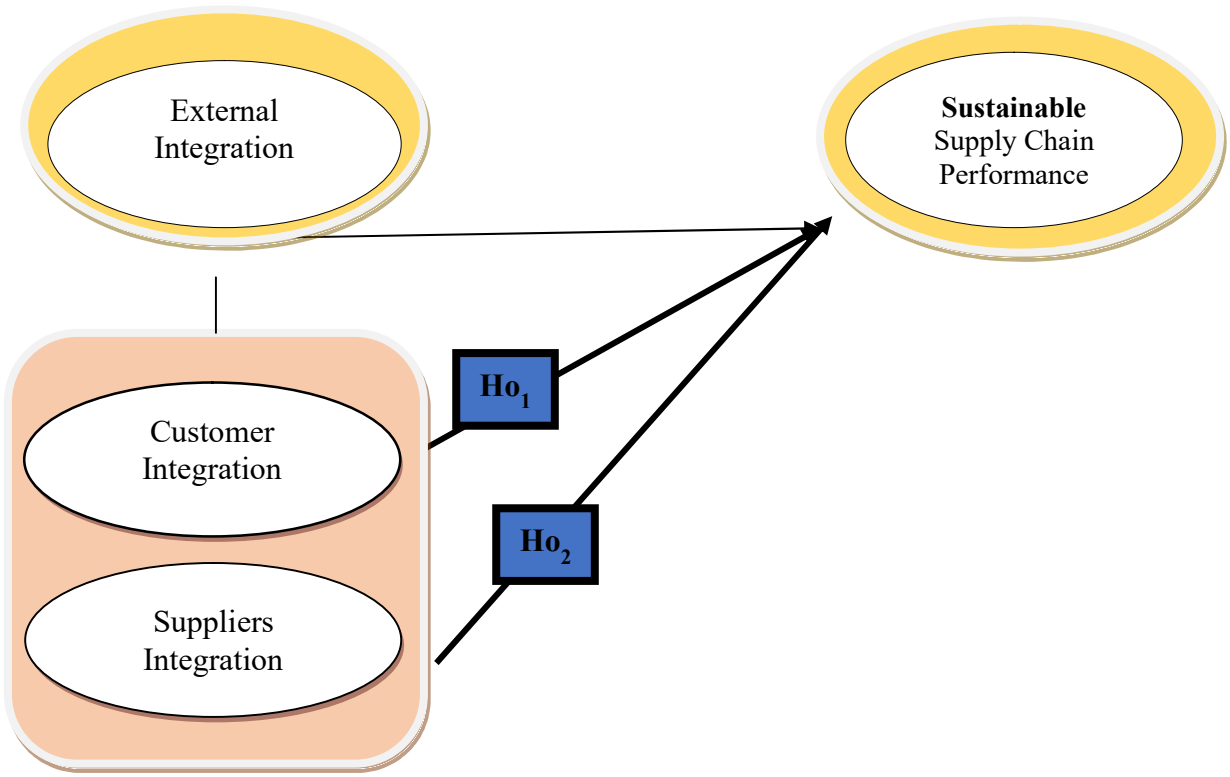

Figure 1: Operational Framework of External Integration and Sustainable Supply Chain Performance.
Sources: Frohlich & Westbrook (2001)

Based on the review of literature and in line with the framework provided by the review of literature, the following research hypotheses were tested at 0.05 level of significance to show tentative relationship between the criterion and predictor variables:

Ho_1: Customer integration does not significantly influence sustainable supply chain performance.

Ho_2: Supplier integration does not significantly influence sustainable supply chain performance.

