

Insights into Logistic Strategy: A Progressive Factor Analysis of Outsourcing Intentions among SME Owners

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Abstract: As the global business continues to evolve, SMEs experience heightened pressure to enhance operational efficiency and remain competitive. This study offers profound insights into the dynamic landscape of logistic strategy by employing a progressive factor analysis to scrutinize the outsourcing intentions among SME owners. By exploring the intricate relationships between various observed variables, the research aims to reveal latent factors influencing the decision making processes of SME owners regarding outsourcing practices. However, understanding the underlying factors that shape SME owners' intentions towards logistic outsourcing is paramount for effective implementation. Utilizing a comprehensive factor analysis methodology, this research identifies and examines the fundamental determinants affecting logistic outsourcing intentions among SME owners. Through an extensive cross-industry survey involving 293 SME proprietors, data is systematically gathered on diverse factors influencing their logistic outsourcing intentions. Rigorous statistical analysis is applied to the collected data to expose latent variables and their intricate interconnections. The results illuminate a multifaceted landscape of influences on SME owners' logistic outsourcing intentions. Notably, three of the four independent factors—attitude, subjective norm, and perceived behavioral control—significantly impact SMEs' logistics outsourcing intentions. Additionally, the study delves into the role of trust in shaping outsourcing intentions, acknowledging the complexity of global supply chains. The findings contribute valuable insights to both academia and practitioners in logistics and SME management, offering a nuanced roadmap for SME owners navigating logistic outsourcing decisions and fortifying the resilience and competitiveness of the SME sector in the evolving global market.

Keywords: Factor analysis, progressive analysis, SMEs owners, logistic outsourcing, intention, decision-making

1 Introduction

Globally, firms commonly adopt logistics outsourcing to gain competencies that they lack in-house and have been around for a while. Accordingly, this concept allows firms to focus on their principal business while outsourcing the non-core components to external partners, otherwise called third-party logistics (3PL) or logistics service providers (LSPs), is medieval in origin in Europe. In the 1950s and 1960s, logistics outsourcing was only viable among warehousing and transportation and was basically a short-term activity. In the 1960s, the emphasis on outsourcing turned to efficiency, cost savings, and long-term contracts, while in the 1970s, value-added services, including packaging, labelling, systems support, and warehousing, were introduced [1,2].

Due to increased commerce and investments, Asia is developing fast, which has led to a surge in the utilization of logistics outsourcing. For example, Singapore is at the forefront of the logistics and supply chain management system. Singapore was ranked #1 in Asia, seventh

internationally in 2018, and fifth globally from 2012 to 2018 [3]. Accordingly, 25 of the world's top logistics groups are in Singapore, such as Dalsey, Hillblom and Lynn (DHL), Kuehne Nagel, Sankyu, Schenker, Toll, United Parcel Service (UPS), and Yusen Logistics. This situation makes Singapore a critical center and the most optimum logistics and supply chain management hub or location for top firms across all sectors of the economy [4,5].

In recent times, Covid-19 may have contributed to firm's adoption of outsourcing. The COVID-19 epidemic, which became prevalent fast throughout the globe in early 2020, has rocked economies and sectors and played a significant role in boosting growth and transforming the trajectory of business outsourcing ambitions. Coronavirus may have spurred numerous critical breakthroughs in the outsourcing domain, particularly SMEs, making them more elegant, robust, and inventive under unprecedented obstacles, especially in the supply chain. The epidemic also underlined the need for flexibility in outsourcing partnerships. With unpredictable fluctuations in demand, businesses found it advantageous to rely on external

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providers who could flexibly adjust their services in response to changing requirements, thus avoiding the costs and complexities of maintaining a fixed in-house workforce to curtail expenses related to their operation and labour while ensuring product and service quality [6,7]. The COVID-19 pandemic may modify the psychological beliefs of enterprises/SMEs' desire to outsource in Kelantan state of Malaysia, where agility and transformation of firms are crucial in the aftermath of any pandemic.

