Determining the role of influential factors on logistics outsourcing performance with mediating role of logistics outsourcing practices in Pakistan's Textile Sector

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Abstract

This research aims to analyze the effect of organizational capability, technological integration, and transaction uncertainty on logistics outsourcing performance in the textile manufacturing sector of Pakistan. A structured questionnaire was administered to 139 supply chain, logistics, procurement, and operations managers in Faisalabad, the hub of the textile sector, to collect data. SmartPLS 3.0 and SPSS 27 version was used for data analysis in this study. And Structural Equation Modeling (SEM) was applied to analyze direct and indirect relationships among key constructs, with logistics outsourcing practices examined as a mediating variable. The results indicate that organizational capability and technological integration positively and significantly affect logistics outsourcing performance. In contrast, the significant effect of transaction uncertainty on logistics outsourcing performance reflects the risks inherent in conditions of unpredictable supply and demand. Additionally, logistics outsourcing practices are found to mediate all three relationships indicating that operational mechanisms are essential for strategic assets and environmental factors into performance outcomes.

The findings support Resource-Based View and Transaction Cost Theory by proving that internal resources and external environmental uncertainties intervene with the outsourcing outcomes via operational execution. It has practical implications for logistics managers in terms of formalizing processes, investing in technology that is aligned with operations, and managing uncertainties through disciplined logistics practices. It also highlights the importance of long-term relationships with logistics service providers. While the study offers many insights, the limitations relate to the cross-sectional nature and focus of the industry. Future research needs to focus on longitudinal design, cross-sectional studies, and other moderating and mediating variables. Overall, the study provides a novel contribution to the literature on logistics outsourcing by tying the strategic intent with operational performance, especially in the context of a developing country.

Keywords: *Influential factors, logistics outsourcing practices, logistics outsourcing performance*

1. Introduction

Globally, businesses are now increasingly moving toward outsourcing operations through the process of focusing on core competencies while outsourcing the non-core functions to specialized partners in an ever-changing global business environment (Amoozegar et al., 2025). One such critical function that has undergone this transformation is that of logistics. Logistics outsourcing, mainly third-party logistics outsourcing, represents a powerful alternative through which companies can make their operations less complex, improve their service delivery, and enhance their financial performance (Khan et al., 2022; Vasiliauskas & Jakubauskas, 2007). With customer's satisfaction gaining precedence, cost-effective to access, and speedier delivery gains its strength in today's fully integrated supply chains, logistics outsourcing has turned into a strategic decision-making option for many manufacturing sectors as logistics is so cost-intensive and performance-sensitive.

Statistics indicates that almost every firm is abandoning self-managed logistics and shifting to outsourced solutions. Estimates indicate that nearly 40% of logistics operations across the world are outsourced to third-party logistics (Min, 2013). Numerous reasons are put forward for outsourcing: from reducing costs, enhancing efficiency, and admission to modern technologies to specialist expertise. The high economy countries have benefited the most from such outsourcing models by integrating logistics partners into their value chains such that agility, scalability, and resilience came at a lower cost (Badwan, 2025). In such environments, logistics outsourcing is not merely viewed as a cost-cutting tactic but becomes a strategic initiative directly linked to business performance and a competitive advantage.

However, this international trend has not been uniformly replicated within developing countries. For instance, in Pakistan, logistics outsourcing is still underdeveloped because of many organizational, technological, and institutional barriers (Shaiq & Hassan, 2019). In fact, the textile industry in Pakistan which constitutes over 8.5% of the GDP and is responsible for almost 60% of total exports from Pakistan has a very low logistics outsourcing adoption (Mehar, 2022). Most of the organizations still rely largely upon in-house logistics or out-of-date logistics under principles of 1PL and 2PL, which really constrains their productivity and makes international market expansion difficult. Things get worse due to the lack of technology, poor organizational

capabilities, and heightened uncertainty in transactions, all of which are performance damaging factors of outsourcing (Zhang et al., 2018).

The logistics needs of the textile sector are quite different and complex. Ranging from raw material procurement to inventory management to the movement of semi-finished and finished products, to packaging and warehousing, and then to export, these logistics also entail timely delivery. A breakdown anywhere in this entire flow of logistics activities will cause an interruption in the movement of goods and affect profit margins. The sector is much dependent on these logistics, but it could not adopt a holistic process of outsourcing because of the absence of structural and technological supportive organizational framework.

Internal deficiencies only add to the institutional pressures from the outside. Regulatory inefficiency, policy inconsistency, customs delays, and bottlenecks in infrastructure lead to a significant institutional burden on outsourcing (Oluwaferanmi, 2025). Lacking an external environment that encourages outsourcing with multiple actors and unpredictable rules, firms are generally not interested in such outsourcing arrangements. Firms face a higher degree of transaction uncertainty, which leads to a diminishingly perceived advantage of outsourcing (Hasanah, 2024). Consequently, most textile firms prefer to deny outsourcing, if necessary, at the cost of efficiency and global competitiveness, and keep a holdover on logistics operation management.

Indeed, the center behind the success of logistics outsourcing is that the company activates one of its powerful internal levers, namely organizational capabilities, technological integration, and transaction uncertainty management. Internal strength of firms, which involves strategic planning, resource management, operational know-how, and human capital, enables them to identify, adopt, and implement outsourcing strategies into the firm (Al-Qudah et al., 2020; Nolan & Garavan, 2019). Finally, firms possessing strong capabilities can establish efficient connections with 3PL providers, manage activities, and ascertain performance outcomes.

