Market- Related Activities of the Value Chain and Manufacturing Firms' Performance in Selected States of Northern Nigeria

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Abstract: *The study examined the role of market-related activities of manufacturing value chain on the performance of manufacturing firms in selected states of Northern Nigeria. A firm-level survey was conducted in a cross-sectional examination of members of the Manufacturers Association of Nigeria (MAN), with a sample of 144 firms. The data collected for the study, which was supported by the value configuration theory, was analyzed using multiple regression analysis through the partial least squares structural equation modeling (PLS-SEM). It was discovered that marketing & sales activities, as well as service activities, have significant relationships with manufacturers' overall performance. However, outbound logistic has no significant relationship with performance.The findings imply that whereas managers can rely on the contributions of marketing & sales as well as service activities along their value chain, outbound logistic activities may not contribute significantly in its present form towards better performance. It was therefore recommended thatmanagers should find ways of improving those outbound activities they perform; and consider introducing strategic drivers, such as information technology, to enhance performance.*

Keywords: Firm performance, manufacturing, market-related activities,outbound logistics, marketing & sales, services, value chain

1. Introduction

The performance of an organization relates to the functioning of the organization, outcomes of its operations, how well it achieves its market-oriented as well as its financial goals (Chan, Ngai, & Moon, 2016; Li, Ragu-Nathan, Ragu-Nathan, & Rao, 2006; Yamin, Gunasekruan, & Mavondo, 1999). Firm performance is multidimensional (Santos & Brito, 2012; Selvam, Gayathri, Vasanth, Lingaraja, & Marxiaoli, 2016), and the enhancement of these performance requires some measurements,which can be classified into accounting and marketing indicators (Demirbag, Tatoglu, Tekinus, & Zaim, 2006), as well as objective or subjective indicators (Adetunji & Owolabi, 2016; Dawes, 1999; Harris, 2001; Monday, Akinola, Ologbenla, & Aladeraji, 2015). Many organizations owe their success to their innovativeness (Tohidi & Jabbari, 2012).

The primary activities of the value chain are those activities firms perform, which include the manufacture of the product, its selling, distribution to the buyer and other post-sale activities and these activities can be further divided into product-related activities and market-related activities (Porter, 1985). Market-related activities (outbound logistics, marketing & sales, and services) are those activities that transfer the end products to the ultimate customer (Porter, 1985; Saha, 2011).

Nigerian manufacturers are not competitive, as they operate in an environment that is not business friendly (Lagos Chamber of Commerce and Industries [LCCI], 2017; National Competitiveness Council of Nigeria [NCCN], 2017). A testimony of this unsatisfactory situation is the preponderance of foreign products in the local market. Furthermore, manufacturers that are often times unable to economically channel their end products to the ultimate consumer, do not engage in business-friendly post-sales activities (Dibua& Dibua, 2012; Haruna, 2013; LCCI, 2017; National Bureau of Statistics [NBS], 2017;Njoku & Kalu, 2015; Okafor, 2011; Onuoha, 2012).

Consequently, manufacturers are unable to improve performance notwithstanding the resources at their disposal. Furthermore, the study area in Northern Nigeria still suffers unique challenge of insurgency and insecurity, which has disrupted business activities (Achumba, Ighomereho, & Akpor-Robaro, 2013; Eme & Jide, 2012; Shehu, 2015). The solution probably lies with the effective and efficient management of the marketing side of the value chain, which is why this study examined the effect of market-related activities ofmanufacturerson performance, and specifically to:
a) Assess the effect of marketing & sales activities on manufacturing firm's performance,
b) Evaluate the effect of outbound logistic activities on manufacturing firm's performance, and
c) Examine the effect of service activities on manufacturing firm's performance.