Regardless of the expanding trend of enterprises' participation in logistic outsourcing activities however, further quantitative studies concerning Malaysia is needed according to the literature [8,9]. With the growing need and adoption of outsourcing by SMEs/firms, with various justifications like reducing costs, service enhancement, and the need to focus on core business tasks [10], little literature, however, abounds with this study thus, on psychological factors and logistic SMEs outsourcing intention, particularly in Kelantan state of Malaysia. However, psychological factors are essential components that assist a business owner or person decide to outsource logistics services by developing the purpose of logistics outsourcing. Again, psychological components like trust is also a factor that may have a big impact on the desire of a person or company owners to initiate outsourcing decisions [11]. Hence, this study's focus on psychological components covers attitude, subjective norm, and perceived behavioral control, founded by the Theory of Planned Behavior (TPB).

Apart from these three aspects of TPB employed by multiple earlier [12-15], this original study included trust as part of the study variables. According to relevant studies, trust constitutes a substantial predictor for TPB [13,16], and concerning the goal of logistic SME outsourcing. With the fewer studies on psychological factors and the use of trust by past researchers, as per [17], and in this study's context and concerning examining logistic SMEs intention to outsource with the application of the TPB, this notable study added trust to narrow down the research gap. Thus, this study seeks to bridge the gap in the literature and investigate psychological factors with the inclusion of trust in the intent of logistic outsourcing SMEs in Kelantan, Malaysia.

2 Literature and Hypotheses Development

2.1 Logistic SMEs Intention to Outsource

The Theory of Planned Behavior (TPB) has a significant link with the intent of logistic firms to outsource. TPB uses components such as perceived behavioral control, attitudes toward conduct, and subjective norms to correctly foresee and explain behavior and intentions. As stated by Ajzen [18], a person's attitude toward subjective standards connected to perceived peer or societal roles that support the execution of a certain behavior may be developed by looking at the advantages and drawbacks involved with executing that action. From Rintala et al., [15], as attitudes change, subjective standards become more motivating, decision-makers of firms involved in outsourcing or service delivery

become more competent, and behavioral theories may better explain why businesses will outsource their operations. Evidence from Rintala et al., [15], Ruiz-Alba et al., [19], and Marchet et al., [20] suggest that the application of TPB in the research of intention of logistics outsourcing can assist SMEs in understanding how psychological factors as per this study (attitude, subjective norm, perceived behavioral control, and trust) can serve as influencing factors that drive SMEs to opt for logistics outsourcing that could bring benefits to them.

2.2 Effect of Attitude of SMEs Intention to Outsource

From the TPB, attitude toward conduct is generated under the impact of concepts about the action itself. This suggests that a given behavior will lead to certain consequence, which is then subjectively judged as being like it or not. These beliefs may be regarded as the presumption that an action will lead to a specific consequence [15,21,22].

The component of attitude has been the object of a large amount of study in recent years, and it is increasingly accepted as a predictor of intents to outsource logistics, particularly in the perspective of SMEs. As per German et al., [23], the mentality of a business owner has a major effect on the behavioral intention to employ a 3PL provider for outsourcing. Likewise, Ong et al., [24] study suggested that an individual's intentions surrounding their behaviors are greatly impacted by their attitudes. Moreover, according to the findings of a research done by Ding et al., [25], which evaluated buyers' intentions about the procurement of traceable seafood, a more favorable attitude is predictive of a more pronounced purchasing intention. Based on the prior research SMEs' positive attitude may be connected with their propensity to outsource their logistical operations when considering whether or not to outsource these services. In view of that we hypothesize that:

Hypothesis 1: Attitude has a positive effect on logistic SMEs outsourcing intention.

2.3 Effect of Perceived Behavioral Control on SMEs Intention to Outsource

Drawing from the TPB, an individual's evaluation of his or her own capacity to carry out a specific conduct is known as that person's perceived behavioral control Ajzen, [18]. Control beliefs and perceived power are the two components that go into building up perceived behavioral control. Beliefs concerning the availability of opportunities or resources that either facilitate or stand in the way of the execution of an activity are known as control beliefs [26]. Yet, German, et al., [23] analysis indicated that even with absolutely neutral attitudes and subjective norm, perceived behavioral control may lead to behavioral intents.

