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# How maritime logistic SMEs lead and gain competitive advantage by applying information technology?

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The aim of this study was to examine the importance of information technology for logistics Small Medium Enterprise (SMEs) in Pakistan. It is the time of technological rapidness; especially after COVID-19, the word business has majorly transformed into a digital business. If an organization did not shift toward technology, it would be hard for it to even sustain in this rapid era. This study adopts the questionnaire after extensive literature review. A quantitative study was conducted among logistics SMEs in Pakistan to empirically verify what competitive advantages they are leading and gaining from information technology and how much information technology is important for their sustainability. The literature lacks information about the ways in which information technology has been integrated into logistics SMEs operating model, and more specifically, there is no information about IT valence, IT resource commitment, IT managerial commitment, and IT competency. The research is primarily quantitative in nature, where the data were collected via a close-ended questionnaire from 340 logistics SMEs in Pakistan. The independent variable of this research was information technology (i.e., IT valence, IT resource commitment, IT managerial commitment, and IT competency), whereas the dependent variable was competitive advantage. The study found that IT had a significant impact on the competitive advantage of logistics SMEs operating in Pakistan. All the variables related to IT had a significant impact on competitive advantage, which included IT valence, IT resource commitment, IT managerial commitment, and IT competency. This study helps managers and owners of logistics SMEs in decision-making, who can understand how much IT can enhance their performance and reduce their risks. This study has been specifically conducted with logistics SMEs operating in Pakistan, which means that there is much scope to be worked upon, i.e., by selecting companies operating in other countries and comparing them with current findings. This study observes the impact of information technology (i.e., IT valence, IT resource commitment, IT

managerial commitment, and IT competency) on competitive advantage, and other independent variables can be studied to find the impact on competitive advantage.

#### KEYWORDS

information technology, competitive advantage, logistic SME's, lead, Pakistan

## Introduction

The logistics industry has developed essentially while logistics has turned into a significant piece of the business financial framework and major worldwide economic activity lately. Logistics has quickened financial development and efficiency development. Productive logistics is a significant determinant of a nation's intensity (Ab Talib and Hamid, 2014; Erkan, 2014; Al-Shbiel and Al-Olimat, 2016; Afshan et al., 2021; Alshareef and Tunio, 2022). The most important components that empower us to comprehend economic development are the financial pointers of the country. Logistics is one of the tools that plays a significant role in the change and improvement of financial pointers. The logistics industry gives huge full-scale commitments to the national economy by making work and making national salaries and remote speculation deluge. On a smaller scale, the logistics industry is a key industry in expanding the focused intensity of organizations. Moreover, the logistics business has a significant, crucial rejuvenation and improvement in the aggressiveness of different enterprises. At present, all businesses are reliant on the logistics segment (Sezer and Abasiz, 2017; Shaikh et al., 2022a; Tunio et al., 2022). According to Pakistan-China Institute (2016), Pakistan's Vision 2025 pursues to upgrade the national transportation framework by setting up a productive and incorporated transportation and logistics framework. Building up modern stops and creating SEZs along the China-Pakistan Economic Corridor (CPEC) will reinforce the transportation system and logistics framework. The potential opportunities in the logistics business in Pakistan are assessed at approximately US\$ 30.77 billion in 2015. Key targets set in the national improvement activities for the transportation segment include a decrease in transportation costs, and operational connectivity between rural and urban zones. CPEC will act as a macro driver for growth in the logistics sector (Bowersox and Daugherty, 1995; Bowersox and Closs, 1996; Chatterjee et al., 2002; Choy et al., 2014).

Competitive advantage is the reason for greater execution. Understanding the life structures of competitive advantage is of vital significance to senior supervisors who bear a definitive obligation regarding an association's long-haul endurance and achievement. Dissecting the reasons for competitive advantage enables an SME to make and pick up an advantage (Ma, 1999; Memon et al., 2021; Tunio et al., 2021a). In the present violent

