

DETERMINANTS OF SUPPLY CHAIN PERFORMANCE OF STONE PROCESSING INDUSTRY: THE CASE OF SABA DIMENSIONAL STONES PRIVATE LIMITED COMPANY

Dambush Negasi Hadush, Aksum University
Mesfin Yemaneberhan Sibhatu, Aksum University
Kibrom Kiros Gashu, Aksum University

ABSTRACT

Effective supply chain performance is core for enhancing organizational performance and is potentially valuable way of competitive advantage. The main objective of this study was to identify the determinants of supply chain performance of Saba dimensional stone. The data was collected from a total of 201 respondents using questionnaire. The result of the Pearson correlation indicated that supply chain performance was positively correlated with strategic supplier partnership, information sharing and supply chain responsiveness at 99% level of confidence. The result signifies that supply chain performance of the company was mainly determined by these three important variables. Similarly, the result of the multiple linear regression model indicated that supply chain performance of the company was determined by strategic supplier partnership, lead time, information sharing and supply chain responsiveness. Finally, the study recommended that the company should focus on its supply chain responsiveness, information sharing mechanisms and strategic supplier partnership hieratically to enhance its supply chain performance.

Key words: Cost, Information Sharing, Lead Time, Partnership, Performance, Responsiveness

INTRODUCTION

Supply chain management comprises the management of materials, information, and financial flows in a logistics distribution network through the integrations of various stakeholders including vendors, manufacturers, distributors, and customers (Sehgal, 2009). It has become an important field in relation to creation of a single global market and development of economy. It is the main determinant factor for any organization and is essential for managers to understand the impact where supply chain might exert on the overall efficiency of the organization (Ganeshkumar and Nambirajan, 2013). A market with well-organized logistics and supply chain management facilities has more competitive advantage over others (Kherbach and Mocan, 2016). Many investigators have been identified various internal and external factors that affect the performance of supply chain. According to (Hasan and Alim 2010), time consuming sampling procedure, lengthy process of order issuance, unavailability of raw materials, lack of utilities supply, inadequacy of transportation facility, bureaucracy, political unrest, labor cohesion, time involving quality check, individual compliance check, insufficient technological infrastructure, lack of proper technical knowledge, retention of authority, exploited trade union and labor cohesion and cultural difference are the factors that affect supply chain performance.

Ethiopia is naturally rich in its deposit of various kinds of marbles and granites. These resources are known for their wide range of colors and supreme quality and are found extensively in the northern and western parts of the country. There are some marble and granite processing industries in the country. However, most of the companies have no

appropriate distribution system and are unable to attain all the advantages that could be granted by successful supply chain management (Mame and Tamirat, 2018).

Statement of the Problem

The performance of supply and distribution systems of manufacturing industries in developing countries is coping with various limitations such as lack of trust, lack of transparency and lack of knowledge (Lai et al., 2012). The supply chain performance of manufacturing industries in Ethiopia is similar. It has been faced with similar barriers such as high cost of distribution, slow and complicated supply of materials, low level of access and market information and shortage of foreign currencies (Belaynesh, 2016). Lastly, lack of accurate knowledge and low level of information sharing along supply chain were repeatedly reported to create high level of guesswork and this has been followed by ordering and receiving erroneous and low quality materials. In line with this, there is shortage of loyal suppliers due to low level of knowledge and experience and inappropriate information sharing. Such and other material acquisition related gaps bring substantial loss for the company and damages its goodwill. Effective supply chain performance is valuable way of competitive advantage and is vital for enhancing overall organizational performance (Akintoye et al., 2000).

Several studies have been conducted so far in a similar area and the studies were able to identify various determinants of supply chain performance. But, each study has some methodological and theoretical gaps. For instance, the study conducted by Quesada et al. (2012) has theoretical gap as it failed to consider important variables like information sharing, lead time and supply chain responsiveness. Similarly, Belaynesh (2016) has failed to consider one core variable, which is strategic supplier partnership. The studies of Auma and Bonsu (2015) have methodological problem as they applied descriptive analysis in identifying the factors that determine supply chain performance in their specific areas of studies. With this cognizant, the current study was abstracted to fill these gaps and to solve the problems related to the supply chain performance in Saba Dimensional Stone Private Limited Company.

Research Questions

- What is the effect of strategic supplier partnership on the performance supply chain?
- How logistics cost of the company does affect the performance of the supply chain?
- What is the effect of lead time on the performance of the supply chain of the company?
- How information sharing does affect effectiveness of the supply chain performance?
- What is the effect of supply chain responsiveness on the supply chain performance?