Perceived behavioral control is crucial when having aim of logistics outsourcing as perceived behavioral control is predicated on the premise that effective behavior includes time, money, skills, and talents [21]. Perceived behavioral control is also a measure of how much a person feels in charge of how he or she acts, even when there may be external and internal limits [15]. Thus, a good impact of cooperative consuming intents of utilizing online car-hailing and behaviors may be produced based on perceived behavioral control [27]. Further, consumer self-esteem is considered as having related to the perceived behavioral control, and it is stated that high levels of self-esteem either impact or directly result in high levels of intention and behavioral control [28]. Prior research like German et al., [23], demonstrated that perceived behavioral control considerably affects the desire of logistic enterprises to outsource appropriately, this study hypothesizes the following:

Hypothesis 2: Perceived behavioral control has a positive effect on logistic SMEs outsourcing intention.

2.4 Effect of Subjective Norm on SMEs Intention to Outsource

Subjective norm refers to whether or not a person feels under the influence of the family society or specific designated group or social pressure to act in a particular manner. Subjective norm investigates a person's knowledge of what others expect them to do and their motivation to follow or otherwise these social standards [29]. The reflecting component of social influence or subjective norm is a feature of values formed by other people's perceptions towards the aim of individual attitude. When making decisions or carrying out obligations, people act upon or take into consideration the perspectives of careers, such as friends, family, and coworkers [30]. People also experience social limitations and follow or consider the opinions of notable persons while making decisions or carrying out activities [26].

Subjective norm is important component that should be taken into account when outsourcing logistics because they affect how people perceive the social demands of the people who mean to them which is their family, friends, coworkers or others and how motivated they are to accept those pressures [30]. From Fischer, and Karl [7], subjective norm is one of the most crucial indications that influence behavioral intention. Thus, to a larger degree, perceived norm is often connected to behavioral aims. Some earlier investigations demonstrated that subjective norm has a large influence on behavioral intention [22,28]. Hence, this study predicts subjective norm of SMEs to have positive and substantial influence on logistics outsourcing intention and suggest that:

Hypothesis 3: Subjective norm has a positive effect on logistic SMEs outsourcing intention.

2.5 Effect Trust on SMEs Intention to Outsource

Trust is the readiness of one party to be affected by the actions of another party based on the anticipation that the other party will do an action that is essential to the trusting party, regardless of whether the trusting party can watch the action being performed [31,32]. The SMEs' confidence and trust in any third-party logistic organization are both taken into account when picking a logistics outsourcing solution. Trust originates from the SMEs conviction that the 3PL provider's activities would aid it and that it would not mistakenly take any steps that would have the opposite consequence [33].

Trust is a critical component for SMEs aim of logistics outsourcing since it also let them have knowledge or expertise about ethical standards thus, trust may play a notable role in boosting the behavioral objectives of SMEs [34]. Similarly, studies suggest that trust in communication, innovation, and cooperation between SMEs and logistics service providers determines the efficacy of logistics outsourcing [35,36]. Therefore, it is hypothesized that confidence of SMEs toward third-party logistics will impact logistics outsourcing intention with the hypothesis that:

Hypothesis 4: Trust has a beneficial influence on logistic SME outsourcing intention.

2.6 Underpinning Theory

Our analysis accords with Ajzen's [37] Theory of Planned Behavior (TPB). As a psychological theory, the TPB ties people's beliefs to behavior. The components of the theory include attitude, subjective norm, and perceived behavioral control, which experts indicate to impact individuals' intentions toward a given conduct. TPB's primary premise is that a person's behavioral intentions are the most accurate prediction of how they will act in social contexts. Ajzen was the one who initially advocated the development of the foresightful ability of the Theory of Reasoned Action (TRA). The Theory of Planned Behavior, thus, appropriately arose from the TRA as per Ajzen with the introduction of perceived behavioral control into the TRA in the setting of TPB. The TPB matches this study and aligns with past studies on the interrelationships between many human domains, including beliefs, attitudes, behavioral intentions, and actions [37,38] Figure 1 below shows the research setup.