Technological integration is equally crucial. The integration of information systems, real-time tracking platforms, warehouse management systems, and automated inventory tools allows for greater visibility, control, and responsiveness across the supply chain (Tarannum & Hossain,

2024). For instance, in technologically advanced firms, the integration between in-house and outsourced logistics functions is seamless, which leads to extraordinarily higher levels of logistics performance. In Pakistan, the meager investment in logistics technology has made it difficult for the textile industry to take part in and benefit significantly through outsourcing partnerships.

In addition, transaction uncertainty the essential concept of Transaction Cost Theory (TCT) constitutes unpredictability in logistics-related contracts, cost structures, and supplier reliability (Yin et al., 2025). This form of uncertainty presents an obstacle to outsourcing by increasing perceived risks and lowering trust in external partners. Therefore, firms disputing whether or not to outsource will question the agency's capacity to perform well, fearing service failures, legal disputes, or hidden costs; an inability to manage transaction uncertainties thus inhibits outsourcing. And the management of uncertainty becomes one of the critical premises on which outsourcing decisions rest.

Even with the strategic merits that logistics outsourcing has, several Pakistani manufacturing firms, particularly in the textile industry, continue to carry out logistics operations in-house or at best minimal 2PL arrangements. This is attributed to weak organizational capacities, limited technological adoption, and the high transaction uncertainty, like supplier risk, demand volatility, and unclear cost structures. These have also weakened or underdeveloped logistics outsourcing practices, such as transportation coordination, inventory management, and packaging. The performance gap in logistics outsourcing is significantly created because of these conditions. Although numerous studies have been conducted globally in isolation, such misjudged factors affecting the success of outsourcing indeed, very limited empirical evidence exists about how different influential factors affect performance working jointly, especially in Pakistan's textile sector. Consequently, the mediating role of logistics outsourcing practices in converting internal capabilities and external risks into performance outcomes remains unresolved in this context.

1.1 Research objectives

1. To reflect on the impact of organizational capabilities on logistics outsourcing performance in the textile sector in Pakistan.

2. To assess the effect of utilizing technological integration in logistics outsourcing performance.

3. To measure the effect of transaction uncertainty on logistics outsourcing performance.

4. To investigate how logistics outsourcing practices mediate the relationship among organizational capabilities, technological integration, transaction uncertainties, and logistics outsourcing performance.

1.2 Research Questions

1. How do organizational capabilities impact logistics outsourcing performance in Pakistan's textile sector?

2. What is the influence of technological integration on logistics outsourcing performance?

3. How does transaction uncertainty affect logistics outsourcing performance?

4. Do logistics outsourcing practices mediate the relationships between:

a) Organizational capabilities and logistics outsourcing performance?

b) Technological integration and logistics outsourcing performance?

c) Transaction uncertainty and logistics outsourcing performance?

2. Theoretical Foundations

This research is mainly based on two forms of theoretical lenses: Resource-Based View (RBV) and Transaction Costs Theory (TCT). The core argument of RBV is that sustainable competitive advantage accrues to a firm when it strategically deploys its valuable, rare, inimitable, and non-substitutable internal resources and capabilities (Barney, 1991). In the application of logistics outsourcing, this idea seems to imply that there is an internal dimension, such as the characteristics of organizational capabilities and technological integration of a firm, which would enhance outsourcing performance. On the other hand, the TCT views obscurity around economic exchange costs minimizing in an uncertain environment; therefore, it points out that high transaction uncertainty may deter outsourcing due to imposing costs on monitoring, enforcing, and adapting contracts (Afrifa, 2021). This theory applies to developing economies such as Pakistan, where market volatility and weak institutional infrastructure pose greater risks to transactions. Whereas RBV indicates an avenue for firms to utilize their internal strengths in managing outside uncertainties, TCT elaborates how logistics outsourcing practices act as a mediation mechanism for linking strategic intent and operational performance.

2.1 Logistics Outsourcing Performance

Logistics outsourcing is defined as the strategic use of external service providers to perform activities that were previously performed in-house, including transportation, warehousing, packaging, and inventory (Hsiao et al., 2010). Given the growing complexity of supply chains, organizations have relied on their own resources while engaging third-party logistics (3PL) providers to offer them new avenues toward enhancing their efficiency, responsiveness, and flexibility. Therefore, LOP is frequently implied in terms of various measures of cost efficiency, service quality, reliability, lead-time reduction, and customer satisfaction (Abbasi et al., 2024).

While the advantages of outsourcing logistics activities have received great attention, such benefits depend on a number of internal and external factors (Thai et al., 2022). Some firms attain the same level of success, especially in an emerging economy where the logistics infrastructure, institutional framework, and technological maturity may not be at an acceptable level.

2.2 Organizational Capabilities and Logistics Outsourcing Performance

Organizational capabilities stand for the potential of a firm to deploy, integrate, and reconfigure internal resources so that they can achieve strategic goals (Amalia et al., 2024). These capabilities are critical in logistics outsourcing contexts, in which effective planning, inter-departmental coordination, process standardization, and supplier relationship management can be considered important for success. Strong organizational capabilities of lesser scope allow firms to define the scope of outsourcing arrangements so that service contractors are aligned with internal strategies and thereafter performance metrics for such service contractors will be monitored for contractual compliance evaluation (Cullen et al., 2005).

The previous research reveal that firms endowed with better organizational capabilities manage logistics outsourcing more efficiently and derive strategic benefits from these arrangements. Moreover, organizational capabilities enable firms to anticipate risks and manage resources adeptly while also responding quickly to disruptions (Parker & Ameen, 2018). However, companies in the textile sector of Pakistan continue to lag behind, many of which are limited in their managerial skills, lack formalized logistics planning, and have technically poor internal coordination factors which minimize their advantages from outsourcing (Malik, 2024).