General Objective

The general objective of this study is to explore the determinants of supply chain performance of Saba Dimensional Stone PLC.

Specific Objectives

- ❖ To evaluate the effect of strategic supplier partnership on the performance of supply chain
- ❖ To investigate the effect of logistics cost on the performance of supply chain
- ❖ To assess the effect of lead time on the performance of supply chain
- ❖ To examine the effect of information sharing on the performance of supply chain
- ❖ To evaluate the effect of supply chain responsiveness on the performance of supply chain

LITERATURE REVIEW

Supply Chain

Supply chain encompasses companies and business activities needed to design, make, deliver, and use a product or service. Enterprises depend on their supply chains to provide them with what they need to survive and thrive. Every organization fits into one or more supply chains and has a role to play in each of them. Therefore, no organization can prosper without effective supply chain (Hugos, 2003). Sehgal (2009) identified two elements of supply chain; supply element and demand element. The supply element represents the sources of supply, such as warehouses of suppliers. The demand element of supply chain involves ordering, procuring and receiving materials required in its day to day activities. Distribution networks are other elements positioned between the supply and demand elements. Organizational success is inevitable as the supply chain responds to the changing interest of customer demands, restructures the supply chain in response to the varying market and economic environments and arrange the supply chain strategies with that of production, marketing and financial strategies (Lee, 2004).

Supply Chain Management

Supply chain management deals with the control of materials, information, and financial flows in a network consisting of suppliers, manufacturers, distributors, and customers. It is the integration of all activities that procure materials and services, transform them into intermediate goods and final products, and deliver them through a distribution system (Akintoye et al., 2000). It is a process that involves planning, implementing and controlling efficient flow of raw materials, work-in-process inventories, finished products and related information from point of origin to point of consumption, in order to satisfy customer requirements (Asamoah et al., 2013).

Supply Chain Performance

Supply chain performance can be defined as the extended activities of supply chain such as product availability, on time delivery of inventory and similar services and activities to meet the needs of end customers in a responsive manner. Supply chain performance measurements should rely on three basic dimensions namely; service, assets and speed. The service dimension focuses on the ability of anticipating, capturing and fulfilling customers' demand with specific products and on time delivery systems. The asset dimension involves principally inventories and cash that have commercial values. The speed dimension includes time related metrics that track responsiveness and velocity of supply chain activities (Hausman, 2004). Supply chain performance should be measured widely based on international relations that connects all suppliers, customers and other stakeholders. This could be realized through performance measures that support constant improvements on wide range of international supply chain performance rather than narrow company-specific (Kleverlaan, 2008).

Whitten (2012) also designed appropriate tools to measure the performance of supply chain, which are the Triple-A (Agility, Adaptability, and Alignment) supply chain performance measures. The Triple-A supply chain strategy has positive effect on the performance of the supply chain and then the supply chain performance impacts positively the overall organizational performance. The term agility is that supply chains should respond to short-term changes in immediate and ultimate demands of customers. Adaptability refers

to restructuring of the supply chains by adjusting it to the long-term changes in economies and markets. The last strategy, which is the alignment, refers to integrating and coordinating of business processes resulting from equitable sharing of risks, costs, and benefits with all participating partners.

Determinants of Supply Chain Performance

There are many internal and external factors that affect the performance of a supply chain. Many investigators have been identified various factors in their particular areas of studies. Hasan and Alim (2010) identified some factors such as, time consuming sampling process, lengthy process of order issuance, unavailability of raw materials, lack of utilities supply, inadequacy of transportation facility, bureaucracy, poor congestion, political unrest, labor cohesion, time involving quality check, individual compliance check, insufficient technological infrastructure, lack of proper technical knowledge, retention of authority, exploited trade union and labor cohesion and cultural difference are the factors that affect supply chain performance. Similarly, Hayat et al. (2012) found that top level commitment, organizational factors, mutual understanding, and flow of information, relationship and decision making affected the performance of supply chain. According to Dung (2015), trust, power, maturity, frequency, distance, culture, strategy, policy and commitment are the factors that affect the collaboration in supply chain. So, this study has focused on the following five variables, which have been expected to determine supply chain performance.

