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The Effects of Transaction Attributes on Logistics Performance: Empirical Study on Sudanese Food and Beverage Companies

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Abstract

Logistics performance is considered one of the most prominent topics in the logistics management area, which logistics scientists have been testing and developing different measurement and performance criteria. Therefore, drawing upon the resource-based view theory of the firm, a model is developed for investigating the relationship between transaction attributes and logistics performance. It also examined the company size as a control variable. Therefore, the survey was used for data collection from a convenience sample of (241) respondents from Sudanese manufacturing companies. Depending on the path analysis through using AMOS Structural Equation Modeling demonstrates empirical supports to the framework of this study. The results reported a positive relationship between transactions attributes (suppliers' relationship and top management beliefs) and manufacturing companies' logistics performance (cost performance). Furthermore, the findings confirmed that (suppliers' relationship and top management beliefs) and logistics Performance (delivery); also, the results predict that company size positively affects cost performance. The findings have been discussed, and the theoretical, practical implications were figured out. In addition, the limitations with future research suggestions.

Keywords: Management belief; Supplier relationship; Transaction attributes; Logistics performance.

1. Introduction

The performance of firms depends on how effective they are in performing several activities organized in the firm and interaction with other firms in the supply chain. Researchers frequently apply financial measures such as profit, return to the asset, return to investment, and market-related measures such as sales revenue (Hang and Nguyen, 2019; Nur Fadiah et al., 2017; Chi-Chang and Lai, 2015). Operational performance and sales growth as performance indicators to measure the effect of transaction attributes such as information sharing via supply chain technologies were used (Panahifar et al., 2018). Competitive advantage as a performance measure to investigate the effect of supply chain technologies on performance improvement was employed by the study of Collins et al. (2010). Strategic focus, differentiation, cost and strategic alliances have also been considered in measuring firms' performance though business strategies were considered as mediating relationships between logistics services and firm Performance (Hoang and Nguyen, 2019).

The studies synonymously assume that logistics performance and firms' performance are measured using the same financial Performance and market-related Performance (Hang and Nguyen, 2019; Nur Fadiah et al., 2017; Chi-Chang and Lai, 2015). However, this study treats logistics performance separately, and logistics capabilities strongly influence it. Therefore, logistics performance is also considered as an essential factor determining a firm's performance. Nevertheless, unlike firm Performance, which is measured in market-related and profitability, logistics performance is measured in terms of delivery time and cost of logistics operations (Picasso et al., 2015).

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Resource-Based View (RBV) considers the theoretical perspective for addressing relationships between logistics capabilities and logistics performance. The view is popular in the logistics-performance study as it argues that firms' resources and capabilities determine the firm's competitive advantage (Carvalho et al., 2020; Hadrawi, 2019; Vitorino Filho, 2018; Wernerfelt, 1984).

Studies on logistics capabilities indicate that logistics service capabilities, flexible capabilities delivered, and relationships determine a firm's performance in the photonics industry in Taiwan; the warehousing capability, information technology use and transportation were found to be important capability factors affecting logistics performance as measured in terms of revenue (firm Performance) (Chi-Chaang and Lai, 2015). In addition, Hadrawi (2019) found out that supply logistic integration positively influenced competitive performance mediated by lean processes and supply performance.

Logistics function is considered contemporarily critical firm activity which determines firms' performance. The efficiency of the logistics capabilities determines logistics services and then firm performance. Studies on attributes focus primarily on warehousing, information technology and internal logistics or inbound logistics. Inbound logistics would affect a firm's performance. Logistics operations determine the competitive advantage of firms determining their sustainability. Logistics performance affects a firm's performance, and logistics performance depends on several attributes such as networks, skill, and technology.

Most of the previous studies on logistics performance measured based on firm Performance focus more on inbound logistics, outbound logistics, cost of logistics, technology, and human resources. Such studies indicate that logistics, internal logistics, outbound and inbound logistics determine the firm's performance. Technology and relationships also affect firms' performance positively (Hoang and Nguyen, 2019). Firm size is controlled to measure the effects of logistics capabilities. Firm size is also considered as a moderating variable as it was believed to affect the direction of relationships between the capability factors and firm Performance (Nur Fadiah et al., 2017). Both studies confirmed that firm size affects logistics performance as measured in terms of firm performance.

So far, studies fail to address logistics attributes in their studies entirely. In addition, measuring logistics performance in terms of firm Performance does not explicitly show the effect of the attributes on logistics performance. Several factors influence firm performance in addition to logistics. Hence, studying the effects of transition attributes and logistics Performance will fill the research caveat for which this study aims. In addition, disregarded attributes such as management beliefs and supplier relations are emphasized. Therefore, this study considers logistics attributes and their effect on logistics performance. Study on attributes has been given little attention, and no considerable research has been conducted so far. Hence, this paper tries to address the effect of logistics attributes on logistics performance. Furthermore, the paper controls firm size as it is expected to affect the cost of logistics performance. The study administered 241 enterprises in Sudan, and data was analyzed using SEM to confirm attribute-performance relationships controlling their size.

As mentioned in the research gaps, this study aims to test the effects of transaction attributes on logistics performance and then examine the company size as a control variable. Thus, this study contributes to the body of knowledge by identifying how transaction attribute affects logistics performance. Furthermore, the study's findings support logistics performance by helping decision-makers practice the most effective practices.