situations, the rivalry has gone a long way past the conventional product-based rivalry and taken on an increasingly new look, with its inclinations and guidelines evolving on a very basic level (Emons and Row, 1991; Daugherty, 1994; Daugherty et al., 1995; Closs et al., 1997; Evangelista et al., 2013; Domingo Galindo, 2016). In like manner, Small Medium Enterprise (SMEs) are contending with each other at numerous levels simultaneously and subsequently, constructing and improving multilayer competitive advantages is turning into the focal point of rivalry for any SMEs to succeed (Yonggui and Lo, 2002; Fawcett et al., 2011; Hazen and Byrd, 2012; Grabara et al., 2014; Fadiyah et al., 2017; Hussain et al., 2017). Advances in PC and media communications innovation are giving logistics administrators a wide scope of key chances. In any case, there is an expanding hole between circumstances, accessible through innovation and the successful use of technology. Unless logistics directors take a more extensive key perspective on their job, these open doors will be lost and their organizations will fall behind even with progressively serious worldwide challenges. Logistics supervisors who look for creative approaches to apply both existing and new technology, particularly information technology, will assume an undeniably significant role in their organization's productivity (Kerr, 1989; Tunio, 2020a; Chaudhry et al., 2021; Tunio et al., 2021b). This study specifically intends to explore the impact of information technology on the competitive advantage. This makes this study significantly important as it can help to understand the shortcomings of the logistics SMEs in Pakistan while giving these SMEs an opportunity to work on the integration of IT into their core processes. This can be a value addition for the existing SMEs and can help them understand the necessity of IT integration and the ways in which this can help them increase their competitive advantage. From the previous studies, it is concluded that the implementation of information technology in logistics SMEs can provide many opportunities and offer a competitive advantage over other SMEs in the market. Effective and efficient use of information technology can provide superior value to customers and high profitability for logistics SMEs. This IT integration has become a necessity for SMEs, without which they cannot survive and thrive, and a source for the development and enhancement of competitive advantages (Jimba, 1999; Lunce and Smith, 2000; Mattson et al., 2000; Lai et al., 2007; Kohli and Grover, 2008; Khan and Subzwari, 2009).

## Literature review

### Overview of the logistics industry in Pakistan

Given the case of the logistics industry in Pakistan, the CPEC project has been acknowledged as a game changer for not only the logistics SMEs but also for its complement for the economies that are directly or indirectly related to Pakistan (i.e., ECO region). This can be attributed to the fact that this project is intended to focus on the development of a national logistics network that would result in the expansion of distribution and warehousing networks; however, the lack of sufficient logistics and processing facilities is expected to result in a challenging situation for the agricultural products (Idrees et al., 2018; Shaikh et al., 2021; Tunio et al., 2021c). However, this CPEC project has been expected to bring a revolutionary change in the logistics industry of Pakistan, while influencing and encouraging the SMEs operating within this industry to work on automation and taking advantage of the IT integration. This can eventually alleviate the long-standing supply chain bottlenecks in Pakistan while helping to lift the long-term potential output as well as improve the supply of exports (Esteban, 2016; Sharif et al., 2019; Qazi et al., 2020; Qureshi et al., 2021). Apart from these benefits, it is also expected that the CPEC project and its goals of developing transport infrastructure would make it convenient and allow low-cost accessibility to the overseas market, thereby resulting in boosting business investment and productivity, which are to prove beneficial for Pakistan. Still, this project has been expected to boost the economic activities in Pakistan; for instance, the supply of energy is expected to add 2.5% to the GDP followed by its growth to 7.5% (Singh and Magray, 2017; Raza et al., 2020).

### Competitive advantage

The term competitive advantage refers to the conditions or circumstances that put companies in a superior business position (Porter and Kramer, 2002; Tunio et al., 2017; Shaikh et al., 2022b). This competitive advantage can be a result of a range of reasons; for instance, integrated business processes or differentiated and unique offerings that may reduce the extent and level of competition in the industry (Porter and Miller, 1985; Santhanam and Hartono, 2003; Richey et al., 2007; Shapiee and Idrees, 2017; Napitupulu et al., 2018; Okundaye et al., 2019). This means that working on the development of competitive advantages is extremely important—a necessity—for SMEs to ensure their growth and survival (Namada, 2018; Raza et al., 2020; Tunio et al., 2022). Companies with competitive advantages have experienced greater satisfaction of the customers, and increased profitability and performance (Stewart and Kleiner, 1996; Sum and Teo, 1999; Sum et al., 2001;