A model was proposed for the study, where market-related activities of the value chain, that is, outbound logistics, marketing & sales, and services, functioned as the independent variable, while the firm's performance was the dependent variable. The data were collected in 2017 from 144 manufacturing firms in Northern Nigeria that are members of the MAN, an association of manufacturing firms organized into seven branches (MAN, 2017). However, only the following five branches were considered in the study: Jos; Kaduna Northwest; Kaduna Southeast; Kano Bompai; and Kano Sharada.

2. Literature Review

a) Firms performance

The concept of firm performance has received various interpretations over the years. Some look at the firm performance to mean the development of share prices, while others viewed it as the firm is said to perform when it has made a lot of profit or it has increased its present value (Kolawole & Tanko, 2008). A firm's marketing performance indicates how effective and efficient its marketing activities are with regards to its marketing goals (Homburg, Grozdanovic & Klarmann, 2007), whichis influenced by firm's characteristics, strategy, environment, supply chain management practice, diversification, capital structure, ownership structure, unionization, information & communication technology, entrepreneurial and other qualities/characteristics of the owners and directors of the firms(Adetunji & Owolabi, 2016; Ahmad, 2017; Nimlaor, Trimetsoontorn, & Fongsuwan, 2014).

The most notable performance measures of a firm are financial and non-financial measures (Adetunji & Owolabi, 2016; Monday*et al.*, 2015; Stock, Greis, & Kasarda, 2000), and in strategic management research, firm performance is often used as a dependent variable (Richard, Devinney, Yip, & Johnson, 2009; Santos & Brito, 2012; Selvam*et al.*, 2016).

b) Market-related activities

The value chain of a company describes the ordered sequence of different, horizontally linked activities, which are required to bring a product from conception all the way through the acquisition of basic raw materials, through the different phases of production, delivery to the final consumer, and disposal after use (Dekker, 2003; Kaplinsky& Morris, 2001; Porter, 1980). The primary activities of the value chain are those activities involved in the physical creation of the product and its sales, transfer to the buyer and after-sales services and these activities can be further divided into product-related activities and market-related activities. Marketing performs a critical role in the value chain, since it affects the relationship between a firm and its customers and market-related activities (outbound logistics, marketing & sales, and services) are activities the organization performs to transfer the finished products and services to the customer (Prajogo, McDermott, & Goh, 2008; Saha, 2011).

Outbound logistics deals with functions in the final storage of goods from the last production process to the distribution of the goods to the customers, and includes collecting, storing, and physically distributing the product to buyers, warehousing, material handling, delivery vehicle operations, order processing and scheduling (Chan, 2007; Kwateng, Manso, & Osei-Mensah, 2014; Porter 1985).The marketing and sales functions promote and sell a firm's products and services, and they deal with activities associated with providing the means by which buyers can purchase the product and inducing them to do so, and it manages market researches, product strategies, marketing campaigns, advertising, channels, and lead generation. Sales, on the other hand, convert leads generated by marketing into deals (Chan, 2007; Porter, 1985).Services deal with functions in providing added value to products by ways of performing after-sales works which include installation, implementation, maintenance and repair, warranty services, and customer services. After-sales services can benefit from predictive analytics in the anticipation of problems (Chan, 2007; Porter, 1985).

c) Market-related activities and firms performance

Marketing & sales are the activities that create the process of awareness and sale of the products and the benefits offered (Sandhu, 2015) and these activities have a significant effect on performance (Ebitu, 2016; Gbolagade, Adesola, & Oyewale, 2013). Outbound logistics activities are associated with functions in the final storage of goods from the last production process to the distribution of the goods to the customers (Porter, 1985), they affect performance positively (Adino&Osodo, 2017; Roko & Opusunji, 2016).However, Bawa, Asamoah, and Kissi (2018),as well as Oyebamiji (2018), discovered a negative and insignificant relationship between outbound logistics and performance. Services, such as after-sales-services, installations, repairs, etc. provide added value to products by increasing post-purchase experience that enhances customer satisfaction (Chan, 2007), and they are known to affect performance positively (Abou-Foul, 2018; Bustinza, Bigdeli, Baines, & Elliot, 2015;Crozet & Milet, 2017).