The remainder of this paper is structured as follows: first, the introduction, which includes the phenomena and the gaps. Second, the theoretical link between transaction attribute and logistics performance. Third, methodology and sample. Fourth, we present data analysis and findings, discussing the findings, conclusions and their implications and direction for further research.

2. Literature Review

This section of the paper encompasses the reviews of related literature and the conceptual framework used for hypothesis development. In the same supply, chain firms develop constant and effective mutual communication and information sharing on supply chain operations over time, partners' performance satisfaction increases from the relationship. Such a growing performance satisfaction increases the intention and desire of supply chain partners to work even in much more cooperation (trust) and pledge themselves for the continuity of this fruitful relationship and each other's success for the overall goodness and performance of the supply chain cluster (relationship commitment) (Carvalho et al., 2020). By the time motivating each other through rewarding as well as sharing the risks and losses, the partners will have a high tendency to take joint planning and decisions in their supply chain operations at tactical and strategic levels based on shared operational, tactical and strategic information (Lin., Potter., and Pettit, 2021).
As the buyer-seller relationships evolve into a win-win collaboration context, measuring the level of strategic vertical and horizontal collaboration in supply chains helps partners understand the potential mutual benefits of such collaborative practices (Simatupang and Sridharan, 2005). This shows us a higher collaboration level in a supply chain.

2.1. Transaction attribute

Transaction attributes refer to the dynamics of factors within a given relationship (Bhattachary et al., 2015). In the context of transactional theory, it is assumed that practices and behaviours should be based on the logic of exchange and creating shared values and benefits (Liu et al., 2009). Many studies have tested the transactional theory in different contexts, which has called for finding different factors and justifications that include specific investments in logistic outsourcing human and physical assets. Physical assets are tangible assets, and they mainly include equipment, facilities and devices (Narayanan et al., 2015); moreover, Social network theory confirmed the essential role of interaction and transactions between the parties and nodes. (Lin., Potter. and Pettit, 2021)

We are expanding this framework to include technology and information exchange because logistics is a technology-intensive industry. Such industries tend to compete fiercely and generate competitive disruptions due to the rapidly evolving nature of technology combined with the beliefs of top management and supplier relationships and influence (Yang et al., 2016; Yuan et al., 2020).

2.1.1. Top management Beliefs

Rahikkala, et al. (2015).The influence of the top management has been proven because the top management could influence the success of the project as well as the responsibility. Sandberg, and Abrahamson. (2010) mentioned that top management belief (TMB) leads desirable managerial actions; hence, positive management beliefs and behavior can be 'practiced as an action that helps top management embrace logistics attributes, use beliefs to infer decisions drawing on stimuli on logistics performance. According to Upper echelons theory, that managers act based on their interpretations of the things and situations they face, besides that managers' behaviors are determined by their beliefs, experiences, values a. (Dubey et al., 2018), also SC managers command more resources, greater power, and longer planning horizons to achieve performance targets (Villena., Guanyi., and Elena, 2018). In other words, TBM is a subjective psychological state regarding the potentials of logistics performance. Therefore, positive top management beliefs in logistics benefits may facilitate the success of logistics performance. Top management needs to develop the beliefs and structured values to analyze the environment and responding to the business conditions for guiding the behaviors of the management (Lee et al., 2014; Liang et al., 2007). In other words, the environmental factors affect top management beliefs, which in turn et al. (2015). The influence of the top management has been proven because the top management could influence the success of the project as well as the responsibility. Sandberg, and Abrahamson. (2010) mentioned that top management belief (TMB) leads to desirable managerial actions; hence, positive management beliefs and behaviour can be 'practised as an action that helps top management embrace logistics attributes, use beliefs to infer decisions drawing on stimuli on logistics performance. According to Upper echelons theory, that managers act based on their interpretations of the things and situations they face, besides that managers' behaviours are determined by their beliefs, experiences, values a. (Dubey et al., 2018), also SC managers command more resources, greater power, and longer planning horizons to achieve performance targets (Villena., Guanyi., and Elena, 2018). In other words, TBM is a subjective psychological state regarding the potentials of logistics performance. Therefore, positive top management beliefs in logistics benefits may facilitate the success of logistics performance. Top management needs to develop the beliefs and structured values to analyze the environment and responding to the business conditions for guiding the behaviours of the management (Lee et al., 2014; Liang et al., 2007). In other words, the environmental factors affect top management beliefs, which influence the firm's decisions and outcomes (e.g., Liang et al., 2007; Yigitbasioglu, 2015).

Top managers offer guidelines for managers and employees to support logistics by sharing positive beliefs. Moreover, they may implement favourable organizational structures and policies to support the logistics performance (Liang et al., 2007; Mitchell, 2006). Top management support has been recognized as the main driver for performance in many previous studies (Shee et al., 2018); also, (Rahikkala et al., 2015) confirmed the role of that top management support in information system efficiency of logistics.

In this study, researchers wanted to examine the direct effects of top management beliefs on delivery and cost performance. Thus, researchers proposed:

H0: The level of top management beliefs has a positive impact on delivery performance.
H1: The level of top management beliefs has a positive impact on cost performance.