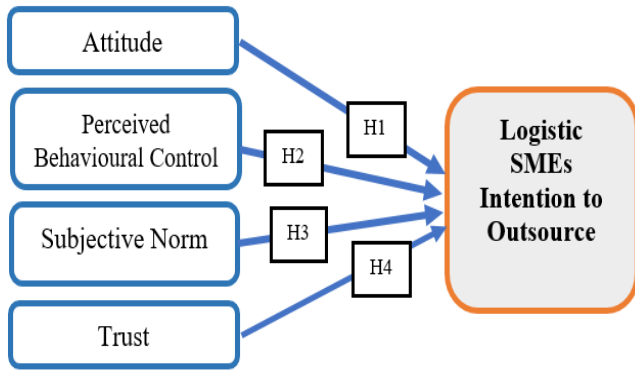


Fig.1: Study Framework.

3 Research Methods

Factor analysis involves mathematical equations to identify latent factors from observed variables. The progressive factor analysis process typically includes several steps. Here the factor loadings (A) and communalities (h²) were estimated. Estimation of the factor loadings matrix (A) using methods like principal component analysis (PCA) or maximum likelihood estimation. The communalities (h²) represent the proportion of each variable's variance explained by the factors.

$$S = AA^T + \Psi \dots\dots\dots (1)$$

Where A is the matrix of factor loadings, and Ψ is the diagonal matrix of unique variances (uniquenesses). Eigenvalue decomposition on the covariance matrix is to obtain eigenvalues (λ) and eigenvectors (e).

$$Se = e\Lambda \dots\dots\dots (2)$$

Where Λ is the diagonal matrix of eigenvalues. Factor loadings, representing the associations between observed variables and latent factors, are estimated using advanced statistical techniques such as principal component analysis. The eigenvalue decomposition of the covariance matrix facilitates the identification of key factors affecting logistic strategies.

3.1 Research Design and Sampling Strategy

This study employed a cross-sectional based on a quantitative research technique. The study's participants are SMEs from Kelantan working in logistics. According to the SME Corporation Malaysia [39] database, 46,728 SMEs exist in eastern Malaysia, Kelantan. G-Power software was employed based on the research population and the factors involved, which is acceptable for establishing the minimal sample size for a study. By G-Power's specifications and the study's four (4) independent variables, a minimal sample size of 64 was obtained. Again, Daniel Soper's a priori sample size calculator also suggested a minimal sample size of 150, utilizing the research variables and their items. Guided by this minimal sample size, we constructed and delivered a questionnaire using a purposive sampling approach and a group social media platform like WhatsApp. Purposive

sampling is preferable over random sampling in social science studies as the researcher cannot acquire the actual sample frame of the study to justify employing the random sampling strategy.

3.2 Measurement Scale

We used multiple questionnaire items to reduce random error in single-source data. This study employed measurement items from previous related scholars to develop the questionnaire for each of the study variables. Attitude and Perceived behavioral control items came from Rintala et al., [15], Subjective norm from Giampietri et al., [40]; Trust from Liu et al., [41]; Raman, [42] and SMEs logistics intention to outsource which is the dependent variable from Rintala et al., [15]; Solakivi et al., [43]. The researchers used various Likert scales to design the study's independent and dependent variables. Thus, we used a 5-point Likert scale to design all four independent variables questionnaire items, and for the study dependent variable items, we developed them using a 7-point Likert scale. The reason for adopting a varied Likert scale approach in question design is to reduce biases from respondents while answering the questionnaire.

4 Results

4.1 Exploratory Data Analysis Procedure

Following data collection, it was analyzed using SPSS-26. Our study first conducted normality and multicollinearity analysis, if any outliers, and assessed the missing values. Moreover, we reached out to 298 responses, with only 293 of the responses serving the purpose of this study, rendering five (5) responses unqualified. The invalid responses are less than 5 per cent of the total recovered data and will not significantly affect the study outcome. The completed questionnaire generated roughly 93% valid response rate and verified Agustini's [44] view that a 60% respondent rate is enough for a study.