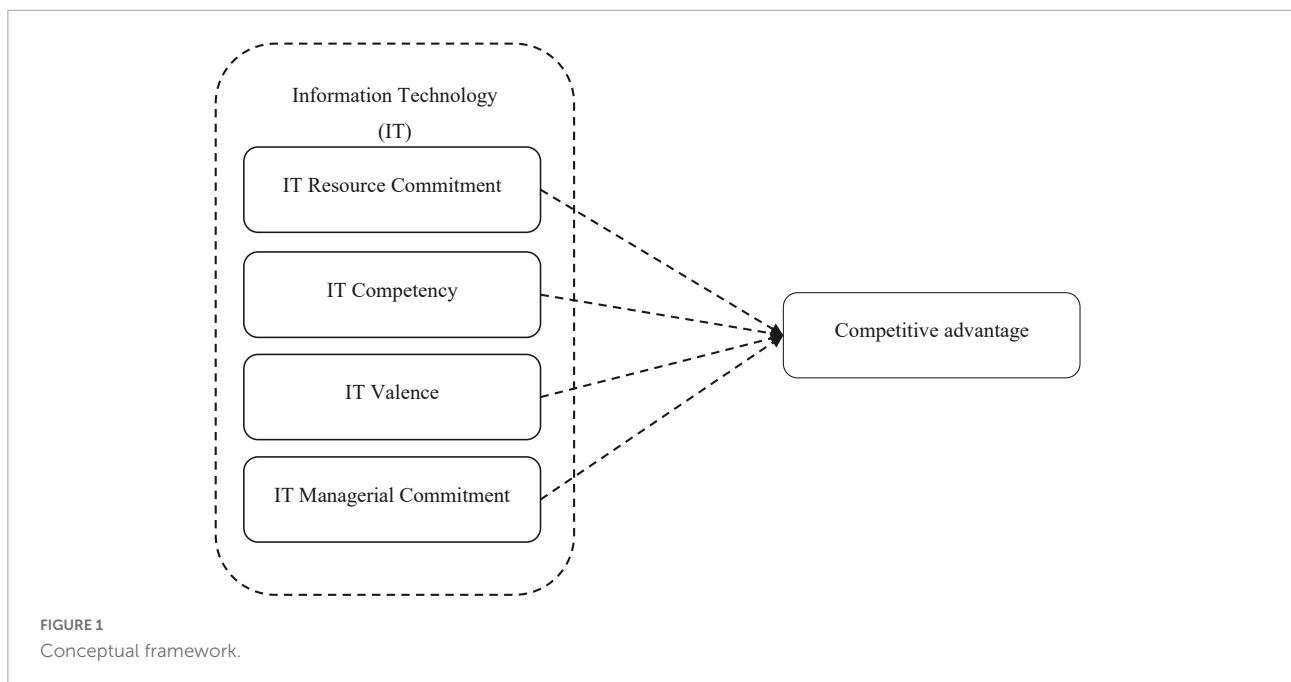
Vaidyanathan, 2005; Suominen and Takala, 2006). In addition, it has also been suggested that when companies have a competitive advantage, they are commonly preferred by the customers in the market, thereby making business the most successful in the market, which leads to increased market share (Kang et al., 2018; Raza et al., 2019). However, it has also been suggested that developing a competitive advantage is quite challenging, which means that companies must heavily invest in their resources and competencies for its development. Yet, it is believed that IT can play a critical role in resolving this challenge; for instance, integrating the processes and practices of the companies can provide it with valuable insights that can be leveraged by SMEs to meet customers' and clients' expectations with ease and convenience (Neirotti and Raguseo, 2017; Tunio, 2020b). This can also provide a competitive advantage for the SME, regardless of the industry in which they operate. If this particular aspect is applied to logistics SME, the IT integration can be quite important since the IT integration can reduce lead time and cycle time, which would give the companies greater benefits.

### Information technology

In the technologically advanced era, information technology has become a necessity for SMEs operating in different fields and domains, which means that the logistics industry is no exception to it. Considering this aspect, in the studies conducted by Kearns and Lederer (2004) and Lai et al. (2006), the concept of IT has been categorized in the forms of (1) IT resource commitment, (2) IT competency, (3) IT valence, and (4) IT managerial commitment. All of these have been treated as the independent variables in this study and have been elaborated in the following sections.