2.1.2. Logistics IT Implementation

The literature has emphasized the vital role of information technology in logistical contexts and its impact on business outcomes (Novais., Marin and Moyano-Fuentes, 2020). In logistics, money, information, and products flow from one actor in the supply chain to another for enormous activities. Information is valuable in real-time and supports logistics decisions and operations such as demand forecast, inventory, delivery schedule, and input flow (Chen et al., 2017). IT and IS implementation have been considered as a crucial enabler to achieve logistics excellence and value-added supply chains through logistics service and logistics cost optimization in logistical processes by several scholars (Zawawi et al., 2014; Barbosa and Musetti, 2010; Liu et al.,2010, Rao et al., 2011). The main contribution of IT and IS implementation

to create mentioned logistics excellence becomes possible with their information integration capability. On the other hand, the satisfaction in supplier relationship quality is the result of a comparison between a buyer's performance and the supplier's expectations; besides that, information technology in the supply chain is an essential factor for evaluating supply chain performance (Mor., Bhardwaj and Singh, 2018)

Langley et al. (2007) mentioned IT implementation as one of the top three factors for logistics performance for Logistics Service Providers (LSPs). Another similar study was conducted with 105 LSP located in China, and researchers reported a higher level of IT capability of LSPs, leading to reduced costs, innovation and customized services, and improved service quality (Lai et al., 2008). Furthermore, with the advanced information-sharing capability among the partners, the supply chain is mentioned as to be externally and internally integrated, and this integration would lead to high performance in different dimensions like cost, on-time delivery, visibility and flexibility (Kalkan,2018; Thun, 2010; Prajogo and Olhager, 2012).

Whether IT and IS have direct or indirect effects on firm Performance due to the timeliness and low-cost nature of web-based transactions and execution of logistics operations over company's web sites and electronic market platforms (B2B-B2C), as well as improved backward constant information sharing and integration from downstream to upstream of supply chains by integrated software tools (Warehouse Management System, Transport Management System) between supply chain players and database integrated IS tools (Barcode, RFID, GPS) enables increased logistics service capabilities for firms thus lead to improved customer service levels, reduced costs in transportation, order and warehouse management due to lowered cycle times, optimized inventory levels and improved flexibility and visibility have been mentioned (Kalkan ,2018; Zawawi et al., 2014; Evangelista et al., 2012; Yu, 2015, Langley et al., 2007). Under such an improvement in firms' capabilities due to high class IT and IS implementation, efficiency and effectiveness improvement in logistic operations would lead to high firm performance across different logistic performance measures (Kalkan, 2018; Evangelista et al., 2012).

In this study, researchers wanted to examine the direct effects of IT implementation on delivery and cost performance. Thus, researchers proposed:

H0: The level of IT and IS implementation has a positive impact on delivery performance.
H1: The level of IT has a positive impact on cost performance.

2.1.3 Suppliers' relationships and logistics performance

For any business to stay competitive in the global supply chain, it needs to develop strong long-term relationships with its partners to exist altogether in its cluster (Carvalho et al., 2020). Thus, in today's complex global logistics, it is the whole supply chains' competition instead of single companies' competition. Comparative studies have brought empirical evidence showing supply chains with higher partnership and collaboration levels would have a more significant competitive advantage and performance over those supply chains with lower levels of partnership and collaboration (Mhyr and Speakman, 2005; Singh and Power, 2009). The ever-increasing dependence of businesses' performance on their suppliers' complementary capabilities and performance makes effective supplier management a goal to be achieved (Holweg et al., 2005).

It has been promoted in the context of structuring strong and long-term buyer-supplier relationships and collaboration for developing complementary capabilities/competencies (Johnsen et al., 2008) and improving performance for any individual partner within the same chain by many scholars (Paiva et al.,2008; Sheu et al., 2006; Chen and Paulraj, 2004).

The most of the recent studies focusing of the transformation of the relationship from discrete, adversarial-transactional relationships into long-term oriented high level cooperative and collaborative partnerships/alliances form where the buyers work with a limited long-term contracted supplier base is mentioned as businesses' response to the high competition in markets and can be attributed to their willingness for the reduction of uncertainty and lead time to create more resilient/responsive logistics through high quality information sharing/integration and decision synchronization on tactical and strategic contexts, to gain new competencies through sharing of resources and knowledge (Supplier Development) while engaging the partners into the process from early stages (Sharma and Modgil, 2019), Providing an ecosystem that allows changes that lead to improvement in the value provided by suppliers' products, reliability and confidence in delivery processes can be done through a comprehensive integration process for all parties to the supply chain. Creating integration leads to joint thinking of solutions and then joint implementation, thus avoiding many costs and improving operations and overall Performance (Hamid., Abdelkareem., and Alhamdany, 2020; Hamid., Ibrahim and Abdelkareem, 2020; Vickery et al., 2003; Simatupang and Sridharan, 2005; Van der Vaart and Van Donk, 2007; Monczka et al., 2009).

Moreover, long term relationships maintain a constant flow of data, information, the product from the supply chain partners. Also, these factors encouraging suppliers' to improve products quality and eventually firm Performance

(Nenavani, and Jain, 2021; Sheu et al., 2006). Disruptions in logistics such as the Bullwhip effect have already been reduced due to decreased inventory fluctuations, so the costs in the channel and thus companies become more responsive to such turbulence in markets (Holweg et al., 2005). Many other studies indicated the level of impact of cooperation, coordination and interrelationships in reducing costs and improving flexibility (Jabbour et al., 2015; Neumüller et al., 2016; Simatupang and Sridharan, 2005). In this study, researchers wanted to examine the direct effects of suppliers on delivery and cost performance.