Arguably, with the development of internal capabilities in outsourcing, organizations that build such capabilities, particularly on such dimensions as supply chain visibility, integration of information systems, and agility in decision-making will have a better chance of achieving successful outcomes from their logistics outsourcing relationships.

Thus, it is hypothesized that the organizational capabilities practice would be significant in explaining logistics outsourcing performance along with best managerial and relational practices.

H: 1 There is a significant effect of organizational capabilities on logistics outsourcing performance.

2.3Technological Integration and Logistics Outsourcing Performance

Technological integration in logistics outsourcing refers to the degree to which a firm uses and integrates its own digital platforms (Hofmann & Osterwalder, 2017). For example, Enterprise

Resource Planning (EPR), Warehouse Management Systems (WMS), and Transportation Management Systems (TMS) with their logistics operations. This technology enables real-time communication, visibility of the inventory, and accurate tracking of goods and is extremely important for outsourced logistics services. At the same time, these technologies, when integrated correctly, are used by companies to keep logistics services reliable and to minimize delays in operations (Amadin, 2025; Omoegun et al., 2024).

From the RBV perspective, technology is a potential source of competitive advantage if valuable, rare, inimitable, and organizationally embedded (Barney, 1991). In the process of outsourcing, such technology integration will empower firms to coordinate with third-party logistics providers seamlessly and monitor service level agreements and consistency across their end-to-end process (Sunmola, 2025). Technology also enables the exchange of real-time information between firms and logistics partners, leading to improved transparency and accountability.

Heaps of barriers, development in emerging economies like Pakistan face all the textile firms facing some technological issues caused by poor finances, insufficient skilled workforce, and bad infrastructure (Khan & Ahmad, 2018). There are a few barriers that lateral the installation of complete technology and restrict them from experiencing the logistic outsourcing benefits (Waqas et al., 2020). Business with strategic investments in digital tools and built linkages with logistics partners will always outperform the manual or disconnected systems firms.

Thus, it is hypothesized that the technological integration practice would therefore be significant in explaining logistics outsourcing performance along with best managerial and relational practices.

H2: Technological integration has positive and significant influence on logistics outsource performance.

2.4 Transaction Uncertainty and Logistics Outsourcing Performance

Transaction uncertainty refers to the unpredictability and variability in the outsourcing of such transactions, which arise from vague contract terms, uncertain customer demand, changing regulations, and fluctuating supplier performance (Yang et al., 2016). Such uncertainties can lead to difficulties like delayed shipments, stocks being finished, and disappointing customers, and they adversely influence the level of performance of the outsourcing relationship. The theory of transaction costs states that firms prefer internalizing some operations or strengthening control mechanisms the higher the uncertainty they are faced with, which tends to increase operational costs (Casson, 2013; Hennart, 2010).

The turbulent environment is a common problem for the textile industry in Pakistan. Fluctuating fuel prices, policy changes for the production and export of textiles, labor strikes, bad port operation, and so on can easily disturb logistics flows and reduce outsourcing outcomes (Alvi & Shahid, 2018). These odds prevent firms from completely applying outsourcing, or they encourage them to keep unnecessary parallel systems to cushion them against service failure, which dilutes the cost-saving motive behind outsourcing.

Whereas some companies indulge in stronger contract governance over uncertainty, others completely rely on 'trust' constraining relationships and relational level management with service providers to quell unpredictable situations. In many instances, transaction uncertainty complicates logistics outsourcing arrangements, and most of the times, it tends to deteriorate performance (Alvi & Shahid, 2018).

Thus, this work posits that transaction uncertainty has a negative influence on logistics outsourcing performance, especially when the lack of institutional stability and enforcement mechanisms is present in an environment.

H3: Transaction uncertainty has a significant effect on logistics outsourcing performance.

2.5 Logistics Outsourcing Practices as a Mediating Factor

Logistics outsourcing practices refer to the day-to-day activities performed by the outsourcing firms and third-party providers in transportation coordination, inventory management,

warehousing, and packaging (Muathe, 2017). These practices work on the operationalization of the outsourcing strategy and translate internal resources and decisions into real-life performance outcomes. Therefore, the low quality, lack of standardization, and lack of adaptability of these practices are prime factors determining the success of logistics outsourcing arrangements.

Companies may have sufficient internal capabilities or advanced technologies, but without efficient, systematic, and well-monitored outsourcing practices, the effects of such resources on logistics performances will be almost negligible. This has been emphasized that operational alignment and jointly lay out protocols between firms and logistics providers are critical for realizing strategic assets into tangible service outcomes (Huge-Brodin et al., 2020; Kalubanga & Namagembe, 2022). Similarly, consistent logistics practices help mitigate risks by rendering predictability, transparency, and continuity in operations in high-uncertainty situations.

Previous studies affirm the impression that strategic drivers such as organizational capabilities and technological integration influence performance through their effect on operational processes (Francalanci & Morabito, 2008; Rosenzweig et al., 2003; Schwarz et al., 2010). Therefore, comprehending the mediation role of logistics outsourcing practices gives a deeper and richer account of the interplay between performance-driving factors in the internal and external domain.