The study applied the Stabell and Fjeldstad's (1998) value configuration theory, which draws from the Porter's (1985) value chain framework and the Thompson's (1967) concepts of organizational technologies, to explain firm-level value creation logic across a wide range of industries and firms to the analysis of performance.

d) Research framework

The proposed model predicts that marketing & sales (MS), outbound logistics (OL), and services (SV) can influence the ability of manufacturing firms to improve performance as depicted in Figure 1.

Figure 1: Theoretical Framework

a) Marketing & sales and firmperformance

The creation of superior customer value through an effective sales and marketing relationship provides an opportunity for better performance to the firms (Ebitu, 2016; Gbolagade*et al.*, 2013). Marketing mix,sales promotion, advertising, and product branding also affectperformancesignificantly (Odulami & Ogunsiji, 2011; Pembi, Fudamu, & Adamu, 2017; Ogbari, Okorie, Aka, & Ekwerigbe, 2016). Targeted at the right prospects and customers, both marketing and sales activities can be invaluable drivers forperformance enhancement. It was therefore postulated that product innovation can affect a firm's performance significantly, which leads to the following hypothesis:

H_2: *Marketing & sales significantly relates to the firm's performance.*

b) Outbound logistics and firm's performance

Outbound logistics deals with storing and delivery of finished goods to the final consumer (Porter 1985).There are as many research findings that showed a significant relationship between outbound logistics and firm's performance (Mbondo, Okibo, & Mogwambo, 2015; Kathurima, Ombul, & Iravo, 2016; Roko & Opusunji, 2016). However, there are others that indicated insignificant relationships (Bawa*et al.*, 2018; Oyebamiji, 2018). There is, therefore, an indication of a mixed result, which implied that the deployment of outbound logistic activities would translate into better performance on one hand, while on the other hand, it would not translate to significant firm's performance. Despite the diverse results, the following proposition was advanced:
H_1: *Outbound logistics significantly relates to the firm's performance.*

c) Services and firmperformance

Customer relations management is a lawful marketing process by which organization establishes a better foundation for providing the service and meeting customers' satisfaction and is effective in boosting performance(Abou-Foul, 2018; Bustinza*et al.*, 2015; Crozet & Milet, 2017). However, Min, Wang, and Luo(2015) discovered a negative correlation between the two variables. From the theory, it would appear that organizations that are able to relate more effectively with their customers are in a good position to perform better.It was therefore postulated that product innovation can affect a firm's performance significantly, which leads to the following hypothesis:
H_2: *Services significantly relates to the firm's performance.*

3. Methodology

The model developed for this study assumes that the process innovation and product innovation would enhance the capabilities of manufacturers to perform better.

a) Design

This study adopted the survey research design and it was a cross-sectional examination of members of the MAN in 2017. The primary data were collected through the administration of a structured questionnaire, while the multiple regression analysis was conducted through the PLS-SEM using the *Smartpls* 3.0 software developed by Ringle, Wende,and Becker (2015). The analytical procedure, for the stages of the PLS-SEM algorithm, was adopted from (Hair, Hult, Ringle, & Sarstedt, 2014; Henseler, Ringle, & Sarstedt, 2012).

b) Population and Sample

The study targeted all manufacturing firms operating in Northern Nigeria (except for those in Abuja, due to the dearth of manufacturerslocated in the branch and the Adamawa/Borno/Yobe branches, due to the ongoing insurgency in the region), registered with MAN as at March 2017. MAN is structured into 11 sectors with five branches and has 225 members in the study area (MAN, 2017). Using Krejcie and Morgan (1970) table for determining sample size, a sample of 144 firms was obtained from the population, while the area sampling technique was used to draw samples from the population.

c) Measures and instruments

A 7-point Likert scale questionnaire coded Strongly Disagree (1 point); Disagree (2 points); SomeWhat Disagree (3 points); Undecided (4 points); SomeWhat Agree (5 points); Agree (6 points), and Strongly Agree (7 points) was used to collect the data. The five-item marketing & sales,as well as service measures,were adapted from Tallon, Kraemer, and Gurbaxani (2000); the four-item outbound logistic measures were adapted from Sethi and King (1994); while thefive-item instrumentation for measuring firm performance was adapted from Sarkar, Echambadi and Harrison (2001).