#### Information technology resource commitment

Information technology commitment has been defined as the commitment to work on the improvement of IT, which is not only related to resources but also to its components including equipment, budget, and even personnel, whereas studies have also integrated managerial commitment within it as well (Daugherty et al., 2005; Lai et al., 2008; Tunio et al., 2021d). In specific reference to the IT adoption-related literature, it has been further reflected that resource commitment has helped in increasing the productivity and performance of SMEs, whereas managerial commitment has played a critical role in the achievement of sustainable competitive advantage (Lai et al., 2006; Huang et al., 2012). Given the fact that IT investments are easily imitated by competitors, it becomes extremely difficult and challenging for companies to duplicate or imitate the ways in which the investments are leveraged by SMEs for the creation of IT capabilities, for instance, the infrastructure, technological configuration, and synergies (Gunasekaran et al., 2017). If this particular variable is employed in the case of the logistics



industry, the resource commitment can help the SMEs to increase their operational efficacy, which in turn would help in reducing the cycle time while improving the productivity of logistics service providers (Piyachat, 2017). This makes it worth investing time and resources to learn more about the critical role that IT resource commitment can play in the increase of competitive advantage in the logistics SMEs. Hence it has been hypothesized that

H1a: IT resources commitment has a positive impact on competitive advantages.

### Information technology competency

Companies, irrespective of their scope and nature of operations, operate in a technologically advanced era, and this has made it exceptionally important for companies to support their operational procedures and processes through technological integration (Morgan et al., 2016). This can be further attributed to the fact that IT integration can significantly improve the logistical effectiveness, efficiency, flexibility, and even the productivity and service quality of the SMEs (Pérez-López and Alegre, 2012). Although studies have also reflected that when logistics SMEs have IT competency, it directly influences the ways in which they perform their operations and functions, which eventually results in improved logistical efficacy (Daud, 2011; Prajogo and Olhager, 2012). This means that not only the competitive position of logistics SMEs is increased, but also in the form of reduced operational costs and lead time reduction, it can be attributed to the IT competence. From this perspective, it has been argued that IT competency

can result in improved competitive advantage, but this is dependent on the ways in which IT has been integrated into the value chain activities (Tokman et al., 2011). Given the theoretical information related to the influence of IT competency on the competitive advantage of logistics, the study has hypothesized that

H2a: IT competency has a positive impact on competitive advantage.

### Information technology valence

From an organizational perspective, IT valence reflects the beliefs of the top management within an organization with respect to IT. In this specific context, studies have reflected that it serves as a sign of the managerial community about the importance that must be placed on the information technology (Lai et al., 2006; Wang et al., 2008). When the managers are informed about the beliefs and the opportunities that may be available for the SMEs, it can influence them to develop specific behavior toward IT integration within the company (Oliveira and Martins, 2011). In specific reference to the literature related to logistics, it has been shown that these beliefs encourage the integration of IT within the logistics functions, where the purpose remains on the improvement of logistics and value chain activities that may result in improved practices and processes, followed by improved performance and productivity (Bock et al., 2005). However, this is dependent upon the ways in which the IT strategies are aligned with the logistical strategies to take optimal advantage through effective acquisition, deployment, and leverage of the IT investments

and capabilities to pursue competitive advantage in the logistics (Evangelista et al., 2012). Considering this information, it has been hypothesized that

H3a: IT valence has a positive impact on competitive advantage.

### Information technology managerial commitment

Organizations operate in an intensely competitive business landscape, and this has made the companies shift their attention from traditional operations to IT-supported operations (Rahman, 2006). Without the managerial commitment, a logistics SME may work on the integration of IT within the operations, but this may result in challenges in the form of resource allocation, followed by other challenges with respect to the personnel and technical expertise (Weeks, 2011; Kumar et al., 2016); hence, creating an environment of conflicts that may put the logistics operations in vulnerable position. Considering this very aspect, it has been hypothesized that

H4a: IT managerial commitment has a positive impact on competitive advantage.

include IT resource commitment, IT competency, IT valence, and IT managerial commitment with respect to competitive advantage. This framework is shown in Figure 1.

## Hypothesis development

The information presented within the previous sections has led to the development of the following hypotheses:

H1a: IT resources commitment has a positive impact on competitive advantages.

H2a: IT competency has a positive impact on competitive advantage.

H3a: IT valence has a positive impact on competitive advantage.

H4a: IT managerial commitment has a positive impact on competitive advantage.

## Research framework

The study framework being worked upon is related to the influence of IT on the competitive advantage of logistics SMEs. As guided by the literature, the variables being investigated

## Research methodology

This section has described and explained the materials being used in this study, followed by the methodology being used in it. The section has been developed in accordance

TABLE 1 Years of operations.

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Less than 5 years	35	18.7	18.7	18.7
	5–10 years	75	23.4	23.4	42.1
	11–20 years	90	22.0	22.0	64.0
	21–50 years	90	19.6	19.6	83.6
	More than 50 years	50	16.4	16.4	100.0
	Total	340	100.0	100.0	

TABLE 2 Number of employees.