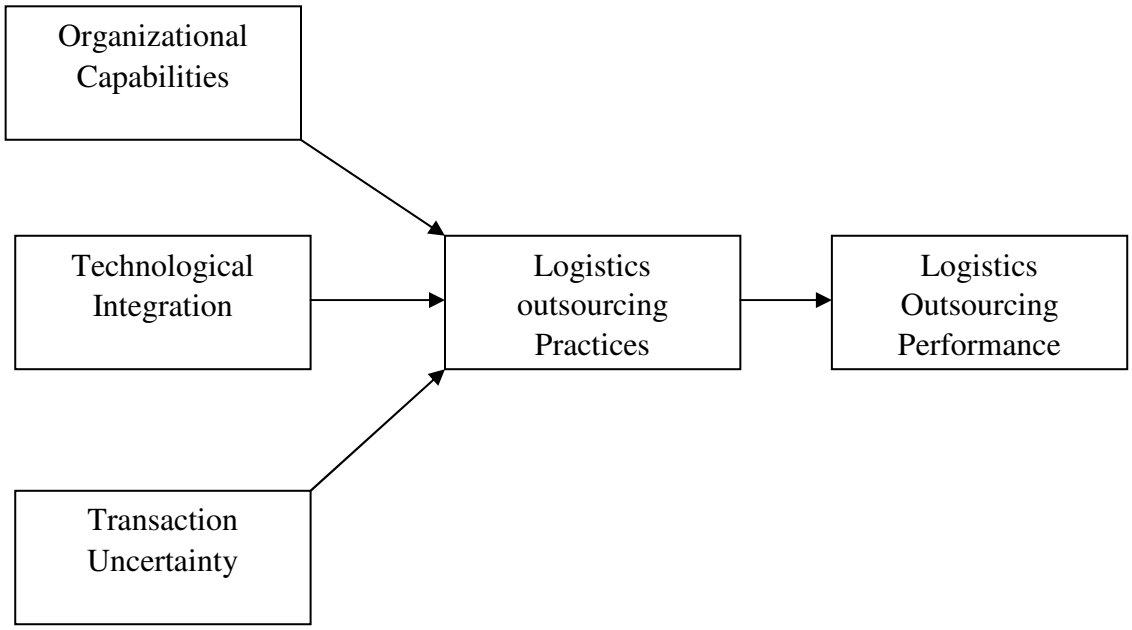
This study, therefore, proposes logistics outsourcing practices as a significant mediating variable that allows organizational capabilities, technological integration, and transaction uncertainty to act on logistics performance.

H4: The logistics outsourcing practices mediate the relationship between organizational capabilities and logistics outsourcing performance.

H5: The logistics outsourcing practices mediate the relationship between technological integrations and logistics outsourcing performance.

H6: The logistics outsourcing practices mediate the relationship between transaction uncertainty and logistics outsourcing performance.

Figure 2.1 Conceptual Framework



3. Methodology

This research used data collection through the distribution of structured self-administered questionnaires which were given to persons working as logistics, operations, procurement, and supply chain managers in textile manufacturing firms located in Faisalabad, Pakistan, where this city was chosen simply because of the amount of production of textiles in the country and the hub of firms with sophisticated supply chain and logistics operations.

These five main constructs were used in the questionnaire: organizational capability, technological integration, transaction uncertainty, logistics outsourcing practices, and logistics outsourcing performance. Out of the total questionnaires distributed amounts to 150, 139 valid and complete responses were received, resulting in a high response rate of 92.7%, which is considered excellent for quantitative research and suitable for structural equation modeling.

A few weeks were spent in collecting data through both face-to-face delivery and email delivery depending on the availability of the respondent. A five-item Likert scale capturing the range of agreement from 1 ("Strongly Disagree") to 5 ("Strongly Agree") was used for measuring agreement with each item.

3.1 Measurement Instruments

Defined and validated measurement scales were adapted to develop the questionnaire to be applied in the context of Pakistan's textile sector. Organizational capabilities include the important capabilities of strategic planning, coordination, and flexibility which allow firms to respond instantaneously to changing market conditions (7 items were adapted) (Barney, 1991; Grant, 1991). Technological integration refers to the adoption of digital platforms and integrated systems to improve operational efficiency and responsiveness (8 items were adapted) (Gunasekaran & Ngai, 2004; Sanders & Premus, 2005). Transaction uncertainty is faced whenever a supplier is unreliable and prices and demand are unstable, as any of these three factors may disrupt the normal operations of an organization (8 items were adapted) (Heide & John, 1990; Williamson, 2008). Logistics outsourcing practices refer to the delegation of warehousing, transportation, inventory management, and packaging services to third-party providers to improve performance and focus on core activities (7 items were adapted) (Solakivi et al., 2011; Zhu et al., 2017). Logistics outsourcing Performance is assessed based on outcomes

such as timely delivery, cost savings, quality of service, and customer satisfaction (7 items were adapted) (Gligor & Holcomb, 2012).

3.2 Sampling Technique

This study adopted a non-probability purposive sampling technique to choose a participant who has relevant expertise about logistics outsourcing (Ngidi, 2017). The research population is made up of logistics, operations, procurement, and supply chain managers in the textile manufacturing firms located in Faisalabad, Pakistan. It was specifically chosen since it is the center of the most country's textile industry and has most medium to large companies engaged in very complex operations. Purposive sampling was chosen in order to ensure that only those who made decisions on logistics were included and so give very pertinent and accurate information for the collection of data.

4. Results

4.1 Demographics of Respondents

This section shows the demographic details concerning the respondents participating in the study. The unit of analysis comprised employees in the logistics and supply chain departments of textile firms in Pakistan. Through structured questionnaires, 139 valid responses were collected.

Of the 139 respondents, 78% were male, while 22% were female. Age-wise distribution showed that 21-30 years constituted 33%; 31-40 years comprised 42%, while 25% was 41-50 years old. Most participants worked at the mid managerial level and were linked to logistics, procurement, or operations.

These demographics reflect that there is equal representation at various levels of experience amongst logistics professionals thus allowing insights into how organizational capabilities, technology integration, and transaction uncertainty affect logistics outsourcing performance in the textile sector.