Thus, researchers proposed:

H0: The level of IT suppliers has a positive impact on delivery performance.
H1: The level of suppliers has a positive impact on cost performance.

2.2. Logistics performance

With the growth of the logistics industry and the increasing reliance on it as a source of competitive advantage, the sensitivity of the logistics work and its impact on customers. Traditionally, logistics performance has been defined based on the hard side of performance, such as delivery rate and time. However, these aspects are not the only ones that determine logistical performance. There are aspects such as cost, efficiency, and effectiveness (Fugate., Mentzer, and Stank, 2010). Logistics performance can be defined as the ability to deliver goods and services in the precise quantities and at the precise times required by customers (Green., Whitten, and Inman, R. 2008).

2.2.1. Cost and delivery performance as tools for measuring logistics performance

Most studies have concluded that logistical performance is one of the most important determinants of competitive advantages, through creation of cost/productivity/added value advantages, as this performance is represented in the integration and sharing of information, transportation, storage, packaging and delivery. (Puertas., Martí., and García .2014). The performance of logistics has been measured by different indicators, however stated as delivery speed (Nenavani and Rajesh, 2021; Moldabekova et al., 2021; Hult et al, 2006), quality and cost (Hult et al, 2006), flexibility (Boon-itt and Yew Wong, 2011,; Hult et al, 2006) and visibility (Francis, 2008) different delivery performance and sub measures for the delivery performance has been stated in the literature, e.g., on-time delivery (Garg et al., 2004), delivery reliability (Garg et al., 2003), delivery speed (Nenavani and Rajesh, 2021; Liu et al. 2005), and delivery synchronization (Lee and Whang, 2001).

Firm Performance is related to its effectiveness in meeting goals and objectives. However, logistics performance depends not only on effectiveness in one's firm goals but also on others who are operating in the supply chain. Supply chain management strategy influences firms' performance as measured in operations and financial criteria (Lee, 2021). Firms often apply profit, return to asset, return to investment, and market-related measures such as sales revenue, for which researchers employ those measures in their studies (Hang and Nguyen, 2019; Nur Fadiah et al., 2017; Chi-Chang and Lai, 2015). In addition, strategic focus, differentiation, cost, and strategic alliances have also been considered in measuring firms' performance though business strategies were considered as mediating relationships between logistics services and firm Performance (Hoang and Nguyen, 2019). Moreover, Coskun and Erturgut (2021) argue that logistics performance can be measured based on logistics efficiency, flexibility, and agility.

Most studies considered logistics performance and firms' performance as variables that could be measured employing financial Performance and market-related Performance (Hang and Nguyen, 2019; Nur Fadiah et al., 2017; Chi-Chang and Lai, 2015). A study by Picasso et al. (2015) considered logistics performance as a determinant of firm performance, and unlike firm Performance, it is measured in terms of delivery time and cost of logistics operations.

Garg et al. (2004) argue that logistics operations and processes are complex mechanisms with many levels of value delivery business processes of different partners, and as the number of resources, operations, and partners in the same logistics chain increase, it gets even more complex leading to more variability. The variability produces the critical synchronization problem between the company wise processes, leading to poor delivery performance, where delivery performance was considered one of the most significant performance indicators of any logistics chain (Rao et al., 2011).

Most of the previous studies have concluded that logistical performance is one of the most critical determinants of competitive advantages by creating cost/productivity/added value advantages. This performance is represented in integrating and sharing information, transportation, storage, packaging, and delivery. (Puertas., Martí., and García .2014). Different indicators have measured the performance of logistics, however, stated as delivery speed (Nenavani and Rajesh, 2021; Moldabekova et al., 2021; Hult et al, 2006), quality and cost (Hult et al, 2006), flexibility (Boon-itt and Yew Wong, 2011,; Hult et al, 2006) and visibility (Francis, 2008) different delivery performance and sub measures for the delivery

performance has been stated in the literature, e.g., on-time delivery (Garg et al., 2004), delivery reliability (Garg et al., 2003), delivery speed (Nenavani and Rajesh, 2021; Liu et al. 2005), and delivery synchronization (Lee and Whang, 2001).

Delivery performance is defined as the level of products and services supplied by an organization that meet customer expectations (Rao et al., 2011). It involves measuring performance from the supplier end to the customer end (Rao et al., 2011). Researchers focused on these two performance measures for the measurement of supply chain performance in this research.

3. Theoretical framework

3.1. RBV and logistics performance

RBV has received attention among the studies of logistics and supply chain (Gligor and Holcomb, 2014; Hadrawi, 2019; Vitorino Filho, 2020), for proposing that logistics practices and operations can support different performance dimensions, with it being considered one of the best conceptual bases in the logistics performance (Nishant et al., 2016). In addition, RBV indicates that better performance can be achieved by unique skills, technology, knowledge, and relationships (Miemczyk et al., 2016). Therefore, this study relied on three dimensions representing the resource, skills, and relationship (top management beliefs, suppliers, and Logistics IT). These dimensions can be viewed as a particular type of critical logistics capability (Stank, Keller, and Daugherty 2001).