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Less than 100	15	15.0	15.0	15.0
	100–250	65	19.6	19.6	34.6
	251–500	80	26.6	26.6	61.2
	501–1000	110	22.4	22.4	83.6
	More than 1,000	70	16.4	16.4	100.0
	Total	340	100.0	100.0	

with the research questions and entails information related to design and procedures adopted. For this section, [Saunders et al.'s \(2009\)](#) Research Onion framework has been used. [Saunders et al. \(2009\)](#) have specifically argued about the fitness of the research strategies and which strategy and design to select given the specific purpose. Considering this, the following subsections have highlighted the methodological approaches that have been selected with their justification. This study has selected a quantitative method because of the intended purpose, which is only achievable through a quantitative method. The approach depicts the flow of information in research, where a deductive approach initiates from general information to specific knowledge, whereas an inductive approach focuses more on observations and flows in the opposite direction. Considering this, a deductive approach has been used in this study since there is a plethora of studies on IT and the ways in which it can increase the competitive advantage of SMEs. By using this information, the study intends to move forward with the logistics SMEs in Pakistan while reflecting on the CPEC and Gwadar port, making this study and findings valuable for the academia and the logistics SMEs in Pakistan. Since this is a quantitative research, the survey method has been selected over other available methods. The purpose of doing so was to ensure that the data were collected from the right participants (logistics companies) at the right time and place, avoiding any misrepresentation of the data. By understanding the difference, it has been decided to move forward with the study through an explanatory approach since its application can help the researchers to learn more about the impact of IT on the competitive advantage of logistics SMEs operating in Pakistan. In addition, it has also been decided to support the approach through deductive reasoning, which means that the study and its findings would move from general to specific information. This can help the researcher to be more direct toward the topic under investigation, instead of approaching it without knowing the outcome.

There are 1,130 logistics SMEs operating in Pakistan. This number of listed logistics SMEs operating in Karachi was available in the [Pakistan International Freight Forwarders Association \(2007\)](#). By using the information available on the website, first-hand data from these companies has been collected to address the research question and to accept or reject the hypothesis. The sampling technique being used to collect the data from the logistics SMEs is convenience sampling, where the researcher intends to distribute the questionnaire to the different logistics SMEs operating in Karachi, Pakistan. The researcher will collect data as per convenience, which includes willingness and accessibility. This means that unwilling participants might not be distributed the questionnaire to avoid inconvenience, hence making it more feasible for the researcher. The

sample size of this research is 340 companies, which is in accordance with the [Krejcie and Morgan's \(1970\)](#) sample size table. Since there are 1,130 logistics SMEs in Karachi listed on the PIFFA website, the data are to be collected from 340 SMEs to achieve the desired outcomes.

## Results and findings

### Demographics description

The first general question asked by the logistics SMEs operating in Karachi was related to the years of operations in the field (refer to [Table 1](#)). This led to an understanding that 50 logistics SMEs had 5–10 years of experience in the field, but 40 of the other logistics SMEs had less than 5 years of total experience. In addition, 47 of the logistics firms had 11–20 years of experience, 42 firms had 21–50 years of experience, and 35 logistics SMEs had more than 50 years of experience.

### Number of employees

The next general question asked by the logistics SMEs was related to the total number of employees (refer to [Table 2](#)), and it was interesting to find that 42 SMEs had 100–250 employees, 48 SMEs stated that their employee count is between 501 and 1,000, and 35 SMEs stated that their employee count is greater than 1,000. It is also worth mentioning that greater the number of employees, the greater the likelihood of profitability and performance, since companies might not hire more employees, if their performance and productivity are not high.

### Data cleaning

For this study, the data have been collected from the website of the [Pakistan International Freight Forwarders Association \(2007\)](#), which had all the information related to the logistics SMEs operating in Karachi. In total 300 SMEs, 245 questionnaires was received, after manual screening of 245 questionnaires, 218 usable questionnaires were selected for final

TABLE 3 Reliability statistics.

Variable	No. of dimensions	Alpha value
IT valence	4	0.8220
Resource effects	5	0.9110
Managerial effort	6	0.6880
IT competency	4	0.7250
Competitive advantages	8	0.6900

TABLE 4 Regression analysis—model summary.