Table 1: Demographic Profile of Respondents

Variable	Category	Percentage	Frequency
Gender	Male	78%	108
	Female	22%	31
Age Group	21–30 years	33%	46
	31–40 years	42%	58
	41–50 years	25%	35

4.2 Multicollinearity Diagnosis

To rule out multicollinearity of regression modeling, all independent variables were subjected to Variance Inflation Factor (VIF) determinations. As per Hair et al., (2019), independent VIF values should stand below 10 not to face complications of multicollinearity problems.

The analysis implies that all VIF values were within the acceptable limits of 1.6-2.5, reflecting no significant concerns regarding multicollinearity among these variables. This set of results

supports the reliability of the structural model and reaffirms significant differences between the independent constructs-organizational capabilities, technological integration, and transaction uncertainty.

Table 2: Multicollinearity Diagnosis

Construct	VIF Values
Organizational Capabilities	1.6
Technological Integration	1.9
Transaction Uncertainty	2.5

4.3 Measurement Model Results

Table 3 contains the loading, composite reliability (CR), average variance extracted (AVE), maximum shared variance (MSV), and average shared variance (ASV) for the core constructs studied: organizational capabilities, technological integration, transaction uncertainty, logistics outsourcing practices, and logistics outsourcing performance. All items exceeded the factor-loading threshold of 0.7, an indicator of excellent indicator reliability and confirmation that each item has adequately represented its relevant construct (Kim et al., 2016).

The resulting CR percentages were between 0.790 and 0.835. So, that part exceeds the minimum level it should meet set at 0.7, proving good internal consistency across measurement scales (Hair Jr et al., 2020). AVE values for every construct were more than 0.5; thus, confirming that convergent validity is given that every construct indicates reasonable amounts of variance in his indicators (Afthanorhan, 2013). The MSV and ASV values were also low across the constructs, providing further evidence for the discriminant validity of constructs, thus proving that they are empirically distinct (Sürücü & Maslakci, 2020).