1. Strategic Supplier Partnership

Strategic supplier partnership a strategic coalition among two or more organizations that facilitates value creating activities such as research, product development, manufacturing, sales and marketing and distribution (Agus and Hassan, 2008). According to, Basu et al. (2017) strategic supplier partnership is successful strategic alliance that could create good relationship between suppliers and manufacturers. Strategic supplier partnership can be defined as the long lasting collaboration of organizations and their suppliers. Effective partnership among the various supply chain actors allows them to achieve their goals and meet consumers' expectations. Furthermore, such collaborative actions provide members in the supply chain with efforts to achieve their specific objectives improve the efficiency of the relationships and enhance the ability to serve customers (Dung, 2015). The wide spread use of internet and web based systems have been enabled companies to form strong supplier integration for demand forecasting, inventory management, smooth production and effective marketing process (Onyango et al., 2015). Strategic supplier partnership management insures smooth information flow and better adaptation to unexpected changes (Wafula and George, 2016).

2. Cost of Logistics

Logistics cost is one of the major organizational activity that plays a vital role in every economic life. It has been conceptualized by focusing on the pertinence of accounting techniques such as activity based costing, target costing, total cost of ownership and balanced scorecard (Halinen, 2015). Data from some studies showed that developing countries incur relatively higher logistics cost than developed countries. The high cost of logistics and inefficient capacity of the logistic system has been reported to hinder the economic development of most developing nations (Ibrahim, 2012). It is important to give due concern to the performance of the cost of logistics in view of competitiveness at national, regional and

international levels. Some technological advancement offered new cost cutting opportunities on logistics, which had been comprised as much as half of the values of the whole commodities due to complex supply chains and globalization (Rantasila and Ojala, 2012).

3. The Concept of Lead Time

In supply chains management, lead time signifies the time gap between ordering a material or service and receiving it (George and Pillai, 2019). Lead time depends on the nature of the product, planning and supply chain management, logistics services and infrastructure and distance between suppliers and customers (Tarty, 2012). Improving lead time is one of the short-term objectives that measure organizational performance and improve its competitive advantage (Basu et al., 2017). Lead time can be improved if it is possible to measure it. This can be done through the use of electronic work flow, by supporting the complete process control and through measuring the times of all the steps (Alexandre et al., 2017).

Long lead time could escalate cost and create customer dissatisfaction due to running out of stock and delaying production (Belaynesh, 2016). So, lead time should be kept as short as possible. This enables efficient supply chain performance, lesser waste and overall cost reduction (George and Pillai, 2019). Chang and Lin, (2019) provided a detailed understanding of the impact of lead time on supply chain performance by modeling supply chain system with four measurements, which are crisis readiness, response effectiveness, recovery speed, and impact propagation rate under different supply chains characterized by various lead-time durations.

4. Information Sharing in Supply Chain

Supply chain involves different stakeholders including manufacturers, suppliers, distributors and retailers. Information sharing among these stakeholders is an important approach for the existence of an organization as an efficient and competent entity (Hassan and Nasereddin, 2018). In supply chain, information sharing reflects the extent to which the crucial, relevant and timely information is available to all members of the supply chain. Information sharing is one of the essential components and enablers of supply chain cooperation and integration (Lotfi et al., 2013). Information sharing within supply chain reduces the need for safety stock, cost of inventory and brings competitive advantage for all supply chain partners. Besides, organizations can speed up the flow of information within supply chains; improve overall effectiveness and productivity and lower market time response through successful information sharing. Effective information sharing is highly associated with the advancement of information technology. (Baihaqi and Sohal, 2013). According to George and Pillai (2019), information sharing is the biggest driver of supply chain performance as it connects various supply chain partners and allows them to coordinate their activities. They found information sharing to have many benefits in supply chains including lower bullwhip effect, improved coordination among various supply chain partners, reduced supply chain uncertainties and better supply chain decisions.

5. Supply Chain Responsiveness

Supply chain responsiveness indicates the way an organization treats rapidly its customer and organization's flexibility in responding to delivery dates requested by customers (Harrison et al., 2004). It is obvious that supply chain could be more competitive if it is agile. In other words, the time in which an organization fulfills an order should be as quick as possible. Better level of supply chain responsiveness improves overall operational

performance, service quality, and logistics performance. More specifically, responsive supply chain practices can improve collaboration, shorten time of delivery, and reduce overall cost (Hayat et al., 2012). Supply chains can be agile, lean or efficient in relation to responsiveness. In agile supply chain, organizations respond rapidly to changes in demand in both volume and variety. Lean supply chain implies the development of a value stream to eliminate all waste including time and to enable a level schedule. It is best in high volume, low variety and predictable environment. The third supply chain is efficient supply chain, emphasizes on certainty of demand and minimization of cost of production by making the best use of supply chain system (Sinha et al., 2015).

