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Research Paper

Innovative Planning and Supply Chain Management of Small And Medium Scale Enterprises (SMEs) In South-East, Nigeria

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Abstract
In this paper, we investigated the relationship between innovative planning and supply chains management of small and medium scale enterprises in South-East, Nigeria using five hundred (500) questionnaires which was administered to selected suppliers of SMEs. The study used three (3) dimensions of supply chain management (cost saving, time saving and product delivery efficiency) that innovative planning is capable of improving. Data obtained in the survey were analyzed using descriptive statistics(mean, standard deviation, minimum and maximum value, Pearson correlation) and inferential statistics(simple regression). Simple regression model results showed that innovative planning positively and significantly influence supply chains management (particularly in areas of cost-saving, time-saving and product delivery efficiency). On the basis of the findings, it was recommended that SMEs should fully embrace innovative planning in order to reduce cost and time and product delivery efficiency associated with supply chain management practices. Furthermore, SMEs that have supply chain management in place, there is the need for them to strengthen their innovative planning approaches.

Keywords: *Innovative planning; Supply chain management; Productivity; Small and medium scale enterprises;*

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I. INTRODUCTION

In both developed and developing nations, small and medium scale enterprises (SMEs) are often envisaged of being unproductive and not able to communicate with project management team as a result of inadequate supply chain management(SCHM). Ageron, Lavastre and Spalanzani (2023) asserted that the underdeveloped nature of SMEs can also be linked to lack of innovative planning (INP). According to Zygiaris (2020), INP impedes productivity due to increase in amount of changes in the operation process as a result of faulty information.

The term 'INP' as observed by Damanpour and Aravind (2020) is a method via which productivity needs and SCHM of SMEs are met. The link between INP and SCHM has been adequately recognized and discussed in the management literature(Damanpour & Aravind, 2022; Arlbjørn, de-Haas & Munksgaard, 2021; Dainty, 2020; and Cao & Zhang, 2020). For instance, Damanpour and Aravind (2022); and Arlbjørn, et al (2021) showed that INP significantly and positively influence SCHM, the studies of Dainty, (2020); Cao and Zhang (2020) found that the relationship between INP and SCHM is significant and negative.

The reasons for the divergence in the results according to Ageron, et al (2023) could be attributable to defects in materials, and delayed deliveries of products resulting from SCHM of SMEs which most of them fail to effectively and efficiently manage. The viewpoint shared by Skipper, Hanna and Cegielski (2019); and Arlbjørn, et al (2021) is also buttressed by Dainty (2020) who found that SCHM inadequacies stem from INP process aimed at meeting suppliers needs.

Furthermore, Dainty (2020) contended that SMEs engaged too late in INP; a vital part of SCHM is the planning process where supply chain managers need to be involved. As noted by Love and Li (2020), SCHM is the efficient material delivery schedules were materials ordered arrive to suppliers. Arguably, the integrative process INP is missing in most SMEs today. Panayides (2016) opined that inadequate innovative plan causes decreased productivity, increased costs and time in the operations of SMEs. Thus, to address these problems, it is vital to look how innovative planning can serve as a means of enhancing supply chain management of SMEs in Nigeria.

1.1 Specific Objectives

This paper investigated the relationship between innovative planning and supply chain management of SMEs in South-East, Nigeria. The specific objectives are:

i. To assess whether innovative planning results to cost-savings associated with the supply chain management of SMEs in South-East, Nigeria.

ii. To determine whether innovative planning leads to product delivery efficiency associated with the supply chain management of SMEs in South-East, Nigeria.

iii. To ascertain whether innovative planning leads to time-saving associated with the supply chain management of SMEs in South-East, Nigeria.

II. REVIEW OF RELATED LITERATURE

2.1 Innovative Planning (INP)

In the management literature, innovative planning (INP) is seen as a vital tool for enhancing business performance and supply chain management of both small, medium and large-sized corporations (Thunberg, 2016; Okoro, 2016; and Okoro, 2014). From the entrepreneurial perspective, one way through which SMEs can become innovative in planning is to think of suppliers, contractors and customers as partners to the enterprise. INP is a systematic process of adopting unique methods and practices in planning the delivery of products schedule for suppliers, contractors, customers, etc..

The prime aim of INP is enhancing planning process of products delivery in alliance within supply chain (Busse & Wallenburg, 2011). The emergence of practices such as collaborative planning, forecasting and replenishment, vendor management inventory, demonstrate the managerial popularity of INP. While diverse measures have been used to estimate INP, relatively few empirical studies had examined whether INP impact on SCHM (Cao & Zhang, 2020; Damanpour & Aravind, 2022; and Arlbjørn, et al, 2021; Dainty, 2020).