III. RESEARCH METHODOLOGY

The data for this study were accumulated from seventy-nine (79) registered bottle water manufacturing firms in Rivers State, whose unadulterated listing was obtained from the business unit of the Rivers State Ministry of Commerce and Industry as at February, 2020 when the survey began. By means of a typical questionnaire information regarding External integration and sustainable supply chain performance of bottle water manufacturing firms were gathered. A causal designed research model was infused to handle one hypotheses collected for the study. The population of the study constitutes 79 bottle water manufacturing firms in Rivers State and the Taro Yemen's formula was used to arrive at a sample 47 firms out of the population. The simple random sampling procedure was then adopted to select five (5) respondents per firm to generate 235 respondents. A 5-point likert-scaled questionnaire was administered to respondents composed of Quality managers, Production managers, Marketing managers, Logistics managers and supervisors, of which 200 copies of the questionnaire were returned, realizing 85 percent response rate

Validity and Reliability of Instrument

To guarantee the validity of the instrument, crystal-clear question items was tested and pretested before the final test. Additionally, to guarantee internal validity of the instrument, the researcher presented the rough copy of the questionnaire to two experts in the field of logistics and supply chain management for reassessment and submissions made was built-in into the final questionnaire.

The Cronbach Alpha technique was used to ascertain the level of internal consistency among the measurement items. The Cronbach alpha coefficient stimulated by the use of SPSS was adopted to ascertain the reliability of the instrument. The value engendered was measured up to with the threshold of 0.7 to substantiate reliability. Cronbach alpha value above 0.7 point towards reliability of the measurement procedure. The reliability measure of external integration and supply chain performance is shown in Table 1:

Table 1: Shows the reliability measure of External Integration and Sustainable Supply Chain Performance (n=200).

Scale	Dimension	Items	Reliability
CI	Customer Integration	3	0.974
S I	Supplier Integration	3	0.933
SCP	Sustainable Supply Chain Performance	3	0.952

Source: SPSS 22.0 Output, based on 2021 field survey data.

Table 1 reiterates the reliability end result of external integration and sustainable supply chain performance, which also slips in the individual item reliability tests. Substantially, all items are reliable and are made use of to study external integration and sustainable supply chain performance in bottle water manufacturing firms in Rivers State. The level of the association between external integration and sustainable supply chain performance can be operationalised by means of customer integration (.974) with 3-items measure; supplier integration (.933) with a 3-item measure and sustainable supply chain performance (.952) with 3-items measure.

The analysis was made up of descriptive and inferential statistics with SPSS version 22 providing aid. The inferential statistics involved three parametric inferential tests- Pearson's Product Moment Coefficient (PPMC), One Way Analysis of Variance (ANOVA) and Simple Regression Analysis. The PPMC was used to test the relationship between the variables, ANOVA was employed to test the differences in means of responses on the variables, while by means of the simple regressions, the study tested the effect of the elements of external integration on sustainable supply chain performance.

Model Specification

This segment stipulates the following model that directed the study:

SSCP = f (EI)----------1

Where

SSCP = Sustainable Supply Chain Performance

EI= External Integration

Therefore,

SSCP = f (EI)

The above equation is trans- customized into econometric form by adding constant term (β) and error term (E) in the model below:

SSCP= f (EI)

SSCP= $\beta 0 + \beta 1EI+e$----------1

SSCP = $\beta 0 + \beta EI + e$----------2

Mathematical form of the model is:

SSCP = $\beta 0 + \beta EI$

Where:

SSCP = Sustainable Supply Chain Performance

EI = External Integration

SSCP = Sustainable Supply Chain Performance

$\beta 0$ = Intercept

$\beta 1$ = Coefficient of the predictor variable

e = error term.

IV. RESULTS

Analysis of Research Questions

The researchers sought to ascertain the relationship of the component of external integration and sustainable supply chain performance of bottle water manufacturing firms in Nigeria. The Pearson's Product Moment Correlation (PPMC) technique was adopted for answering the research questions.

Relationship between Customer Integration and Sustainable Supply Chain Performance

Table 2: Correlation Analysis showing the direction and strength of the relationshi between customer integration and sustainable supply chain performance Correlations

Customer Integration		Sustainable Supply	Chain Performance
Customer Integration		1	.568
	Sig. (2-tailed)		.0000
	N	200	200
Sustainable Supply Chain Performance	Pearson's correlation	.568	1
	Sig. (2-tailed)	.0000	
	N	200	200

* Correlation is significant at 0.01 levels (2-tailed).