Auma (2015) conducted a study on factors affecting supply chain performance in government governmental health institutions in Kisumu, Kenya. The study found that inadequate funding, lack of cooperation among supply chain users, poor management support and non-compliance to rules and market price fluctuations were the factors impacted the effective functioning of the supply chain negatively and significantly. (Ibrahim et al., 2015) investigated the determinants of supply chain performance in case of manufacturing industries in Pakistan. The study found that there was positive and significant relation between trade management, information technology, uncertainty, manufacturing and customer satisfaction with supply chain performance. Similarly, the authors suggested improvement in the information sector as the role of information technology is significance for improving supply chain performance.

CONCEPTUAL FRAMEWORK

Based on the review of related literature, the researchers suggest the following conceptual framework for the study. Many researchers suggested several variables that affect the performance of the supply chains in their specific areas of study. Some of them are more general and some failed to incorporate important variables. So, this study supposed that supply chain is affected mainly by the efforts made in collaboration with its supplier's figure 1.

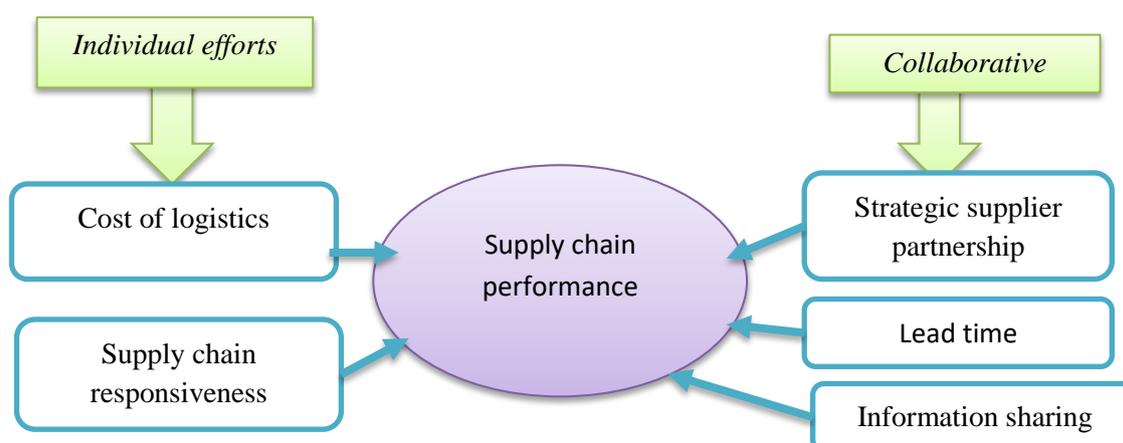


Figure 1
CONCEPTUAL FRAMEWORK OF THE STUDY

RESEARCH METHODOLOGY

The study employed cross sectional survey design. Both descriptive and explanatory study design were used. The study was employed primary sources of data. The target population of the study was all employees of the six departments which is 404 employees of the company. Both qualitative and quantitative types of data were used.

This study followed a multi-stage sampling. In the first stage, six departments were selected purposively as they were relevant to the study. Accordingly, six departments (supply and logistics, production and maintenance, quarry, Engineering, finance, marketing) were selected purposely based on the direct involvement they have in the supply chain of the company. In the second stage, sample of employees from the pre-selected departments were selected using simple random sampling technique. However, the company's manager, department heads, division heads and line leaders of all departments were included in the sample purposely as they were supposed to have better information on the issue of the study. Then, the sample size was allocated to each department proportionately. The sample size was computed based on the simplified formula developed by Yamane (1967). The total number of employees in six departments (404) was defined as the target population. Then, the sample size was determined:

$$n = \frac{N}{1 + N(e^2)} = \frac{404}{1 + (404 \times 0.05^2)} \approx 201 \text{ employees}$$

After sample size has been determined, proportion is given for each of the selected departments Table 1.

S/N	Name of the department	Total number of employees	Percentage	Proportionate sample size
1	Supply and Logistics	16	3.96	3.96x401/201 = 8
2	Production & maintenance	189	46.78	46.78x401/201 = 94
3	Engineering	28	6.93	6.93x401/201 = 14
4	Finance	10	2.46	2.46x401/201 = 5
5	Marketing	32	7.92	7.92x401/201 = 16
6	Quarry	129	31.93	31.93x401/201 = 64
	Total	404	100	201

Source: Saba dimensional stone human resources development office, 2020

Data Source and Data Collection

For the purpose of this study quantitative type of data was collected from the primary sources. The data was collected from the manager, department heads, division heads, line leaders and employees of the Company. The primary data was collected using structured questionnaires from the sample of respondents.