Further, we tested Skewness and Kurtosis of the data using Web power Multivariate Kurtosis or Univariate and Multivariate skewness and kurtosis computation. This calculation was done following Cain et al., [45] to detect data normalcy. The test suggests that all the variables were univariate normal, having their skewness and kurtosis values between -1 and not more than +1 with multivariate normality as per Kline [46], which showed a multivariate skewness was within -1 not exceeding 3, and that of the multivariate kurtosis did not exceed 20. The Mardia's multivariate values for skewness was (β=44.074, p<0.01) with that of the Mardia's multivariate kurtosis (β=465.808, p<0.01). Our data is, therefore, not multivariate normal as per the tested multivariate skewness and kurtosis and is tolerable in social science studies.

4.2 Reliability and Validity of study Elements

As indicated by Table 1, the researchers paid careful attention to the dependability of the study items, and the internal consistency of the measures utilized was examined to ensure the reliability and validity of the study variables. As shown, all study variables scored Cronbach Alpha (α) values more than 0.70 and with suitable computed Composite Reliability (CR) and Average Variance Extracted (AVE) values using a Table provided

by Ramayah, which exceeded 0.80 and 0.50 accordingly. The computed α , CR, and AVE values are above what the literature recommends [47-49], with the value for SMEs intention to outsource scoring the highest. Similarly, the computed descriptive statistics based on the mean values for all the independent variables rated from 1-5 is almost 4 (i.e., agree). The dependent variable rated from 1-7 on the Likert scale also scored 5.262 as the mean value and a standard deviation value of 1.537. Hence, the reliability values indicate that the variables were internally consistent and further suggest that the scales used were reliable for this study analysis.

Table 1: Summary of Study Items, Convergent Validity, Composite Reliability and AVE.

Variables/items	Factor Loadings	α	CR	AVE	Mean values	Std. D'tn
Attitude (AT) 1. Outsourcing logistics is a viable option for in-house logistic firms. 2. The outsourcing of logistical tasks is commonly a wise choice. 3. Our company receives an increase in value due to the advantages of outsourcing our logistical services. 4. Overall, our firm benefits from the outsourcing of logistical activities.	0.871 0.870 0.851 0.848	0.892	0.923	0.633	3.901	1.007
Perceived Behavioral Control (PC) 1. Based on our expertise, we can outsource logistics. 2. We are in charge of making choices about outsourcing logistics. 3. We can determine the necessary capabilities for logistics outsourcing. 4. We can find potential logistical outsourcing partners from the available supplier options.	0.864 0.869 0.869 0.869	0.897	0.925	0.640	3.946	0.948
Subjective Norm (SU) 1. The people who impact my decision-making process mostly believe I should continue outsourcing logistics. 2. Those who are essential to me recommend I should keep outsourcing logistics. 3. The majority of individuals, including us, outsource the function of logistics. 4. Most of those whose opinions I respect would probably agree with my choice to outsource the logistics.	0.854 0.859 0.845 0.845	0.884	0.920	0.624	3.881	0.992
Trust (TRU) 1. Logistics outsourcing is trustworthy. 2. Logistics outsourcing is reliable. 3. We choose high-integrity logistic firms to outsource our logistic activities. 4. We believe in the policies involved in logistics outsourcing.	0.844 0.829 0.839 0.869	0.879	0.918	0.618	3.949	0.986

Logistic SMEs Intention to Outsource (LSMEIO)		0.904	0.927	0.648	5.262	1.537
1. With access to logistics outsourcing providers, we will use them more often.	0.854					
2. In the future, and with logistics outsourcing services, we will use them more.	0.881					
3. In the future, we plan to increase our time in utilizing logistics outsourcing.	0.894					
4. We are interested in continuing to outsource logistics-related functions.	0.874					

4.3 Respondents Demographic Background

The respondents' demographic data have been analyzed and presented using frequency and percentages. As provided in Table 2, 156 out of 293 respondents, or 53.2% of them, were men, and 137 (46.8%) were women. Likewise, most responders (66.9%) were Malays, followed by Chinese (23.2%). Regarding the age of the participants, most were between the ages of 31-40 (44.0%) and 21-30 (38.2%). Likewise, regarding marital status, 225 (76.8%) of the participants were married, while 59

(20.1%) were not. Again, based on respondents' level of education, 89 (30.4%) had Secondary School Education, 108 (36.9%) had a Diploma, and 80 (27.3%) obtained their first degree, while 12 (4.1%) had a Master with only 4 (1.4%) as PhD holders. Additionally, out of the respondents, only 35 (11.9%) are in manufacturing, and most of the SME owners, 258 (88.1%) operated in the Services sector. The biodata outcome indicates an even representation of respondents based on gender, race, and age range who have had sound education and could read and decide to participate freely in the study or not.