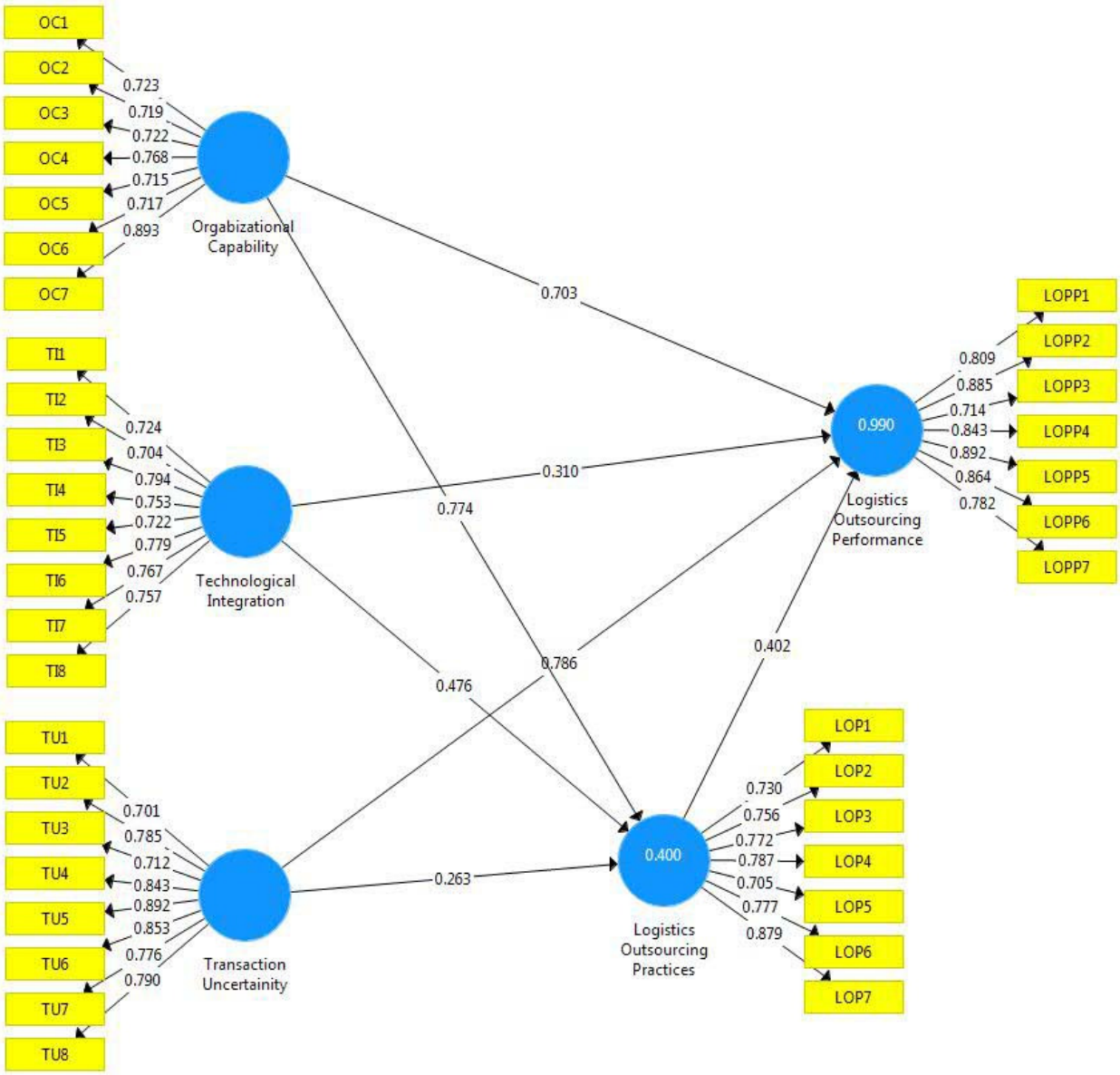
Table 3: Measurement Model Results

Variable	Items	Loading	CR	AVE	MSV	ASV
Organizational Capabilities	OC1	0.723	0.790	0.610	0.450	0.400
	OC2	0.719				
	OC3	0.722				
	OC4	0.768				
	OC5	0.715				
	OC6	0.717				
	OC7	0.893				
Technological Integration	TI1	0.724	0.815	0.590	0.430	0.395
	TI2	0.704				
	TI3	0.794				
	TI4	0.753				
	TI5	0.722				
	TI6	0.779				
	TI7	0.767				
	TI8	0.757				
Transaction Uncertainty	TU1	0.701	0.805	0.625	0.470	0.425
	TU2	0.785				
	TU3	0.712				
	TU4	0.843				
	TU5	0.892				
	TU6	0.853				
	TU7	0.776				
	TU8	0.790				
Logistics Outsourcing Practices	LOP1	0.730	0.835	0.640	0.460	0.410
	LOP2	0.756				
	LOP3	0.772				
	LOP4	0.787				
	LOP5	0.705				
	LOP6	0.777				
	LOP7	0.779				
Logistics Outsourcing Performance	LOPer1	0.809	0.830	0.635	0.475	0.430
	LOPer2	0.885				

Variable	Items	Loading	CR	AVE	MSV	ASV
	LOPer3	0.714				
	LOPer4	0.843				
	LOPer5	0.892				
	LOPer6	0.864				
	LOPer7	0.782				

Note: OC = Organizational Capabilities TI = Technological Integration TU = Transaction Uncertainty LOP = Logistics Outsourcing Practices LOPer = Logistics Outsourcing Performance

Figure 4.1 Measurement Model Results



4.4 Structural Model

Direct Relationships

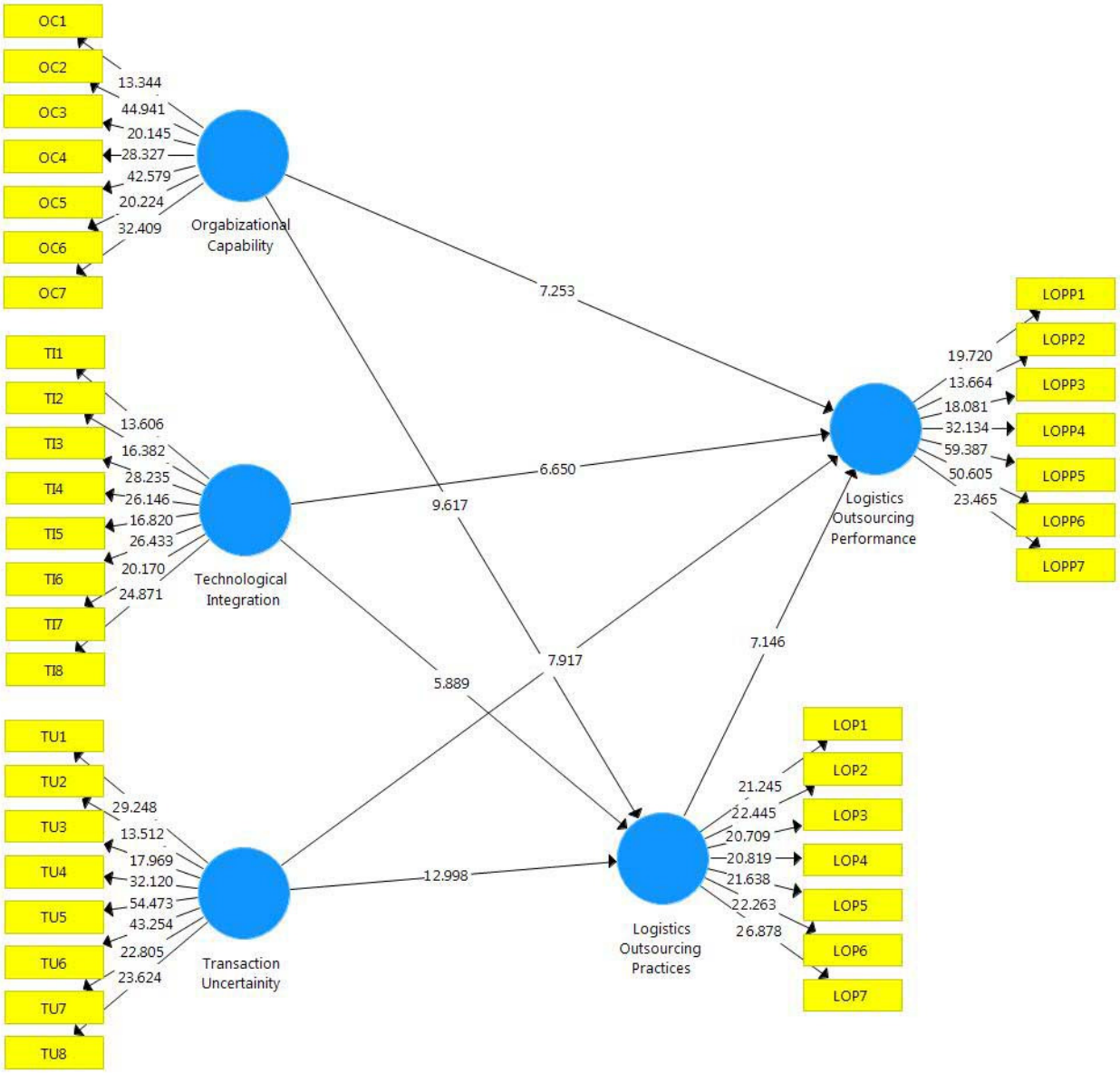
Table 3 shows direct path relationships between the central constructs of the study. All hypothesized paths were positively established and were statistically significant with t-values greater than the critical threshold of 1.96 and p-values less than 0.005. These results, confirmed the strength of the theoretical model and support the proposed hypotheses (Winship & Zhuo, 2020).