As can be seen from Table 2, customer integration has a moderate and positive relationship with sustainable supply chain performance. The sign of the correlation coefficient is positive indicating that when customer integration increases, the focal companies also experience a corresponding response in her sustainable supply chain performance activities. The significant/probability value (PV) = 0.000<0.05, therefore the researchers conclude that a moderate, significant and positive relationship exists between customer integration and sustainable supply chain performance of bottle water manufacturing firms in Rivers State.

Relationship between Supplier Integration and Sustainable Supply Chain Performance

Table 3: Correlation Analysis showing the direction and strength of the relationship between supplier integration and sustainable supply chain performance Correlations

Supplier Integration		Sustainable Supply	Chain Performance
Supplier Integration		1	.589
	Sig. (2-tailed)		.0000
	N	200	200
Sustainable Supply Chain Performance	Pearson's correlation	.589	1
	Sig. (2-tailed)	.0000	
	N	200	200

** Correlation is significant at 0.01 level (2-tailed).

As can be seen from Table 3, supplier integration has a moderate and positive relationship with sustainable supply chain performance. The sign of the correlation coefficient is positive indicating that when supplier integration increases, the focal companies also experience a corresponding response in her sustainable supply chain performance activities. The significant/probability value (PV) = 0.000<0.05, therefore the researchers conclude that a moderate, significant and positive relationship exists between supplier integration and sustainable supply chain performance of bottle water manufacturing firms in Rivers State.

Statistical Test of Hypotheses

The purpose of this section is to test the two research hypotheses stated earlier in the study. This is centered on the establishment of relationship between the predictor and criterion variables. To test the hypotheses the simple regressions was performed on the dependent and independent variables to determine the degree of influence of the predictor variable on the criterion variable. This is aimed at identifying the nature of the influence of the dimensions of external integration on sustainable supply chain performance. The null hypotheses were stated followed by the results of the test presented in tabular form.

Decision Rule

Significant/probability value (Pv) < 0.05 (level of significance = conclude significant influence.

Significant probability value (Pv) > 0.05 (level of significant = conclude insignificant influence.

Influence of Customer Integration on Sustainable Supply Chain Performance

Ho_1: Customer integration does not significantly influence sustainable supply chain performance.

H_1: Customer integration significantly influences sustainable supply chain performance.

Table 4: Influence of Customer Integration on Sustainable Supply Chain Performance *(n=200).*

Model	R	R Square	Adjusted R Square	Std. Error of the estimate
1	.568	.465	.463	2.6751

ANOVA [b]

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	0.87	1	0.63	299.886	.0000
Within Groups	006	199	000		
Total	093	200			

A

.*Coefficients*

	Unstandardized Coefficient			Standardized Coefficient	
Model	B	Std. error	Beta	T	Sig
1 Constant	1.866	.068		26.786	.000
Within Groups	.567	.048	.568	19.675	

Source: SPSS Window Output, Version 22.0 (based on 2021 field survey data).

Decision: Since for hypothesis one, the significant .000 is less than 0.05, there is a significant effect of customer integration on sustainable supply chain performance. The regression helps us to conclude with the R (coefficient of correlation) that there is 56.8% direct relationship between customer integration and sustainable supply chain performance. R-squared value of 46.5% shows that customer integration can affect sustainable supply chain performance.

The ANOVA Table explains the fitness of the model as shown by. The F-ratio in the model is 26.786, which is very significant at $p < 0.05$. This implies that there is significant evidence to extrapolate that customer integration is linearly related to sustainable supply chain performance. This proposes that the model is measured to be fit and that customer integration has some influence on sustainable supply chain performance.

There is also a standardized coefficient of .568 which is perfect as well as corresponding P value (sig.) of 000 which is less than alpha (0.05). Therefore, we conclude that customer integration significantly influences sustainable supply chain performance of bottle water manufacturing firms in Rivers State of Nigeria.