4. Analysis and Results

Two primary software for analysis were used in the study, the IBM Statistical Packages for the Social Sciences (SPSS) version 21, and the PLS-SEM *SmartPLS 3.0*.

a) Multicollinearity diagnosis

Multicollinearity is a problem associated with a correlation matrix when variables are highly correlated, i.e., 0.90 and above (Tabachnick & Fidell, 2007). As a rule of thumb, predictor variables can be correlated with each other as much as 0.8 before there is a reason for worry about multicollinearity. The tolerance value should be high, which indicates a small degree of multicollinearity, while the variance inflation factor (VIF), should be small. A VIF value of 5 and higher indicates a likely collinearity issue (Hair, Ringle & Sarstedt, 2011). The highest value obtained in the model was 3.927 (OL3), whichshows that the collinearity was not an issue because the values are all less than 5.

b) Research model

For the proposed model, the measurement model displays the relationships between the constructs and the indicator variables, while the structural model displays the relationships between the constructs. Firm performance, marketing & sales, and services constructsall havefiveitems, while outbound logistics has four items. However, after factor analysis, itemsOL1, MS1, MS2, MS3, SV2, and SV3 were removed, due to their low factor loadings.

c) Measurement model

Organizational innovation constructs and firm's performance are modeled as reflective measures, based on (Chin 1998; Diamantopoulos & Winklhofer, 2001). An examination of the PLS-SEM estimates focuses on understanding how to assess the quality of the results through the evaluation of both the validity and reliabilityof the construct measures. Composite reliability was used to evaluate internal consistency, while the average variance extracted (AVE) was used to estimate convergent validity. The Fornell-Larcker criterion and cross-loadings were used to measure discriminant validity.

d) Reliability

The composite reliability served as the upper bound for the true reliability with the following values: FP (0.891), MS (0.854), OL (0.932) and SV (0.798) as presented in Table 1. The results revealed that all the constructs have high levels of internal consistency reliability above the threshold of 0.70

(Nunally & Bernstein, 1994) and therefore confirmed the reliability of the constructs.

Table 1: Measurement Model Evaluation

Constructs	Composite Reliability	AVE
FP	0.891	0.622
MS	0.854	0.746
OL	0.932	0.821
SV	0.798	0.569

Compiled by the Author

e) Content validity

The factor loading was used to assess the content validity of the constructs in the study as suggested by (Chin, 1998; Hair, Black, Babin, & Anderson, 2010). As presented in Table 2, all items meant to measure specific constructs loaded highly on the construct they were designed to measure, thus confirming content validity.

Table 2: Cross-Loading of Items

Items	Firm Performance	Marketing & Sales	Outbound logistics	Services
FP1	**0.822**	0.320	0.262	0.378
FP2	**0.715**	0.268	0.118	0.171
FP3	**0.827**	0.407	0.145	0.432
FP4	**0.718**	0.282	0.136	0.403
FP5	**0.851**	0.504	0.216	0.427
MS4	0.357	**0.831**	0.244	0.314
MS5	0.445	**0.895**	0.354	0.549
OL2	0.187	0.341	**0.911**	0.194
OL3	0.239	0.339	**0.948**	0.185
OL4	0.185	0.275	**0.858**	0.230
SV1	0.343	0.460	0.266	**0.758**
SV4	0.393	0.390	0.107	**0.796**
SV5	0.346	0.311	0.137	**0.707**

Compiled by the Author

f) Convergent validity

Convergent validitywas confirmed by examining the composite reliability and the AVE as displayed in Table 1. The composite reliability measures are all above the threshold of 0.70 for construct reliability as recommended (Hair *et al*., 2010). A satisfactory level of convergent validity was also maintained since the AVE values [FP(0.622), MS (0.7463), OL (0.821), and SV (0.569)] are all above the suggested threshold of 0.50 (Wong, 2013).