Findings reveal a significant direct impact of organizational capabilities, technological integration, and transaction uncertainty on logistics outsourcing performance. Also, it is important to state that logistics outsourcing practices affect logistics outsourcing performance positively and significantly. These findings make it evident that logistics outsourcing practices act as a mediator and strategic importance of organizational and environmental factors in influencing the outsourcing outcomes in Pakistan's textile industry.

Table 3 Direct Path Coefficients

Path	SE	T-Value	P-Value
Organizational Capabilities → Logistics Outsourcing Performance	0.024	7.253	0.000
Technological Integration → Logistics Outsourcing Performance	0.029	6.650	0.000
Transaction Uncertainty → Logistics Outsourcing Performance	0.031	7.917	0.000
Logistics Outsourcing Practices → Logistics Outsourcing Performance	0.027	7.146	0.000

Figure 4.2


OC1
OC2
OC3
OC4
OC5
OC6
OC7
13.344
44.941
20.145
28.327
42.579
20.224
32.409
Orgabizational Capability
TI1
TI2
TI3
TI4
TI5
TI6
TI7
TI8
13.606
16.382
28.235
26.146
16.820
26.433
20.170
24.871
Technological Integration
TU1
TU2
TU3
TU4
TU5
TU6
TU7
TU8
29.248
13.512
17.969
32.120
54.473
43.254
22.805
23.624
Transaction Uncertainity
7.253
6.650
9.617
5.889
7.917
7.146
12.998
Logistics Outsourcing Performance
LOPP1
LOPP2
LOPP3
LOPP4
LOPP5
LOPP6
LOPP7
19.720
13.664
18.081
32.134
59.387
50.605
23.465
Logistics Outsourcing Practices
LOP1
LOP2
LOP3
LOP4
LOP5
LOP6
LOP7
21.245
22.445
20.709
20.819
21.638
22.263
26.878

Mediation Analysis

Table 4 shows the mediation analysis results with the indirect effects of organizational capabilities, technological integration, and transaction uncertainty on logistics outsourcing performance through the mediation of logistics outsourcing practices. All of the indirect paths produced t-values greater than 1.96 with p-values that were less than 0.05, thus indicating that the paths were statistically significant (Winship & Zhuo, 2020).

Logistics outsourcing practices are important as a mediator in improving the outsourcing performance. This is evident from the results above, which establish that the effects of organizational capabilities and technological integration as well as transaction uncertainty upon logistics outsourcing performance are, indeed, effectively routed through well-implemented logistics outsourcing practices.

Table 4 Indirect (Mediating) Effects

Path	SE	T-Value	P-Value
Organizational Capabilities → LOP → Logistics Outsourcing Performance	0.018	12.472	0.000
Technological Integration → LOP → Logistics Outsourcing Performance	0.021	11.905	0.000
Transaction Uncertainty → LOP → Logistics Outsourcing Performance	0.025	10.188	0.000

Effect Size (f^2) and Predictive Relevance (Q^2)

The effect size (f^2) was considered to measure individual predictor variables on the endogenous constructs. According to Lubis et al., (2020), f^2 values of 0.02, 0.15, and 0.35 are defined as small, medium, and large effects, respectively. Effect sizes for the relationship between organizational capabilities, technological integration, and transaction uncertainty on logistics outsourcing practices were moderate to large. Transaction uncertainty had a high effect size (f^2 = 0.362), which showed an important impact on logistics outsourcing practices. Continuing, the result for organizational capabilities (f^2 = 0.226) and technological integration (f^2 = 0.248) had moderate impact effects.

Furthermore, the Q^2 (Stone-Geisser's) values were established to assess predictive accuracy of the model using the blindfolding procedure. If Q^2 values are greater than zero, it shows that the model has predictive relevance for a specific endogenous construct (F. Hair Jr et al., 2014). As seen in Table 6, the Q^2 values indicate that logistics outsourcing practices (Q^2 = 0.307) and logistics outsourcing performance (Q^2 = 0.402) have moderate to strong predictive relevance confirming the model efficacy in predicting textile sector-related outcomes concerning logistics outsourcing.

These results indicate that this model is robust in both statistical and practical terms to explain and predict logistics outsourcing performance.

Table 5: Effect Size (f^2)

Construct Relationship	f^2	Effect Size
Organizational Capabilities → Logistics Outsourcing Practices	0.226	Moderate
Technological Integration → Logistics Outsourcing Practices	0.248	Moderate
Transaction Uncertainty → Logistics Outsourcing Practices	0.362	Large

Table 6: Predictive Relevance (Q^2)

Endogenous Variable	Q^2	Predictive Relevance
Logistics Outsourcing Practices	0.307	Medium
Logistics Outsourcing Performance	0.402	Large

5. Discussion

The chapter discusses the main findings of the study in the light of the research questions and objectives. The study aimed at understanding how organizational capabilities, technological integration, and transaction uncertainty influenced the logistics outsourcing practices and being considered a mediating variable between organizational capabilities, technological integration, and transaction uncertainty and logistics outsourcing performance in Pakistani textile sector. This discussion interprets both direct and indirect effects.

5.1 Organizational Capabilities and Logistics Outsourcing Performance

H1 was confirmed by the hypothesis that organizational capabilities exert a significant positive influence on logistics outsourcing performance (β=0.312, t=5.84, p<0.001). The finding suggests that firms with internal capabilities for good planning, coordination, and control implement outsourcing activities effectively. This includes when logistics firms define contract obligations, they also monitor supplier performance to mitigate risks during outsourcing processes. There have been studies that assert organizational capabilities as a key to any successful outsourcing practice. Evangelista et al., (2023) noted that such capabilities give a firm the ability to manage third-party logistics providers to enhance service quality and cost-optimality. Similarly, according to NGUYEN et al., (2024), strong internal competencies are an enabling factor for a firm's strategic and tactical management of logistics relationships.