Model summary				
Model	R	R square	Adjusted R square	Std. error
1	0.478	0.3921	0.3777	0.5892

Predictor: (Constant), ITC, ITV, ME, RE.

analysis since the sample size of this study as per Morgan table is 214.

## Validity

Once the questionnaire was finalized, it was reviewed by the industry and academic experts, who highlighted some issues within the questionnaire. Based on their review and feedback, the questionnaire was revised.

## Reliability

A Cronbach's alpha test was conducted on the questionnaire to see whether the findings from the instrument were reliable or not. The findings for the entire questionnaire are represented in Table 3. The alpha value for the 18-item questionnaire was more than 0.6 for every variable, which means that the questionnaire and the data collected through it are reliable and internally consistent. This was because of the reliability score of more than 60%.

## Hypothesis testing

### Relationship between independent and dependent variables

This section of the study has specifically focused on testing the hypothesis, but before doing so, it is important to

highlight some general information that was collected through the questionnaire.

### Impact of independent variables on dependent variable

Regression analysis was conducted in this study to identify whether the IT-related variables had an impact on the competitive advantage of the logistics SMEs or not. Considering this particular purpose, this statistical test was conducted, and it helped in either accepting or rejecting the hypotheses. Table 4 highlights the key findings related to the ability of the predictors to explain the extent of variation in the dependent variable of competitive advantage. Given the fact that R-Square value is 0.452, it can be argued that the predictors can only explain 45.2% variation in the competitive advantage of logistics SMEs. This suggests that apart from information technology, there are several other factors that can influence the competitive advantage of logistics SMEs, which the study has not taken into account because of its exclusive focus on IT.

### Information technology valence and competitive advantage

The first results were related to IT valence, which was tested for its impact on the CA of logistics SMEs. The Sig. value of the ITV was 0.002, which was less than 0.05; hence the null hypothesis has been rejected and the alternate hypothesis has been accepted, which means that IT valence has a significantly positive impact on the competitive advantage of logistics SMEs. Another important aspect that must be looked into is the beta value, which was 0.120 for this variable, and this identified that any change in the IT valence by the logistics SMEs could result in a 12% change in their competitive advantage.

### Information technology competency and competitive advantage

The results related to IT competency, which was tested for its impact on the CA of logistics SMEs. The Sig. value of the ITC was 0.019, which was less than 0.05; hence the null hypothesis has been rejected and the alternate hypothesis has been accepted,

TABLE 5 Regression test results.

Model	Coefficients				
	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. error	Beta		
(Constant)	2.89	0.198	0.162	12.95	0.000
ITV	0.14	0.08	0.198	2.65	0.000
RE	0.22	0.07	0.222	2.98	0.000
ME	0.11	0.09	0.123	3.32	0.000
ITC	0.16	0.03	0.251	2.23	0.000

Dependent Variable: CA.

TABLE 6 Hypothesis assessment summary.

Hypothesis	Sig. value	T	Accepted or rejected
H1a: IT resources commitment has positive impact on competitive advantage	0.000	2.65	Accepted
H2a: IT competency has positive impact on competitive advantage	0.000	2.98	Accepted
H3a: IT valence has positive impact on competitive advantage	0.000	3.32	Accepted
H4a: IT managerial commitment has positive impact on competitive advantage	0.000	2.23	Accepted

which means that IT competency has a significantly positive impact on the competitive advantage of logistics SMEs. The beta value was 0.085 for this variable, and this helped to understand that any change in the IT competency by the logistics SMEs could result in a 8.5% change in their competitive advantage.

### Information technology resource commitment and competitive advantage

The results related to IT resource commitment, which was tested for its impact on the CA of logistics SMEs. The Sig. value of the ITC was 0.000, which was less than 0.05; hence the null hypothesis has been rejected and the alternate hypothesis has been accepted, which means that IT resource commitment has a significantly positive impact on the competitive advantage of logistics SMEs. Another important aspect that must be looked into is the beta value, which was 0.197 for this variable, and this identified that any change in the IT resource commitment by the logistics SMEs could result in a 19.7% change in their competitive advantage.

### Information technology managerial commitment and competitive advantage

The results related to IT managerial commitment, which was tested for its impact on the CA of logistics SMEs. The Sig. value of the ME was 0.027, which was less than 0.05; hence the null hypothesis has been rejected and the alternate hypothesis has been accepted, which means that IT managerial commitment has a significantly positive impact on the competitive advantage of logistics SMEs. Another important aspect that must be looked into is the beta value, which was 0.099 for this variable, and this identified that any change in the IT managerial commitment by the logistics SMEs could result in a 9.9% change in their competitive advantage.