Based on the assessments of the composite reliability as well as AVE values, the measures of the constructs showed acceptable levels of convergent validity.

g) Discriminant validity

Discriminant validity was examined by following the Fornell-Larcker criterion (Fornell & Larcker, 1981), which assumes that the diagonal elements should be higher than otherelements in their rows and columns. As displayed in Table 3, the Fornell-Larcker criterion provides evidence for discriminant validity.

Table 3: Discriminant Validity

| Constructs	FP	PC	PD	SV	AVE
FP	**0.789**				0.622
MS	0.469	**0.864**			0.746
OL	0.228	0.352	**0.906**		0.821
SV	0.480	0.512	0.221	**0.754**	0.569

Compiled by the Author

h) Structural model and hypotheses testing

Once reliability and validity were confirmed, the constructs are therefore suitable for inclusion in the path model. Thus, the next step involves examining the interactions between the constructs and the model's predictive capabilities.

i. Path coefficients and coefficient of determination (R^2)

The path coefficient range from -1 to $+1$, with coefficients closer to $+1$ representing strong positive relationships and coefficients closer to -1 indicating strong negative relationships (Hair *et al*., 2014). The R^2 measures the model's predictive accuracy and represents the exogenous variable's combined effect, which ranges from 0 to 1, on the endogenous variables. The values of 0.75, 0.50, and 0.25 represent substantial, moderate and weak effects respectively (Hair *et al*., 2011; Henseler, Ringle, & Sinkovics, 2009). As shown in Figure 2, the R^2 values obtained for the firm's performance (0.300) indicate weak effects. As shown by the results, the exogenous latent variables have different effects on the endogenous constructs. With the path coefficient value of 0.321, services has a larger effect on the firm's performance, as againstmarketing & sales with a value of 0.284, and outbound logistics with 0.056
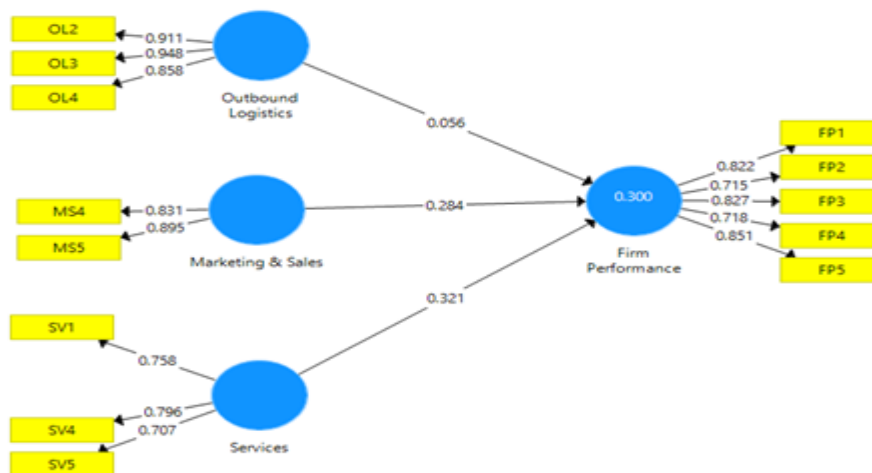
Figure 2: Path Coefficient