Methods of Data Analysis

The tool of analysis applied for this research was the STATA version 14.2. Data collected on various variables of the factors were analysed using the descriptive data analysis method. In order to determine the strength of the relations between variables, the Pearson coefficient of correlation analysis was also applied. Besides, the multiple linear regressions

was applied to analyse the second aspect of relationships between variables. The specification of the model applied for this study was:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where:

Y= independent variable (Supply Chain Performance)

α = the intercept term

$\beta_1, \beta_2, \beta_3,$ and β_4 = regression coefficients

X1, X2, X3, X4, X5 = independent variables (strategic supplier partnership, cost of logistics, lead time, information sharing and supply chain responsiveness respectively).

ε = the error term or disturbance term

The multicollinearity problem exists whenever there is correlation among two or more independent variables, which makes it challenging to detect the specific effect of the independent variables on the dependent variable.

Dependent Variable: The dependent variable of this study was supply chain performance.

Independent Variables: The independent variables of the study were strategic supplier partnership, cost of logistics, lead time, and information sharing and supply chain responsiveness.

RESULTS AND DISCUSSIONS

Analysis for the determinants of supply chain performance

Based on the likert scale which ranges from (1= strongly disagree to 5= strongly agree), the mean score of the variables was analysed for each of the independent variables Table 2.

Variables	Obs.	Mean	Std. Dev.
Strategic Suppliers Partnership	201	3.33	0.525
Logistics Cost	201	3.14	0.488
Lead Time	201	3.45	0.847
Information Sharing	201	3.67	0.406
Supply Chain Responsiveness	201	3.51	0.287

As presented in the above table the average result shows that most respondents agreed with the worthiness of the company's strategic supplier partnership the mean value is =3.33 and standard deviation is 0.525. However, this variable needs more focus to builds up positive cooperative relations among companies and their suppliers.

The components of logistics were cost of inventory, logistics personnel cost, transportation cost and insurance cost. As it is clearly shown in the above table, the overall mean value of logistics cost was 3.14 and standard deviation is 0.488. This indicates that most respondents agreed with the existence of relatively higher logistics cost in the company.

It is clear shown from the above table 2 the overall lead time was estimated to be short by the sample respondents (mean value =3.45), the shorter the lead time is the maximum customers' satisfaction.

The overall mean value of information sharing was 3.67 with a standard deviation of 0.406 showing good trend of information sharing in the company. Information sharing among the SC partners and the company concerning core business issues was found to be relatively higher indicating better cooperation among them regarding business information.

As presented in the above table 2 the performance of the company was somewhat good in supply chain responsiveness as most respondents agreed up on this (the mean value is 3.51 and standard deviation is 0.287).

Correlation Analysis

Table 2.1 PEARSON CORRELATION COEFFICIENT RESULTS OF VARIABLES							
		Supply Chain Performance	Strategic Supplier P/ship	Logistics Cost	Lead Time	Information Sharing	Supply Chain Responsiveness
Supply Chain performance	Correlation	1	0.1745*	0.1293	0.0731	0.3948*	0.4491*
	p-value		0.0132	0.0674	0.3022	0	0
	N	201	201	201	201	201	201
Strategic Supplier P/ship	Correlation		1	-0.0405	-0.028	0.0613	0.0613
	p-value			0.5681	0.6937	0.3872	0.3873
	N		201	201	201	201	201
Logistics Cost	Correlation			1	0.1302	0.0357	0.2070*
	p-value				0.0654	0.6144	0.0032
	N			201	201	201	201
Lead Time	Correlation				1	0.4315*	0.3294*
	p-value					0	0
	N				201	201	201
Information Sharing	Correlation					1	0.6642*
	p-value						0
	N					201	201
Supply Chain Responsiveness	Correlation						1
	p-value						
	N						201

Source: Survey data, 2020

As it is shown in the above table 2.1 there is positive correlation among the dependent variable (supply chain performance) and three independent variables (strategic supplier partnership, information sharing and supply chain responsiveness) at 1% level of significance. More specifically, strategic supplier partnership was positively correlated with supply chain performance (r=0.1745) at 99% level of confidence; information sharing was positively correlated with supply chain performance (r=0.3948) at 99% level of confidence and supply chain responsiveness was positively correlated with supply chain performance (r=0.4491) at 99% level of confidence. Therefore, these were the three important variables that determine the supply chain performance of the company.