Influence of Supplier Integration on Sustainable Supply Chain Performance

Ho_2: Supplier integration does not significantly influence sustainable supply chain performance.

H_2: Supplier integration significantly influences sustainable supply chain performance.

Table 5: Influence of Supplier Integration on Sustainable Supply Chain Performance ***(n=200).***

Model	R	R Square	Adjusted R Square	Std. Error of the estimate
1	.589	.437	.434	.50668

ANOVA [b]

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	59.766	1	59.765	265.579	.0000
Within Groups	29.780	199	.297		
Total	89.546	200			

Coefficients

	Unstandardized	Coefficient		Standardized	Coefficient
Model	B	Std. error	Beta	T	Sig
1 Constant	690	.259		3.569	.000
Within Groups	.780		.589		

Source: SPSS Window Output, Version 22.0 (based on 2021 field survey data).

Decision: Since for hypothesis two, the significant .000 is less than 0.05, there is a significant effect of supplier integration on sustainable supply chain performance. The regression helps us to conclude with the R (coefficient of correlation) that there is 58.9% direct relationship between supplier integration and sustainable supply chain performance. R-squared value of 43.7% shows that supplier integration can affect sustainable supply chain performance.

The ANOVA Table explains the fitness of the model as shown by. The F-ratio in the model is 265.579, which is very significant at $p < 0.05$. This implies that there is significant evidence to extrapolate that supplier integration is linearly related to sustainable supply chain performance. This proposes that the model is measured to be fit and that supplier integration has some influence on sustainable supply chain performance.

There is also a standardized coefficient of .589 which is perfect as well as corresponding P value (sig.) of 000 which is less than alpha (0.05). Therefore, we conclude that suplier integration significantly influences sustainable supply chain performance of bottle water manufacturing firms in Rivers State of Nigeria.

V. DISCUSSIONS OF FINDINGS

On the whole, external integration is an ample dynamic that predicts sustainable supply chain performance, hence, the study's findings shows that external integration has significant influence on sustainable supply chain performance. The tests on the first and second hypotheses attempted to establish the effect of customer integration and supplier integration on sustainable supply chain performance and revealed a moderate, positive and significant influence on sustainable supply chain performance. From the study's findings, it could be valued that when customer integration and supplier integration are aptly harmonized and enormously enthralled, it caresses definitely on sustainable supply chain performance. In order to build long term supply chain performance, firms invest much on external integration. This much investment is being committed to external integration with the hope of establishing perfect external environment assimilation which is only rewarded when those variables of external integration (customer integration and shareholders integration) attract sustainable supply chain performance. Therefore, it is only when there is adequate validation that external integration has significant positive effect on sustainable supply chain

performance, that the activities of external integration can be acknowledged to be wise for bottle water manufacturing firms. Our finding agrees and supports the findings of He *et al.* (2013) who found that supplier integration has a positive influence on customer integration through the mediating role of manufacturing flexibility.

VI. CONCLUSION AND RECOMMENDATIONS

This study focused on investigating the influence of external integration on sustainable supply chain performance of table water manufacturing firms in Rivers State of Nigeria. It is clear from the outcome of the study that there is contained influence of external integration on sustainable supply chain performance. The results of the study's analysis exhibits that there are enough indications to show that the components of external integration as defined by the current study have the potentials to cause sustainable supply chain performance. The study therefore, concludes that the external integration significantly influences sustainable supply chain performance in bottle water manufacturing firms in Rivers State of Nigeria and recommends that:

1. Managers of bottle water manufacturing firms should position strategically, supplier integration to achieve definitive sustainable supply chain performance.
2. Management of bottle water manufacturing firms should be skilled in wrapping the components of external integration identified by this study to relate realistically with sustainable supply chain performance. This is essential because the study revealed that the components of external integration were significant in predicting sustainable supply chain performance**.**

REFERENCES

[1] Basu, G., Jeyasingam, J., Habib, M., Letchmana, U. & Ravindran, R. (2017).The Impact of Supply Chain Management Practices on the Performance of Private Universities in Malaysia. *International Journal of Supply Chain Management, 6(3), 22-35.*

[2] Demester. K., Szasz, L. & Racz, B. (2016). The impact of subsidiaries' internal anexternal integration on operational performance. *International Journal of Production Economics.182, 73-85*2.