ii. Critical values

The bootstrapping procedure was used to assess the path coefficients' significance at 5000 minimum bootstraps, and the critical *t*-values for a two-tailed test was 1.96 at 5% significant level. Thus, when the empirical *t*-value is larger than the critical value, the coefficient is significant at the stated significant level. As shown in Figure 3, the paths MS⟶ FP (3.074); and SV⟶ FP(4.182) have a coefficient value larger than the critical value. However, path OL⟶ FP has a value of 0.880, which is less than the 1.96 thresholds at the stated level of significance.
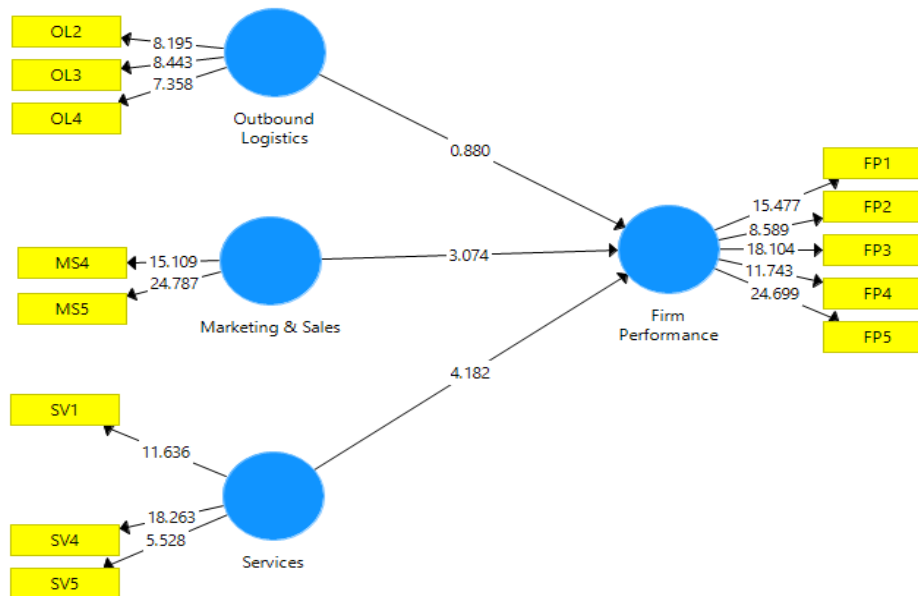

Figure 3: Path coefficient *t*-values

iii. The predictive relevance of the model (Q^2)

To assess the predictive power of the model, the cross-validated redundancy was utilized. The value of the cross-validated redundancy was obtained by running the blindfold procedure to generate the communality and redundancy at 300 maximum iterations, a stop criterion of $1 \cdot 10^{-5}$ and an omission distance of 7. The predictive power of the model was based on Cohen's (1988) guidelines 0.26: substantial; 0.13: moderate; 0.02: weak. The cross-validated redundancy is a good measure of a model's predictive quality, especially if the value is greater than zero, otherwise, the predictive relevance of the model cannot be confirmed (Fornell& Cha, 1994). The cross-validated redundancy of the endogenous variable was found to be 0.159, which is greater than zero, therefore, the hypothesized model indicated good overall predictive power, since the Q^2 value of 0.159 is positive, in line with (Hair *et al.,* 2014; Henseler*et al*., 2009).

iv. Hypotheses testing

As shown in Table 4, the following are the results:
a) Results of hypothesis 1, which predicted a significant relationship between marketing & sales and performance of manufacturing firms (β = 0.284, *t* = 3.074, *p* = 0.002) was supported. The alternate hypothesis was therefore accepted.
b) Results of hypothesis 2, which predicted a significant relationship between outbound logistics and performance of manufacturing firms (β = 0.056, *t* = 0.880, *p* = 0.379) was not supported. Thus, the null hypothesis was therefore accepted.
c) Results of hypothesis 2, which predicted a significant relationship between product innovation and performance of manufacturing firms (β = 0.321, *t* =

4.182, *p* = 0.000) was supported. Thus, the alternate hypothesis was therefore accepted.