Based on RBV and the existing literature of logistics transaction attributes and logistics Performance, transaction. A conceptual framework has been developed, shown in Figure 1.

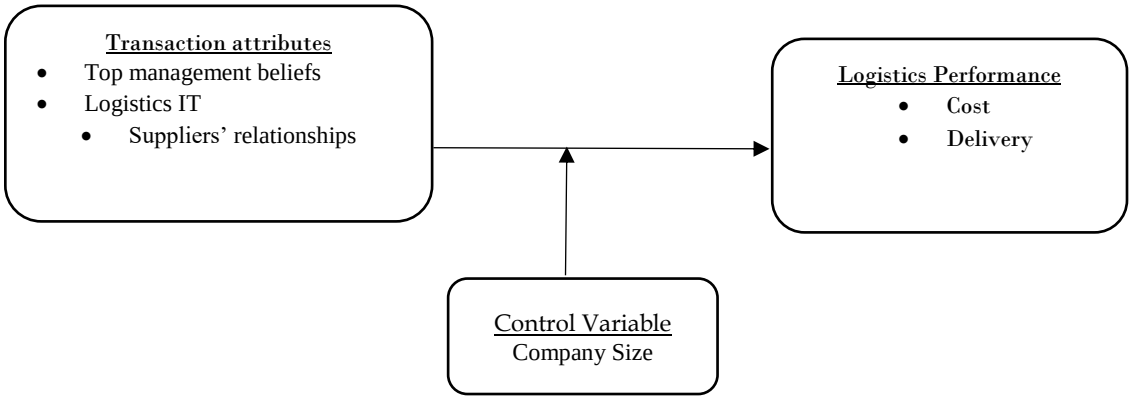

Figure 1. Theoretical framework

3.2. Methodology

Research methodology: this research is Quantitative; quantitative research is a method based on interrogating or asking the concerned respondents (the sample) from the members of the study population about their opinions, practices, beliefs, awareness, and knowledge of specific phenomena through a reliable and controlled method so that clear statistics or findings can be reached. This research relied on Quantitative data (a numerical form of data) (Saunders et al.,2016). Notably, some recent theoretical work (Yuan et al., 2020; Sandberg, 2007; and Tayur, 2012) supports the assessment of logistics transaction attributes and logistics performance using quantitative methods. Therefore, the questionnaire as a data-gathering tool has been adopted because the questionnaire fitting this research in terms of ease of understanding, motivating respondents to respond, and the chance of error is less. The questionnaire has been developed and distributed to the respondents one time as a cross-sectional study on food and beverage companies in Sudan, Khartoum state (Domegan and Fleming 2007; Bryman and Bell, 2015).

3.2.1 Population: can be defined as a wider variety of subjects from which a sample is taken. The study has a population of Sudanese manufacturing companies, supply chain managers, procurement managers, and operations managers of Sudanese manufacturing companies.

3.2.2 Sampling: Sampling refers to applying the respective methods to represent the subset of the Population.

Non-probability sampling: It picks out the samples based on non-randomized methods. The study uses non-probability sampling in which purposive sampling is determined for the study. The sample of food and beverage companies was selected from Sudanese manufacturing companies. Meanwhile, the Population of food and beverage companies were drawn from members of the Sudanese manufacturing companies.

3.2.3. Sample size: represent the number of participants targeted for the study. Determine the size of the sample size depend on the study design, and it may vary based on attributes like confidence interval and level of significance (Chander, 2017). The minimum sample size ranged from 30 to 200 (Louangrath, 2017). Among 150 respondents, the study fixes a 95% level of significance. In total, 384 questionnaires were posted to food and beverage companies. A total of 241questionnaires were received valid for analysis.

3.2.4 The measurement

The measurement for the variables and dimensions were adopted from previous studies after an in-depth review of the literature.; thus, transaction attribute measured through three dimensions; Top management beliefs, supplier, adopted from (Yuan et al., 2020), and Logistics IT measured based on four items adapted from (Yuan et al., 2020), while logistics performance measured by two dimensions (cost and delivery) adopted form (Zhu et al., 2017) and three items for each dimension were utilized.

Data analysis: All measurements of the items were tested and analyzed by factor analysis, EFA and CFA, descriptive analyses (normality, kurtosis, reliability, means, and standard deviations using Structural Equation Modelling (SEM)).

4. Data analysis

This study is a questionnaire-based study conducted in Sudan. The questionnaires were addressed to the food and beverages industry in the public and private sectors in Sudan. Only 241 responded, resulting in 62.7 % response rate. The data were analyzed using SPSS & AMOS v 25. The analytical model employed was Structural Equation Modelling (SEM).