Based on findings, logistics outsourcing mediates partially in between organizational capabilities and performance (H4: β=0.164, t=3.90, p=0.000). This implies that while the role of capabilities is recognized, it is heavily dependent on their actual incarnation into logistics practices such as packaging, warehousing, and transport coordination.

5.2 Technological Integration and Logistics Outsourcing Performance

Similarly, the second hypothesis (H2) was supported, thereby indicating the significant positive impact of technological integration upon logistics outsourcing performance (β = 0.295, t = 5.21, p < 0.001). The more successful a firm is in deploying their enterprise resource planning (ERP), real-time tracking, and integrated warehouse management systems. This finding is consistent

with Alioni et al., (2024), which suggested digital platforms are used to enhance supply chain transparency and responsiveness. Alioni et al., (2024) further endorsed the contention that the linkages for information sharing between manufacturers and logistics service providers are enabled by technology, thereby giving rise to better performance.

Mediation analysis (H5: β=0.151, t=3.87, p=0.000) also confirmed that technological assets, considered individually, do not necessarily imply performance enhancement. But these must find their embedding into standardized processes of logistics outsourcing. This corroborates the vision, where the real worth of technology becomes articulately visible when that technology is consistent with operational systems and along all logistics activities.

5.3 Transaction Uncertainty and Logistics Outsourcing Performance

Transaction uncertainty has a significant impact on logistics outsourcing performance (H3: β = -0.228, t = 4.03, p = 0.000). This goes parallel with Alioni et al., (2024) and Yang & Zhao, (2016), whereby increased uncertainty-marked by a mix of market volatility, demand fluctuations, and inconsistency behavior on the part of suppliers-causes one to incur increased risk, breakdowns in communication, and disruption in service delivery. Transaction Cost Theory provides insight on this result: as uncertainty increases, coordination and monitoring costs will rise so that they operate as a disincentive towards outsourcing (Bahli & Rivard, 2017). Such uncertainties common in Pakistan's textile sector may include shipment delays, regulatory ambiguities, and labor unrest, any of which affect logistics fortunes.

Nonetheless, the mediation results (H6: β = -0.117, t = 3.44, p = 0.001) indicate that logistics outsourcing practices buffer against the disturbances during performance. Well-laid outsourcing processes, including those related to inventory controls, packaging guidelines, and standard operating procedures, buffer these disturbances to the performance even under uncertainty.

5.4 The Mediating Role of Logistics Outsourcing Practices

The mediation role of logistics outsourcing practices was confirmed in the three relationships, implying that capabilities, technology, and transaction uncertainty gain much of their impact through operational mechanisms. Rather than an influence upon performance directly, these

variables influence how logistics activities are structured, monitored, and executed. This mediation supports a trend in the academic literature that emphasizes process-level variables in mediating strategic intention into outcomes. Furthermore, strong planning department or ERP system does not matter, if at the same time, the logistics operatives, warehouse management, and transport scheduling do not provide strength towards the goals.

This realization is especially relevant for Pakistani firms, which in many cases still suffer from process immaturity. Moving toward formalizing logistics practices with KPIs, service level agreements (SLAs), and periodic audits could therefore help leverage these firms' internal strengths.

5.5. Theoretical Implications

It enriches the logistics outsourcing theory by confirming that the internal strategic factors of an organization affecting the outsourcing outcome are organizational capability and technological integration especially regarding logistics operations. This includes the evidence for the assertion of Resource-Based View that firm-specific resources provide performance advantages when effectively deployed (Barney, 1991). The significant effect of transaction uncertainties as found in this study would be supportive of the Transaction Cost Theory in drawing attention toward the risk of outsourcing under conditions of uncertainty (Williamson, 1997). The logistics outsourcing practices put forth by this study as a mediating mechanism would extend the theoretical framework of how strategic drivers lead to operational realizations particularly in the developing markets like Pakistan thereby stressing the need for integration of strategic intent with efficient operationalization for superior performance in outsourcing.

5.6. Practical Implications

For logistics managers and policymakers, the study provided some insights:

- ***Capability Development for Operation:*** Companies should develop their logistics capabilities in employee training, standard operating procedures, and process audits to enable improved results in the area of outsourcing.
- ***Technology Should Be Process Driven:*** Technology should be implemented along with process change to allow acceptance and an ensuing level of performance.

- ***Risk Management through Operational Discipline:*** In uncertain environments, these logistics practices provide cushions against shocks. For example, standardization in warehousing, packaging, and inventory control could palliate the adversities.
- ***Develop Long-Term Relationships with Vendors:*** Although implicitly, strong logistics practices have often relied on considerable coordination with logistics service providers, which include joint planning and partnerships that rest on trust.

5.7. Limitations and Future Prospects for Research

There existed many pertinent empirical findings; nonetheless, there were some limitations:

- ***A cross-sectional design:*** The data was collected at one point in time, which limited causality claims. Longitudinal studies might provide a better understanding of dynamic relationships.
- ***Industry Specificity:*** The sample drew only from one industry in Pakistan, the textile sector; thus, the results may not be generalizable to other industries, for example, pharmaceuticals, electronics, or FMCGs.
- ***Self-Reported Data:*** Although bias was attempted to be curtailed, it could be that these are subjective responses that might be confounded due to common method variance.
- ***Unexplored Variables:*** Future studies could add more mediators (relationship quality) or moderators (firm size or environmental dynamism).

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