Broadly speaking, the diverse measures of assessing the relationship between INP and SCHM showed the growing interests on the part of management researchers to better understand this phenomenon. Hence, this study takes into cognizance, whether INP will significantly and positively influence SCHM of SMEs in South-East, Nigeria.

2.2 Supply Chain Management (SCHM)

Supply chain is a network of corporations that are involved through upstream and downstream linkage, in diverse processes and activities leading to value in the forms of products in the hands of suppliers, subcontractors, and consumers (Soosay, Hyland & Ferrer,20218). Impliedly, supply chain is concerned with flow of materials to suppliers, subcontractors and consumers and the controlling and organizing of these processes is referred to as the Supply Chain Management (SCHM). Supply chains do not exist without effective management of the process.

SCHM entails management of all activities linked with sourcing and procurements, conversion, and logistics management activities (Li, Ragu-Nathan, Ragu-Nathan & Subba Rao, 2016). Basically, SCHM integrates supply and demand management within and across the corporation. There are four (4) phases of the SCHM which according to Simatupang and Sridharan (2015) include: Planning and Execution of Plans; Logistic, Collaboration; and Integrating Functions within and between corporations.

Broadly, SCHM goal is to reduce costs(cost-savings), time (time-savings), efficiency in product and service deliveries among others(Gunasekaran, Patel & McGaughey, 2014).

Also, the goal is to enhance SCHM and reduce diverse widespread problems in SMEs via innovative planning. This study adopted three(3) SCHM goals: cost-saving, product delivery efficiency, and time-saving associated with the supply chain management of SMEs in South-East, Nigeria.

III. RESEARCH METHODS

In this study, survey research design was used because the study seeks to obtain the perception of individuals on whether innovative planning (INP) influences supply chain management (SCHM). The study population consists of suppliers of materials to SMEs in South-East, Nigeria. Given that numbers of suppliers of materials to SMEs in South-East, Nigeria is enormous, the purposive sampling technique was used in selecting five hundred (500) respondents who are suppliers to SMEs in South-East, Nigeria.

The instrument of data collection comprise questionnaire designed on a 5-point scale of strongly agree, agree, undecided, disagree and strongly disagree. The instrument was administered to suppliers of materials to SMEs in South-East, Nigeria. Liñán and Chen (2009) advocated multi-item scales for research survey because they are more reliable than a single-item scale.

The instrument was divided into two (2) parts: bio-data of respondents and questions on INP and SCHM dimensions (cost-saving, time-saving and product delivery efficiency). The SCM dimensions are likened to those employed in the studies of Damanpour and Aravind (2022); Arlbjørn, et al (2021); Dainty

(2020); and Cao and Zhang (2020). The reliability of the research instrument was carried out using Cronbach Alpha; a pilot-test of fifty (50) respondents was used and Alpha coefficient of 0.88 was obtained. The model of the study is given as:

$$costs = \delta_0 + \delta_1 Inp_i + \varepsilon_t \quad eq.\ 1$$
$$times = \delta_0 + \delta_2 Inp_i + \varepsilon_t \quad eq.\ 2$$
$$ped = \delta_0 + \delta_3 Inp_i + \varepsilon_t \quad eq.\ 3$$

Where: costs = Cost-savings; *times* = Time-saving; *ped* = product delivery efficiency *Inp* = innovative planning; *et* = Error term. Data obtained were assessed via descriptive statistics(mean, standard deviation, minimum and maximum value, Pearson correlation) and inferential statistics (simple regression). The independent variable is INP while the dependent variable is SCM dimensions. Data obtained were analyzed using STATA 16.0 statistical software.

IV. RESULTS

Table 1: Summary of Descriptive Results

	Minimum Value	Maximum Value	Mean Score	Standard Deviation
COSTS	1	5	2.8029	0.5004
TIMES	1	5	2.7039	0.5480
PED	1	5	2.6610	0.5403
INP	1	5	2.6448	0.5091
Observation	500	500	500	500

Source: Computed by the Researcher, 2023

The summary of descriptive statistics in Table 1 revealed that the mean value for SCHM dimensions are 2.8 (*COSTS*), 2.7 (*TIMES)* and 2.7 (*PED)* while the independent variable had a mean of 2.6. The man values clearly indicate that all the items on INP and SCHM outperformed the mean benchmark of 2.5, thus signifying that respondents perceived the items as good indicators for assessing the relationship between INP and SCHM

Furthermore, the least score is one (1) and the highest is five (5); this is expected since the research instrument was scaled to 5-point. Also, standard deviation values showed that the sampled suppliers' perceptions are not too far from each other because the standard deviation scores ranged from 0.5004 (being the least) and 0.5480 (the highest).