Table 2: Distribution of Respondents' Demographic.

Demographic Item	Characteristics	Frequency (N=293)	Percentage (%)
Gender	Male	156	53.2
	Female	137	46.8
Ethnicity/Race	Malay	196	66.9
	Chinese	68	23.2
	Indian	22	7.5
	Other	7	2.4
Age Range	20 or less than 20 years	16	5.5
	21 - 30 years	112	38.2
	31 - 40 years	129	44.0
	41 - 50 years and above	36	12.3
Marital Status	Married	225	76.8
	Single	59	20.1
	Divorced	9	3.1
Level of Education	Secondary School Education	89	30.4
	Diploma	108	36.9
	Degree	80	27.3
	Masters	12	4.1
	PhD	4	1.4
SME Sector	Manufacturing	35	11.9
	Service and others	258	88.1

4.4 Inferential Analysis of Study Variables

Based on the inferential analysis of study variables to ascertain the causal effect of the independent variables on the dependent variable, Pearson correlation and multiple linear regression analysis were conducted to determine the causal relationship or effect of the independent variables (i.e., Attitude, Subjective norm, Perceived Behavioral control and Trust) on the dependent variable (SMEs logistics intention to outsource) as demonstrated.

4.4.1 Pearson Correlation Analysis of Study Variables

In line with Fehrer [50], correlation coefficient (r), the Rule of Thumb, as shown in Table 3, signifies a high positive correlation. As illustrated, the Pearson correlation

logistics outsourcing intention. Subjective Norm (R=0.893, p<0.001) significantly impacted SMEs in logistics outsourcing intent. Perceived Behavioral Control was recorded (R=0.893, p<0.001), indicating it significantly affected firm logistics outsourcing intention. Finally, Trust (R=0.898, p<0.001) validates that Trust registered a positive and significant effect on SMEs' logistics outsourcing intention. The results following Guilford's standards for correlation analysis and the interpretation of the (r) and the p-values show that all the independent predictors have had a strong relationship with SMEs' logistics outsourcing intention. Thus, these variables under consideration should be taken carefully by Kelantan SMEs involved in logistics outsourcing to increase their sales and client engagement through outsourcing strategies.

Table 3: Pearson's Correlation Coefficient Results.

Items		1	2	3	4	5
1. Attitude (AT)	Pearson Correlation	1	0.890*	0.893*	0.893*	0.898**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000
	N	293	293	293	293	293
2. Subjective Norm (SU)	Pearson Correlation	.890**	1	0.885*	0.861*	0.860**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000
	N	293	293	293	293	293
3. Perceived Behavioral Control (PC)	Pearson Correlation	0.893*	0.885*	1	0.860*	0.878**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000
	N	293	293	293	293	293
4. Trust (TRU)	Pearson Correlation	0.893*	0.861*	0.860*	1	0.882**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000
	N	293	293	293	293	293
5. SMEs Outsourcing Intention (LSMEIO)	Pearson Correlation	0.898*	0.860*	0.878*	0.882*	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
	N	293	293	293	293	293

4.4.2 Multiple Regression Analysis of Study Variables

The results of the multiple regression analysis in Table 4 below on the independent and dependent variables based on the model summary posit that the independent variables accounted for 0.854 and 85.40% of the variance in logistics SMEs outsourcing intention with an Adjusted R-Square of 0.854. Based on the values of the standardized coefficient Beta (β) values, t and p-values, Attitude is (0.335, 5.300, p<0.001), Subjective Norm (0.096, 1.700, p>0.001), Perceived behavioral control (0.242, 4.262, p<0.001) and Trust (β=0.292, t=5.401, p<0.001). The results indicate that, except for the coefficient (R) and p-value for Attitude (R=0.890, p<0.001) signifies a positive and significant bond with SMEs'