Table 1. Company profile

Items		Frequency	Percent
Company age	less than 5 years	12	5.0
	5-10	51	21.2
	10-15	33	13.7
	over 15 year	145	60.2
	Total	241	100.0
company size	less than 50 employees	14	5.8
	50-100 employee	38	15.8
	100-150 employee	16	6.6
	over than 150 employees	173	71.8
	Total	241	100.0
Competitor	Less than 5	94	39.0
	5-10	72	29.9
	10-15	23	9.5
	over 15 competitors	52	21.6
	Total	241	100.0
Ownership of the organization	Public	85	35.3
	Private	78	32.4
	Share holder	78	32.4
	Total	241	100.0

4.1 Factor analysis

4.1.1 Exploratory factor analysis

EFA was carried out through structured order, were considered for EFA. First, the Bartlett test of sphericity was used to confirm the relevance of factor analysis, which was evaluated by examining the correlation matrix of the collected data (Kharub., Mor., and Sharma. 2019; Hair et al., 2005). At the same time, sampling adequacy was calculated by Kaiser-Meyer-Olkin (KMO) statistics (Kharub., Mor., and Sharma. 2019). The score of the Bartlett test of sphericity and the KMO value. Using Maximum Likelihood to conduct (EFA), factor analysis was done on the twelve items used to measure dimensions of the transaction attributes on logistics performance. Table 5.6 shows the summary of the results of all the items above 0.5. So, the KMO and Bartlett's test equal 0.869, which is significant (0.00). This result shows that the sample size is adequate for structural equation modelling (Gaskin, 2012; Kenny and McCoach, 2003; Manjeet and Sujatha, 2018). The Cronbach's Alpha results indicate high reliability of the constructs except for F3 (Mor., Singh., and Arora, 2020).

Table 2. Factor analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.869
Bartlett's Test of Sphericity	Approx. Chi-Square	1266.580
	df	78
	Sig.	.000

Items		Cronbach's Alpha				
		0.735	0.736	0.667	0.846	0.743
	Commonality	F1	F2	F3	F4	F5
The senior management of our firm believes that logistics outsourcing has the potential to provide significant business efficiency to the firm.	**.680**		.848			
The senior management of our firm believes that logistics outsourcing will create a competitive arena for firms.	**.792**		.865			
The senior management of our firm believes that logistics outsourcing has the potential to provide significant business benefits to the firm.	**.661**		.722			
There are enough trustworthy Supplier who potentially could provide logistics services to us.	**.766**					.904
There are enough reliable Supplier who potentially could provide logistics services to us.	**.784**					.832
Logistics information systems in my firm are being extended to include more integrated applications.	**.724**	.814				
My firm's logistics information system captures and maintain real time data.	**.625**	.694				
Logistics operating and planning databases are integrated across applications within my firm.	**.734**	.864				
We have increased control of logistics expenses.	**.652**			.747		
We have decreased total cost of logistics.	**.712**			.871		
We have reduced delivery lead time.	**.733**				.862	
We have improved delivery reliability in our firm.	**.839**				.902	

The results were found substantial, and hence the result of factor analysis was accepted (Hair et al., 2005).

4.1.2 Confirmatory factor analysis (CFA)

Confirmatory factor analysis (CFA) was performed to check the reliability and validity of data measuring instrument, respectively. To assess the degree of correspondence between the manifest variables and latent construct of the transaction attributes on logistics performance a multi-dimensional CFA model in (Figure 1) has been conceptualized and tested for its psychometric properties. The results of the CFA showed acceptable fit statistics: $\chi 2(75.327)$ DF =44, $\chi 2$/DF =1.712,

RMSEA=0.054, NFI=0.93, CFI=0.97, IFI=0.97, GFI=0.95, and SRMR=0.049. The result of measurement model appears in the next figure.