Table 4: Hypotheses Testing

	R/ships	Beta	*t*-value	*p*-values	Decision
H$_1$	MS ⟶FP	0.284	3.074	0.002	Supported
H$_2$	OL ⟶FP	0.056	0.880	0.379	Not Supported
H$_3$	SV ⟶FP	0.321	4.182	0.000	Supported

Compiled by the Author

5. Findings

The following are the findings of the study:
a) Marketing & sales have significant effects on the performance of manufacturing firms in Northern Nigeria.
b) Outbound logistics has no significant effects on the performance of manufacturing firms in Northern Nigeria.
c) Services have significant effects on the performance of manufacturing firms in Northern Nigeria.

6. Discussion

The study examined the effect of organizational innovation on the performance of manufacturing firms and the results of the study highlighted the importance of the relationships and the implications therein.

a) Marketing & salesand firm performance

It was posited that there will be a significant relationship between marketing & sales and performance of manufacturing firms and the relationship (β = 0.284, *t* = 3.074, *p* = 0.002) was discovered to be significant. So for every unit increase in marketing & sales, there was a 28.4%

increase in a firm's performance. Thus, it implied that the activities associated with providing a means by which buyers can purchase the product and inducing them to do so, such as advertising, promotion, sales force, quoting, channel selection, channel relations, and pricing can be geared towardsthe performance of manufacturers. The findingssupport the hypothesis and in agreement with the outcomes of other studies (Odulami& Ogunsiji, 2011; Pembi*et al.*, 2017; Ogbari *et al.*, 2016).

b) Outbound logistics and firm performance

It was postulated that there would be a significant relationship between outbound logistics and performance of manufacturing firms and the relationship ($\beta = 0.056$, $t = 0.880$, $p = 0.379$) was found to be positive but insignificant. So for every unit increase in outbound logistics, there was a 5.6% increase in firm's performance. This finding was in disagreement with (Mbondo*et al.*, 2015;Kathurima, *et al.,* 2016; Roko&Opusunji, 2016), but in agreement with the results of Bawa, *et al.,* (2018) and Oyebamiji (2018), which also showed insignificant relationships. The result, therefore, did not support the hypothesis. Thus, it implied that activities associated with collecting, storing, and physically distributing the products to buyers, such as finished goods warehousing, material handling, delivery vehicle operation, order processing, and scheduling do not contribute significantly to performance. Perhaps the manufacturers in the survey rely on third-party outbound logistics providers, as is often the practice, and therefore considered this activity as external and therefore not strategic.

c) Services and firm performance

It was postulated that there will be a significant relationship between service activities and performance of manufacturing firms and the relationship ($\beta = 0.321$, $t = 4.182$, $p = 0.000$) was discovered to be significant. So for every unit increase in service activities, there was a 32.1% increase in a firm's performance. Thus, it implied that the activities associated with providing service to enhance or maintain the value of the product, such as installation, repair, training, parts supply, and product adjustment can lead tothe overall performance of manufacturers. The findingssupport the hypothesis and are consistent with the outcomes of other studies (Abou-Foul, 2018; Bustinza *et al.*, 2015; Crozet & Milet, 2017), though not consistent with Min, *et al.* (2015).

7. Conclusion and Recommendations

It was discovered that marketing & sales activities, as well as service activities, have significant relationships with manufacturers' overall performance. However, outbound logistic activities have no significant relationship with performance. Based on the findings, it was therefore recommended thatmanagers should continue to engage marketing & sales as well as service activities and should find ways of improving those outbound activities they perform. Furthermore, there is a need to consider introducing drivers, such as information technology, to enhance performance.

8. Implications, Limitations and Future Research

Managers can count on organizational innovations to contribute to the firm's performance. A notable limitation is the typical limitations of the cross-sectional design studies, such as finding and recruiting participants from the target population, representativeness of the sample, lower validity and reliability scores. The second limitation was the PLS bias, which relates to the assessment of model fit and consistency of the parameter estimates. Future studies should consider a longitudinal design to determine the relationships over time and should use covariance-based SEM (CB-SEM) to avoid the PLS bias.

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