Regarding the relationship among the independent variables, the result signifies that some of the independent variables are positively and significantly correlated to each other. Logistics cost was positively correlated with supply chain responsiveness ($r=0.207$) at 95% confidence level, indicating lower cost of logistics leads to better supply chain responsiveness. Similarly, lead time was positively correlated with both information sharing ($r=0.4315$) and supply chain responsiveness ($r=0.3294$) at 99% confidence level. This reflects that as long as lead time is short, there will be better sharing of information among the supply chain actors and the supply chain responsiveness will be better. Lastly, information sharing was found to be positively correlated with supply chain responsiveness ($r=0.6642$) at 99% confidence level. This indicates better trend of information sharing among the supply chain actors could result in better supply chain responsiveness.

Multiple Linear Regression Analysis

The multiple linear regression models were tested for multicollinearity. The study also applied ANOVA to test the goodness-of-fit of the model. The study applied the variance-inflation factor (VIF) to test the problem of multicollinearity. Therefore, there was not multicollinearity problem within the independent variables and the model was consistent with this regard Table 2.2.

Variables	VIF	1/VIF (Tolerance)
Strategic Supplier Partnership	1.01	0.989668
Logistics Cost	1.08	0.924314
Lead Time	1.25	0.797112
Information Sharing	2.03	0.493175
Supply Chain Responsiveness	1.91	0.523786
Mean VIF	1.46	

Source: Survey data, 2020

The problem of endogeneity was tested using the Hausman specification test. The result of the test shows that the difference between the two parameters was insignificant ($p=0.9520$). So, all independent variables were exogenous indicating the consistency of the model Table 2.3.

	OLS Results	IV Results	Difference	S.E
Variables	(b)	(B)	(b-B)	(v_b - v_B)
Strategic Supplier Partnership	0.015814	0.108953	-0.09314	0.144756
Logistics Cost	0.271943	0.066502	0.205442	0.231971
Lead Time	-1.9919	-0.11037	-1.88153	1.775203
Information Sharing	1.185213	0.235879	0.949334	0.917875
Supply Chain Responsiveness	0.592059	0.445039	0.147019	0.320634
b = consistent under H_0 and H_a ; obtained from iv regress				
B = inconsistent under H_a , efficient under H_0 ; obtained from regress				

Test: Ho: difference in coefficients not systematic
$\chi^2(5) = (b-B)[(V_b - V_B)^{-1}](b-B) = 1.12$
Prob> $\chi^2 = 0.9520$

Source: Survey result, 2020

For this study, the p-value for the F-test was 0.2654, which was insignificant. Therefore, the null hypothesis was not accepted and the regression analysis was found to be free of heteroscedasticity problem.

Determinants of Supply Chain Performance

The overall model was statistically significant at 0.0000 level, indicating that the goodness-of-fit of the model in explaining the relationship of the hypothesized variables at 99% level of confidence. The result for the coefficient of multiple determinations (R^2) indicates that 65.8% of the variance in the dependent variable was explained by the independent variables included in the model. The coefficients of the estimated parameter showed that four variables have significant relationship with the performance of the supply chain. Thus, strategic supplier partnership, information sharing and supply chain responsiveness affected the supply chain performance positively as expected. Similarly, lead time has negative relation with supply chain performance. However, there was not any linear relationship between logistics cost and supply chain performance as its p-value was not significant. The possible reason could be problem of transparency on the data of logistics cost. The detailed justification of the findings has presented below Table 2.4.

Supply Chain Performance	Coefficient	Robust Std. Err.	t-value	P> t
Strategic Supplier Partnership	0.1089526***	0.0444	2.45	0.015
Logistics Cost	0.066502	0.054926	1.21	0.227
Lead Time	-.1103705**	0.059695	-1.85	0.066
Information Sharing	0.2358794***	0.085041	2.77	0.006
SC Responsiveness	0.4450393***	0.122256	3.64	0
_cons	0.928178	0.356909	2.6	0.01
No. of observations	201			

N.B: ***, **and * indicate significance levels at 1%, 5% and 10% respectively

Source: Survey data, 2020

Strategic Supplier Partnership: This variable has positive and significant relationship with the supply chain performance at 1% significant level. This indicated that the presence of strategic supplier partnership enhances the supply chain performance of the company by 10.9%.

Lead Time: This variable was found to have negative relationship with the performance of the supply chain at 5% level of significant. This indicated that any delay of supplies or finished products by an hour lowers the performance of the supply chain by 11%.

Logistics Cost: This variable has no significant relation with the supply chain performance.

Information Sharing: consistence to the expectation, this variable has positive relation with the supply chain performance at 1% significance level. The existence of this determinant contributed 23.6% increment in the supply chain performance of the company.

Supply Chain Responsiveness: As it was assumed, this variable was found to have positive relationship with the supply chain performance at 1% level of significance. The result showed that fast supply chain response improved the performance of the supply chain by 44.5%.