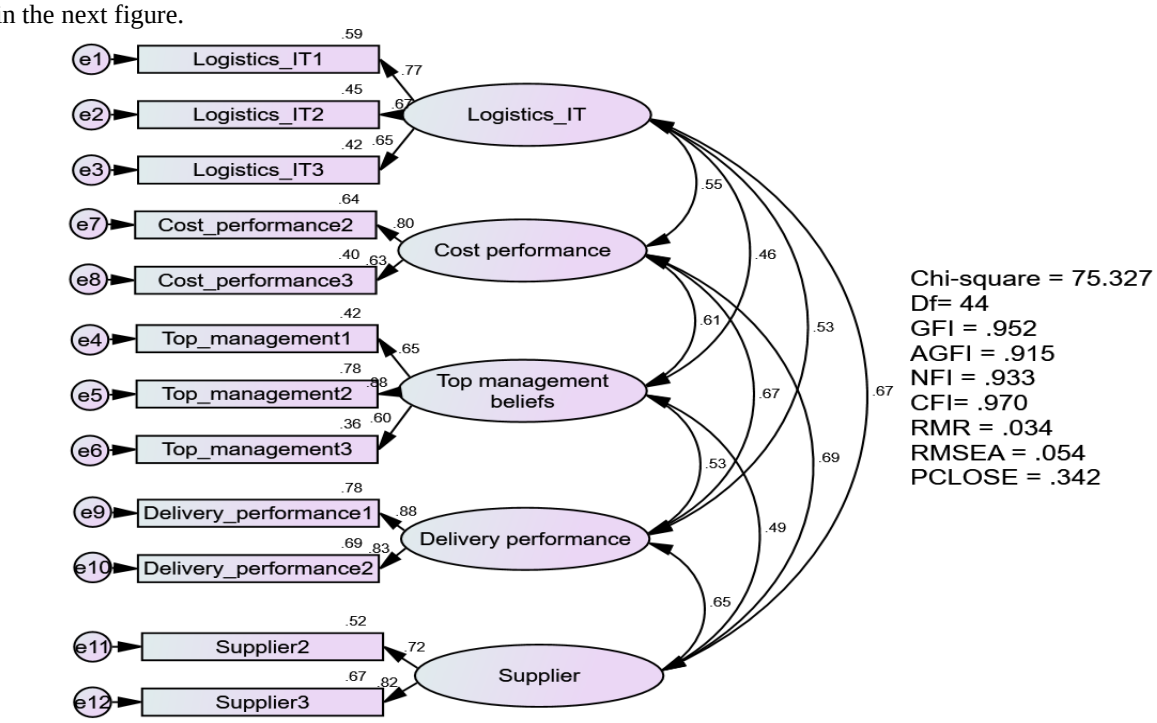

Figure 2. Model results

4.3 Model Result

The convergent validity of the construct of the transaction attributes on logistics performance has been assessed through standardized factor loadings, AVE and CR. The CR value between (0.680 to 848) the discriminant validity was assessed by comparing the AVE, the value AVE for Logistics IT (0.489) is less than 0.5, while all other values of AVE are higher than 0.5.

Table 3. Model Validity Measures

Variables	CR	AVE	MSV	MaxR (H)	Logistics IT	Top management beliefs	Cost performance	Delivery performance	Supplier
Logistics IT	0.740	0.489	0.450	0.750	**0.699**				
Top management beliefs	0.760	0.521	0.369	0.829	0.460***	**0.722**			
Cost performance	0.680	0.518	0.482	0.708	0.546***	0.608***	**0.720**		
Delivery performance	0.848	0.736	0.443	0.853	0.529***	0.535***	0.666***	**0.858**	
Supplier Relationship	0.746	0.596	0.482	0.759	0.671***	0.491***	0.694***	0.646***	**0.772**

4.3.1 Structural models and hypotheses test results.

In the current study, the hypotheses have been tested through constructing structural model using SEM. Structural model provides a direct effect on the output file as unstandardized and standardized.

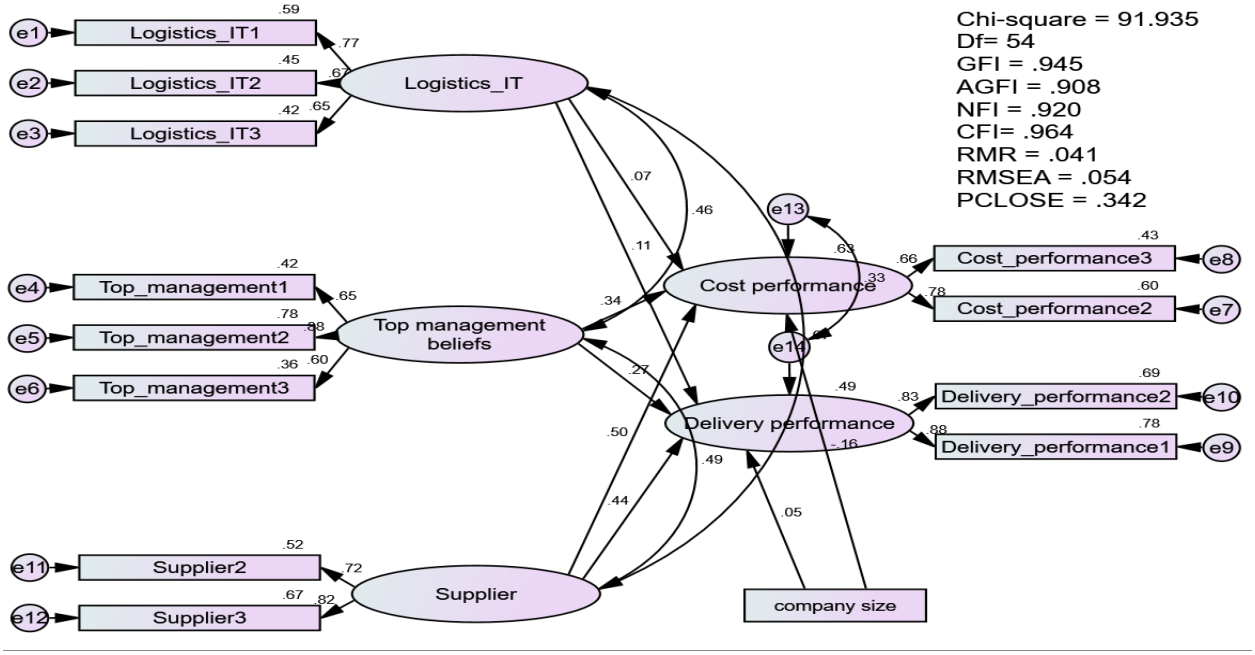

Figure 3. Structural model with parameter estimates.

Figure 3 shows the estimation results of the structural model. The goodness of fit indices were $\chi 2$= (91.935), DF=54, CMIN/DF= 1.703 with RMSEA=0.054, NFI=0.92,CFI=0.96, IFI=0.96,GFI=0.94, and SRMR=0.041, suggesting an acceptable fit. As indicated by path coefficients and their significance levels, the path Logistics IT on (Cost performance and Delivery performance) are not significance levels equal (β=0.072; $p < 0.595$ and β=0.145; $p < 0.352$) when the paths form (Top management beliefs, Supplier) on (Cost performance and Delivery performance) are significance levels ($p < 0.05$) always the path from company size is significance levels ($p < 0.05$).