[3] Flynn, B. B., Huo, B & Zhao, X. (2010). The impact of supply chain integration on performance: A contingency and configuration approach. *Journal of Operations Management, 28 (1-2), 58-71,*

[4] Fredricksson, A. (2011). *Materials supply and production outsourcing*. Doctoral Thesis Chalmers University of Technology.

[5] Fronhlich, M.T. & Westbrook, R. (2001). Arcs of Integration: An international study of supply chain strategies. *Journal of Operations Management, 19(2), 185-200.*

[6] He, Y., Lai, K.K., Sun, H. & Chen, Y. (2013). The impact of supplier integration on customer integration and new product performance: The mediating role of manufacturing flexibility under trust theory. *International Journal of Production Economics, 260-270.*

[7] Ikegwuru, M. & Harcourt, H. (2018). Understanding the impact of cloud computing service adoption on supply chain performance: An empirical study. *RSU Journal of Strategic and Internet Business 3(2), 182-204.*

[8] Lee, C. W., Kwon, I. W. G. & Severance, D. (2007). Relationship between supply chain performance and the degree of linkage among supplier, internal integration, and customer. *Supply chain Management: An International Journal, 12(6), 444-452.*

[9] Maestrini, V., Luzzini, D., Maccarrone, P & Caniato, F. (2017). Supply chain performance measurement systems: A systematic review and research agenda. *International Journal of Production Economics,* 183), 299-315.

[10] Matinez, M. Aranda, D.A & Gutierrez, L.G. (2013), IT integration, operation and flexibility. *Journal of Engineering and Management.*

[11] Narasimhan, R. & Kim, S.W. (2002). Effect of supply chain integration on the relationship between diversification and performance: Evidence for Japanese and Korean firms. *Journal of Operations Management, 20(3), 303-323.*

[12] Perols, Zimmermann, C. & Kortmann, S. (2013). On the relationship between supplier integration and time-to-market. *Journal of Operations Management, 31 (3), 153-167.*

[13] Prajogo, D. & Olhager, J. (2012). Supply chain integration and performance: The effects of long term relationships, information technology and sharing, and logistics integration. *International Journal of Production Economics, 135 (1), 514-522.*

[14] Ragatz, G.L., Hand field, R. B. & Scannell, T. V. (1997). Success factor for integrating suppliers into new product development. *Journal of Product Innovation Management, 14 (3), 190-202.*

[15] Schoenherr, T. & Swink, M. (2012).Revisiting the arcs of integration: Cross validation and extensions. *Journal of Operations Management, 30 (1-2), 99-115.*

[16] Seo, Y.J., Dinwoodie, J. & Roe, M. (2015). Measures of supply chain collaboration in container logistics. *Maritime Economics & Logistics, 17(3), 292-314.*

[17] Stank, T. P., Keller, S.B. & Closs, D. J. (2001). Performance benefits of supply chain logistical integration. *Transportation Journal, 41 (2/3), 32-46.*

[18] Yeung, J.H. Y., Selen, W., Zhang, M. & Huo, B. (2008). The effect of trust and coercive power on supplier integration. *International Journal of Production Economics, 120(1), 66-78.*

[19] Zhao X., Huo, B., Flynn, B. B. & Yeung, J. (2008). The impact of dependence power and relationship commitment on the integration between manufacturers and customers in a supply chain. *Journal of Operations Management, 26(3), 368-388.*

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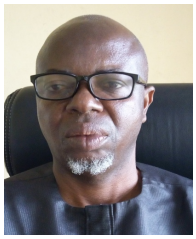

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