Table 2: Pearson Correlation Result

	COSTS	TIMES	PED	INP
COSTS	1.0000			
TIMES	0.0357	1.0000		
PED	0.0340	0.0715	1.0000	
INP	0.0580	0.0662	0.0324	1.0000

Source: Computed by the Researcher, 2023

The result of Pearson correlation revealed that innovative planning (INP) is positively linked with the three (3) SCHM dimensions as shown in the correlation coefficients. Also, none of the correlation coefficients exceed 0.8; an indication of nonexistence of multicolinearity problem in the model of INP and SCHM.

Table 3: Result of Innovative Planning (INP) and Cost-Saving (COSTS)

Dependent Variable: Cost-Saving (COSTS)		No. of Obs. = 500		
Variables	Coefficient	Standard Error	t-Statistics	Sig.
Constant	0.4021	0.7930	14.20	0.0000
INP	0.6640	0.5601	23.44	0.0000
F(1, 499) (p-value)			107.23 0.0000	
R-Squared			0.7728	
R-Squared Adj.			0.6725	

Source: Computed by the Researcher, 2023

Table 3 showed that INP had a positive coefficient of 0.6640; this support INP is positively correlated to the dependent variable (*COSTS*). The R-Squared adjusted of 0.6725 implies that INP explained about 67.3% of the systematic variation in *COSTS*. The t-statistics of 23.44 and F-value of 107.23 with respective probabilities of 0.0000 are less than 0.05 suggesting that INP had positive and significant effect on COSTS.

Table 4: Result of Innovative Planning (INP) and Time-Saving (TIMES)

Dependent Variable: Time-Saving (TIMES)			No. of Obs. = 500	
Variables	Coefficient	Std. Err	t-Statistics	Sig.
Constant	0.6106	0.4230	7.08	0.0000
INP	0.7215	0.5104	11.05	0.0000
F(1, 499) (p-value)			22.65 0.0000	
R-Squared			0.8741	
R-Squared Adj.			0.7962	

Source: Computed by the Researcher, 2023

Table 4 showed that INP had a positive coefficient of 0.7215; this support that INP is positively linked with the dependent variable (*TIMES*). The R-Squared adjusted of 0.7962 implies that INP explained about 79.6% of the systematic variation in *TIMES*. The t-statistics of 11.05 and F-value of 22.65 with respective probabilities of 0.0000 are less than 0.05 suggesting that INP had positive and significant effect on TIMES.

Table 5: Result of Innovative Planning (INP) and Product Delivery Efficiency (PED)

Dependent Variable: Product Delivery Efficiency (PED)			No. of Obs. = 500	
Variables	Coefficient	Std. Err	t-Statistics	Sig.
Constant	0.7224	0.5044	9.22	0.0000
INP	0.7810	0.6409	12.73	0.0000
F(1,499) (p-value)			88.86 0.0000	
R-Squared			0.8209	
R-Squared Adj.			0.7301	

Source: Computed by the Researcher, 2023

Table 5 showed that INP had a positive coefficient of 0.7810; this support that INP is positively linked with PED. The R-Squared adjusted of 0.7301 implies that INP has explained about 73% of the systematic variation in PED. The t-statistics of 12.73 and F-value of 88.86 with respective probabilities of 0.0000 which are less than 0.05 suggest that INP had positive and significant effect on *PED*.

Furthermore, the implication of the result is that when SMEs employ innovative planning, it would lead to increased supply chain management, particularly in aspects of cost-saving, time-saving and product delivery efficiency. The result above is in line with the findings of Damanpour and Aravind (2020); and Arlbjørn, et al (2021) who showed that innovative planning significantly and positively influence supply chain management SCHM while it disagrees with the results of Dainty, (2020); and Cao and Zhang (2020) found that the relationship between innovative planning and supply chain management is significant and negative.

V. CONCLUSION

This study investigated the relationship between innovative planning (INP) and supply chains management (SCHM) of small and medium scale enterprises (SMEs) in South-East, Nigeria. To carry out this investigation, five hundred (500) questionnaires was administered to selected suppliers of SMEs. Data obtained in the survey were analyzed using both descriptive and inferential statistical tools. Findings showed that innovative planning positively and significantly influence supply chains management (particularly in areas of cost-savings, time-savings and product delivery efficiency)

In view of the findings of the study, it was recommended that SMEs should fully and adequately embrace innovative planning in order to reduce costs and time and product delivery efficiency associated with their supply chain management practices. This study contributes to management literature by establishing that innovative planning is a determinant of supply chain management of SMEs in South-East, Nigeria.

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