Subjective Norm, whose values for β=0.096, t=1.700, and p>0.001 proved insignificant, the remaining three independent variables provided a significant relationship on logistics SMEs outsourcing intention. Likewise, from the findings, the t-value for Trust had the highest effect of 5.401, followed by attitude, which indicates a t-value of 5.300 on SMEs' outsourcing intention. The findings indicate that Trust and a good Attitude among the network of friends and colleagues of logistics SMEs are crucial for logistics SMEs' involvement in outsourcing activities. In a nutshell, a mathematical representation of the results based on the multiple regression coefficient analysis is exemplified as:

$$\text{Logistic SMEs Intention to Outsource} = -3.971 + 0.335 (\text{Attitude}) + 0.096 (\text{Subjective Norm}) + 0.242 (\text{Perceived Behavioral Control}) + 0.292 (\text{Trust}).$$

Table 4: Summary of Multiple Regression Analysis Results.

Variables	R-square	Standardized Beta (β) values	T-values	Sig-values	LCI	UCI	Tolerance	VIF
Constant	0.854		-3.971	P<0.01	-.898	-.303	0.127	7.889
AT		0.335	5.300	P<0.01	.322	.702	0.160	6.260
SU		0.096	1.700	0.090	-.025	.335	0.157	6.377
PC		0.242	4.262	P<0.01	.202	.549	0.174	5.744
TRU		0.292	5.401	P<0.01	.289	.620	0.127	7.889

a. Dependent Variable: SMEIO; b. Predictors: (Constant), TR, PC, SU, AT; Correlation is significant at the 0.01 level (2-tailed). Note: LCI= Lower Confidence Interval and UCI=Upper Confidence Interval bias corrected

To add, under the collinearity statistics coefficients, tolerance and VIF values of the study variables, as per Table 4, confirmed Pituch and Stevens's [51] rule in using SPSS for data screening and analysis. Tolerance indicates the proportion of variation explained in independent variables, and when tolerance values are less than 0.10, it suggests the presence of multicollinearity. The VIF is seen as the reciprocal of the Tolerance (i.e., $VIF = 1/Tolerance$) or simply $1/(1-R\text{-square})$. According to Lomax and Hahs-Vaughn [52], a $VIF > 10$ can indicate the presence of more severe multicollinearity involving a given independent variable(s). As shown in Table 4 above, the tolerance values for the study variables exceeded 0.10 with VIF values not more than 10; hence, our single source data for the study variables had no multicellularity problems.

In summary, the data reported in Table 4 above, H1 predicts that Attitude favorably influences logistic SME outsourcing intention ($\beta=0.335$, $t=5.300$, $p<0.001$). This shows a substantial link of Attitude on logistic SMEs outsourcing intention was achieved. H2 investigated the hypothesis that Perceived Behavioral Control positively influences logistic SME outsourcing intention, and multiple regression output revealed ($\beta=0.242$, $t=4.262$, $p<0.001$) for Perceived Behavioral Control. Thus, the facts confirm the theory that Perceived Behavioral Control strongly impacts logistic SME outsourcing intention. Next is H3, which explored that the Subjective Norm favorably influences logistic SME outsourcing intention. Though a positive link occurs with multiple regression analysis ($\beta=0.096$, $t=1.700$, $p>0.001$), the impact is insignificant and opposes the proposition. H4 claimed that Trust favorably influences logistic SMEs' outsourcing intention with the findings for Trust as ($\beta=0.292$, $t=5.401$, $p<0.001$). The results validated the theory that Trust favorably and substantially impacts logistic SMEs' outsourcing intention.

The results, therefore, evidenced that most of the study subjects agreed that among the psychological factors (i.e., Attitude, perceived behavioral control, subjective norm, and trust), Trust and Attitude are paramount

influencing factors of logistic SMEs' intention to outsource followed by Perceived Behavioral Control.