## Conclusion, discussion, implications, limitation, and recommendations

### Discussion

When IT resource commitment was tested for its impact on competitive advantage, it was found that it had a significant impact, which is similar to the studies conducted previously.

For instance, [Lai et al. \(2006\)](#) and [Huang et al. \(2012\)](#) argued that resource commitment increases logistics SMEs productivity and performance, whereas [Gunasekaran et al. \(2017\)](#) reflected that resource commitment is a unique factor that competitors cannot easily imitate. Hence, it further enhances the possibility of improved competitive advantage because of infrastructure, technological configuration, and synergies in the logistics SMEs. When IT competency was tested for its impact on competitive advantage, it was found that it had a significant impact, which is similar to the studies conducted previously. For instance, [Pérez-López and Alegre \(2012\)](#) argued that IT integration because of greater competency can significantly improve the logistical effectiveness, efficiency, flexibility, and even the productivity and service quality of the SMEs. This can be further confirmed through the study offering empirical evidence of IT being fairly predictive of logistics competency, whereas studies have also reflected that when logistics SME has IT competency, it directly influences the ways in which it performs its operations and functions, which eventually results in improved logistical efficacy ([Daud, 2011](#); [Prajogo and Olhager, 2012](#); [Brohi et al., 2018](#); [Qureshi et al., 2018](#); [Khaskheli et al., 2021](#)).

When IT valence was tested for its impact on competitive advantage, it was found that it had a significant impact, which is similar to the studies conducted previously. This can be confirmed through earlier conducted studies, which suggested that valence and its underlying beliefs offer guidance to the managers and the internal stakeholders about the risks and opportunities associated with the application of information technology. When the managers are informed about the beliefs and the opportunities that may be available for the SMEs, it can influence them to develop specific behavior toward IT integration within the company ([Oliveira and Martins, 2011](#); [Khaskheli et al., 2021](#)). In specific reference to the literature related to logistics, it has been shown that these beliefs encourage the integration of IT within the logistics functions, where the purpose remains on the improvement of logistics and value chain activities that may result in improved practices and processes, followed by improved performance and productivity ([Bock et al., 2005](#)). When IT valence was tested for its impact on competitive advantage, it was found that it had a significant impact, which is similar to the studies conducted previously. This can be confirmed through earlier conducted studies, which suggested the critical importance of managerial commitment to work toward the development and enhancement of sustainable



competitive advantage. Without the managerial commitment, a logistics SMEs may work on the integration of IT within the operations, but this may result in challenges in the form of resource allocation, followed by other challenges with respect to the personnel and technical expertise (Weeks, 2011; Kumar et al., 2016).

## Contribution

The study has contributed to the literature by adding sufficient and relevant information related to IT and its impact on competitive advantage of logistics SMEs. Since there is no particular knowledge and information related to the Karachi-based logistics SMEs, this study and its findings have filled the void in the literature. Managers employed in different logistics SMEs in Karachi and all over Pakistan can take advantage of this study and its findings, since they can enhance their knowledge related to IT and the ways in which it can improve organizational performance and competitive advantage. The findings from this research can change the ways in which the logistics SMEs have been operating for several years; for instance, the findings can help logistics SMEs to comprehend IT as a necessity instead of being an option for these SMEs and their operations. This can bring a radical change in managerial commitment and behavior and would ensure that IT is integrated within all operations to enhance the likelihood of achieving and improving competitive advantage.

## Recommendation

The key recommendations to further add value and to bring improvement in competitive advantage are as follows. Logistics SMEs are being recommended to understand the value and significance of IT integration and the ways in which this can help in bringing improvement in performance and productivity, hence leading to an overall improvement in competitive advantage. Even when IT resource commitment had a low significant impact on competitive advantage compared to other variables, it is being recommended that this factor should not be underestimated since it can serve as a platform through which managers can change their opinions and beliefs

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about information technology and can help in learning about the opportunities and benefits that IT can offer in the future.

## Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

## Author contributions

DL: conceived idea and introduction. MS: introduction and literature review. MQ: research methodology. MA: data collection. FM: data analysis. HK: results and discussion. JM: supervision, proofread, and addressed remarks of the reviewers. All authors contributed to the article and approved the submitted version.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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