CONCLUSION

Based on the findings of the study, the researchers conclude the following major points.

There were statistical significance relationship between supply chain performance and four of the proposed variables (strategic supplier partnership, information sharing, supply chain responsiveness and lead time). Strategic supplier partnership was positively related with supply chain performance at 1% level of significance with β -value of 0.108. Information sharing was also associated positively with supply chain performance at 1% significance level with β -value of 0.235. So, information sharing with supply chain partners is important for a successful and competitive supply chain. The other variable that had positive and significant relation with supply chain performance was supply chain responsiveness. It was significant at 1% level with β -value of 0.445.

The result on lead time indicates that having longer lead time minimizes the performance of supply chain and shorter lead time improves the performance. There was no statistical relationship between the dependent variable and logistics cost as its p-value was greater than 0.10. Generally, the results revealed that the success of supply chain of the company depends on supply chain responsiveness, information sharing, lead time and strategic supplier partnership. Specifically, supply chain responsiveness was the strongest variable explaining the performance of the supply chain. The next strong determinants were information sharing, and then lead time and lastly strategic supplier partnership.

RECOMMENDATION

Based on the findings, the researchers suggest the following recommendations to improve supply chain performance of the company and in manufacturing industries in general.

Supply chain responsiveness has been found to be the strongest determinant of supply chain performance in this study. So, it is very crucial to build responsive supply chain with partners in order to enhance the speed and flexibility of the whole supply chain. This could be done through improving collaboration with all supply chain actors like suppliers, customers, transport agents, and concerned governmental bodies like custom offices. In addition to this, it is important to invest on capacity building activities to the internal workers of the supply chain department. Better communication among various supply chain actors could facilitate various activities such as finding best suppliers, ordering and receiving quality materials, correct utilization of capacity of machines and finding potential customers. Such activities are better practices to improve the performance of supply chain as they facilitate fast and accurate communication through the use of advanced information technologies. Hence, it is better to establish strong communication network in order to facilitate information sharing between the company and its supply chain partners.

Shorter lead time helps the efficient operation of the entire supply chain. If there is uncertainty and long lead times, the supply chain will complex with regard to cost and service. Therefore, the company should launch better ordering policies such as quality information sharing, better collaboration with suppliers and customers. Besides, the company

should establish advanced technologies such as just-in-time, material requirement planning and other alternatives so as to reduce lead time and storage related costs.

Better quality of strategic supplier partnership leads to better supply chain performance. Companies with better strategic supplier partnership could adapt unforeseen changes, reduce monitoring costs and provide better solutions to all organizational problems. Hence, it is very crucial to improve such partnerships with suppliers particularly through improving the long-term trust, collaboration and mutual understanding between the company and its suppliers.