Table 4. Relationship of attributes and performance

Attributes and performance			Estimate	S.E.	C.R.	P	Result
Cost performance	<---	Logistics IT	.072	.132	.545	**.586**	**Not supported**
Cost performance	<---	Top_management_beliefs	.405	.112	3.609	***	**Supported**
Cost performance	<---	Supplier relationships	.538	.137	3.920	***	**Support**
Delivery performance	<---	Logistics IT	.147	.146	1.006	**.315**	**Not supported**
Delivery performance	<---	Top_management_beliefs	.376	.118	3.181	**.001**	**Supported**
Delivery performance	<---	Supplier relationships	.563	.153	3.691	***	**Supported**
Delivery performance	<---	company size	.044	.049	.893	**.372**	**Not supported**
Cost performance	<---	company size	-.115	.046	-2.521	**.012**	**Supported**

*'***'. '**', Significant at 1% and 5% respectively.*

5. Discussion of results

Table 3 presents the model result. The analysis shows logistics performance-attribute relations. Six types of relationships were tested in the model. Relationship between transactions attributes (top management, IT Implementation, supplier relationship, delivery and top management belief, delivery and supplier relations, cost and company size, cost, and company size).

Top management belief is found to be positively correlated with logistics performance measured in terms of cost and delivery. Top management beliefs affect the structure and direction of decisions, and they focus on logistics attributes that could improve efficiency, contribute to competitive advantage and business benefits. As stated by (Lee et al., 2014; and Liang et al., 2007), top management has the authority and the mandate to develop beliefs that could guide decisions and actions to respond to environmental changes in logistics, which in turn could contribute to logistics efficiency in terms of cost and delivery. In addition, the management belief would contribute to the focus and priority given regarding resource allocation and employee engagement in performing logistics functions and outcomes (Yigitbasioglu, 2015). Therefore, the attribute of management belief is expected to bring improved logistics performance. The model result indicates that top management belief is positively correlated with cost and delivery performance with 1% significance

level implying that management's belief on logistics importance to efficiency, competitive advantage and business benefit would promote cost reduction and better delivery service.

The model also made a test of relationships between suppliers' trust and reliability. Strong supplier partnership and trust as social capital has a solid contribution to the performance of logistics. Accordingly, the analytical model result indicated a significant positive relationship between the logistics attributes to logistics performance at a 1% significant level. The study's findings align with studies of (Mhyr and Speakman, 2005; and Singh and Power, 2009). They confirmed that supply chains with higher partnership and collaboration levels would have more significant competitive advantage and performance over those supply chains with higher partnership and collaboration levels lower levels of partnership and collaboration. Besides, firms in a supply chain will succeed together if there is a high degree of interdependence (Holweg et al., 2005). This confirms the theory of social capital in improving relationships and then performance in logistics. In addition, supplier reliability has shown significant positive relations with performance. Thus, reliability has to do with confidence in supplier-firm relationships improving logistics performance.

Relational rather than transactional buyer-supplier relationships and collaboration are promoted for developing complementary capabilities/competencies (Johnsen et al., 2008) and improving performance for any individual partner within the same chain by many scholars (Paiva et al.,2008; Sheu et al., 2006; Vickery et al., 2003; Chen and Paulraj, 2004). The result witnesses that relational rather than transactional businesses are claimed to improve businesses' response to the stiff competition and would assist them to share information and risk between buyers and suppliers and assist them to reduce uncertainty and lead firms to better logistics performance and business success (Vickery et al., 2003; Simatupang and Sridharan, 2005; Van der Vaart and Van Donk, 2007; Monczka et al., 2009).

Company size is controlled in the model and affects the cost and delivery performance by considering it separately. However, its effect on delivery is not statistically supported. However, IT relation on cost performance is found to be negative and statistically significant at 5% level. This implies that the larger the company size, the lower the cost performance of the firm would be.

5.1. Conclusion and implications

The study on transaction attributes and logistics performance indicates that all attributes related variables are not found significant. From the result, it can be concluded that top management belief is crucial for logistics delivery and cost performance. It implies that top management needs to keep an eye on logistics operations and monitor and follow up their implementations. Top management needs to focus on logistics operations as other business functions and understand that the operation needs top management engagement.

It can also be drawn from this study that suppliers trust and reliability an essential contributors to logistics cost and delivery performance. This implies establishing a system of relationships between a firm and its suppliers to strengthen trust and reduce transaction costs, consequently affecting the delivery and cost performance of firms' logistics operations. Therefore, firm managers need to use Supplier Relationship Management System (SRM) in the logistics operations as it contributes to the effectiveness of logistics performance.

Although this study shows evidence on the relationship between transactions attribute and logistics performance, still some limitations need to be overcome by future research; first, the sample sizes of food and beverage companies affect the generalizability of the findings across the different industries, besides the level of transaction attribute across the time and contests. Therefore, the future must focus on time (length of the relationship) and the firm's culture.

5.2. Future studies may consider managers' interpersonal characteristics, behaviours, and attitudes as determinants for logistics and firm performance. In addition, firm size as a control variable is found to affect performance. Further studies need to be conducted with more focus on contextual factors related to the relationship between supply chain partners. Moreover, according to the findings of this study, most of the direct relationships were not positive and significant, which indicates that an antecedent or mediator variable is missed, such as capabilities associated with transaction attribute as justified by RBV.

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