REFERENCES

- Agus, A., & Hassan, Z.F. (2008). The strategic supplier partnership in a supply chain management with quality and business performance. *International Journal of Business and Management Science*, 1(2), 129-145.
- Akintoye, A., McIntosh, G., & Fitzgerald, E. (2000). A survey of supply chain collaboration and management in the UK construction industry. *European Journal of Purchasing & Supply Management*, 6(3-4), 159-168.
- Alim, M.A., & Hasan, M.R. (2010). Factors Affecting Supply Chain Management Efficiency in Cross Border Outsourcing-A case study of H&M and it's Outsourcing Operations in Bangladesh.
- Asamoah, D., Arthur, Y.D., & Assane, S. (2013). Evaluating the effect of logistical drivers on cocoa supply chain in Ghana: a case of Transroyal Ghana limited. *International Journal of Business and Social Science*, 4(3): 187-195.
- Baihaqi, I., & Sohal, A.S. (2013). The impact of information sharing in supply chains on organisational performance: an empirical study. *Production Planning & Control*, 24(8-9), 743-758.
- Basu, G., Jeyasingam, J., Habib, M.M., Letchmana, U., & Radhakrishnan, 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.
- Belayneh, D.T. (2018). The practice of supply chain management and its relationship with organizational performance the case of Ethiopian marble processing enterprise.
- Belaynesh, G. (2016). Factors affecting textile supply chain distribution performance in Ethiopia: Bahirdar textile Share Company in focus (Master's thesis). Bahirdar University, Ethiopia.
- Chang, W.S., & Lin, Y.T. (2019). The effect of lead-time on supply chain resilience performance. *Asia Pacific Management Review*, 24(4), 298-309.
- de Toledo, A.I.G., da Silva, A.V., Lezana, A.R., Uriona, M.M., & Forcellini, F.A. (2017). Reducing lead times in the supplier relationship management process: A process-centric approach. *Revista-Esnacios*, 38(22), 38-50.
- Dung, L.T. (2015). Factors affecting the collaboration in supply chain of mechanical enterprises in Vietnam. *International Journal of Managing Value and Supply Chains*, 6(4), 17-29.
- Ganeshkumar, C., & Nambirajan, T. (2013). Supply chain management components, competitiveness and organisational performance: causal study of manufacturing firms. *Asia-Pacific Journal of Management Research and Innovation*, 9(4), 399-412.
- George, J., & Pillai, V.M. (2019). A study of factors affecting supply chain performance. *In Journal of Physics: Conference Series*, 1355(1), 012018.
- Hälinen, H.M. (2015). Understanding the concept of logistics cost in manufacturing.
- Harrison, T.P., Lee, H.L., & Neale, J.J. (2005). The practice of supply chain management: where theory and application converge. *Springer Science & Business Media*.
- Hassan, A.Y., & Nasereddin, H. (2018). Importance of information sharing in supply chain and knowledge leakage. *Transylvanian Review*, 26(26), 12-14.
- Hausman, W. (2004). Supply chain performance metrics. The practice of supply chain management: Where theory and application converge, 61-73.
- Hayat, K., Abbas, A., Siddique, M., & Cheema, K.U.R. (2012). A study of the different factors that affecting the supply chain responsiveness. *Social Sciences and Humanities*, 3(3), 345-356.
- Hugos, M. H. (2018). Essentials of supply chain management. John Wiley & Sons.
- Ibrahim, M., Ahmad, S.F., Shahid, M.K., & Asif, M. (2015). Factors influencing the performance of supply chain management in manufacturing industry of Pakistan. *Industrial Engineering Letters*, 5(3), 34-41.
- Kherbach, O., & Mocan, M.L. (2016). The importance of logistics and supply chain management in the enhancement of Romanian SMEs. *Procedia-Social and Behavioral Sciences*, 221, 405-413.
- Karikari, K.B. (2016). Client supplier relationship management in procurement of goods (Doctoral dissertation).
- Kleverlaan, M.P. (2008). Supply chain performance.
- Lai, K.H., Wong, C.W., & Cheng, T.E. (2008). A coordination-theoretic investigation of the impact of electronic integration on logistics performance. *Information & Management*, 45(1), 10-20.

- Lee, H.L. (2004). The triple-A supply chain. *Harvard Business Review*, 82(10), 102-113.
- Lotfi, Z., Mukhtar, M., Sahran, S., & Zadeh, A.T. (2013). Information sharing in supply chain management. *Procedia Technology*, 11, 298-304.
- Mame, T. (2018). Factors affecting supply chain integration in marble industry: The case of Ethiopian marble processing enterprise. Addis Ababa University, Ethiopia.
- Meseret, T. (2016). The effect of inventory management and control policies on supply chain performance of Ethiopian public enterprises: Amhara water works construction enterprise (AWWCE) in focus (Master's thesis). Bahirdar University, Ethiopia.
- Odeny, M.A. (2015). Factors affecting supply chain performance in government health institutions in Kisumu central sub-county, Kenya (Doctoral dissertation, University of Nairobi).
- Onyango, O.J., Onyango, M.B., Kiruri, S.N., & Karanja, S.N. (2015). Effect of strategic supplier relationship management on internal operational performance of manufacturing firms: A case of East African Breweries Limited, Kenya. *International Journal of Economics, Finance and Management Sciences*, 3(2), 115-124.
- Quesada, H., Gazo, R., & Sanchez, S. (2012). Critical factors affecting supply chain management: A case study in the US pallet industry. *Pathways to Supply Chain Excellence*, 33-56.
- Rantasila, K., & Ojala, L. (2012). Measurement of national-level logistics costs and performance. *International Transport Forum Discussion Paper*.
- Sinha, A., Swati, P., & Anand, A. (2015). Responsive supply chain: modeling and simulation. *Management Science Letters*, 5(6), 639-650.
- Vivek, S. (2009). Enterprise Supply Chain Management: Integrating Best-in Class Process. *John Wiley&Sons*, s, 151.
- Wafula, E., & George, O. (2015). Effects of strategic supplier partnership on firm performance in the energy sector: a case study of Kenya Pipeline Company limited. *International Journal of Innovation, Business and Management*, 10(9): 169-184
- Whitten, G.D., Green, K.W., & Zelbst, P.J. (2012). Triple-A supply chain performance. *International Journal of Operations & Production Management*, 32(1), 28-48.
- Yamane, T. (1973). *Statistics: An introductory analysis*.

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