5 Discussion

The research results of this study emphasize SMEs' psychological aspects impacting their desire to outsource logistics, drawing from the Theory of Planned Behavior (TPB). This section summarizes the key results and their consequences as follows. The first hypothesis checks that attitude positively and substantially influences logistic SMEs' outsourcing intention. The research signifies a substantial positive association between SMEs' attitudes and propensity to outsource logistics. This outcome also coincides with the TPB, which claims that favorable attitudes toward conduct enhance the chance of intention to undertake that behavior. In logistics outsourcing, SMEs with good opinions of outsourcing are more prone to indicate the desire to participate in it actively. The conclusion corresponds with earlier research by German et al., [23] and Akter [53] that attitude has a positive significant link with the overall goal of logistics outsourcing and validates the hypothesis. This conclusion shows that SMEs and logistic service providers should acknowledge the necessity of establishing good attitudes regarding outsourcing. A favorable attitude of logistics businesses may be created by good communication, highlighting the benefits of outsourcing and resolving all potential downsides. The study then studied the association between subjective norms and logistic SME outsourcing intention. Our data reveal how subjective norm, even though substantially associated with logistic outsourcing intention, did not achieve statistically significant value. This result is not in terms with Roh et al., [22], which states that there is a positive and substantial causal relationship between subjective norms and outsourcing of logistics intention. The proposed theory argues that while the views of essential people constitute a part of SMEs' decision-making processes, other driving reasons may be underpinning the decision for SMEs in the research region to outsource logistics. Again, the findings also show that SMEs of Kelantan in Malaysia should be mindful that the effect of subjective norms, albeit existent, is unlikely to be as powerful as other psychological elements to encourage their owners' outsourcing intention.

Furthermore, the study's third hypothesis investigated Perceived Behavioral Control and Logistic SMEs

outsourcing intention: Perceived behavioral control appears as a crucial factor affecting SMEs' inclination to outsource logistics. This research underlines the premise that SMEs are more likely to indicate a desire to outsource when they think they have the requisite expertise and control over the process. Thus, our results validated earlier research claiming that perceived conduct is substantially associated with intention [23,28]. The conclusion suggests that SMEs should proactively review their perceived behavioral control over logistics outsourcing and invest in developing their skills. Policymakers may help SMEs by providing training and resources to enhance their logistics capacities for management.

More so, the conclusion of the fourth hypothesis explored the link between trust and logistic SME outsourcing intention. The investigation identifies trust as a significant element affecting SMEs' inclination to outsource logistics. The results coincide with some studies that established that trust has a strong association with the purpose of logistic SMEs outsourcing [32,35,36]. Thus, the outcome validates the hypothesis of this study. This study recommends that logistic SME managers must build good communication and trust interactions with their logistics outsourcing partners. Again, SMEs that have trust in logistics service providers are more likely to show a desire to outsource. This conclusion shows that trust-building should be a major goal for logistic service suppliers. Building and sustaining honest and trusted connections with SME clients may greatly affect their outsourcing decisions.

5.1 The Study Theoretical Implications

Improvements in awareness of the psychological aspects impacting logistic SMEs in Kelantan state of Malaysia's inclination to outsource. The study contributes to the theoretical knowledge of variables influencing logistics SMEs' propensity to outsource. It underlines the importance of trust and attitude in development of outsourcing decisions. Researchers may build on this base to explore these components' interrelationships more deeply. The result that subjective norm had no significant effect underscores the need for future study to understand the intricacies of social factors on SMEs' outsourcing aspirations. Studying whether certain contextual variables improve or lessen this link is helpful. The study's findings contribute to the advancement of theoretical frameworks, particularly the Theory of Planned Behavior (TPB), by showcasing how psychological factors, such as Attitude, Subjective Norm, Perceived Behavioral Control, and Trust, prompt the intention of logistic outsourcing among SMEs hence, expanded the application of TPB [54,55]. This study highlights the role of psychological factors in comprehending the decisions made by organizations. More so, this study underscores the need to incorporate psychological elements into current organizational behavior models and theories, offering a nuanced view of how SMEs execute outsourcing options.

An additional theoretical relevance of this study is that it enhances the theoretical knowledge of the

psychological aspects influencing logistics SMEs' inclination to outsource. The underlines the substantial significance of Trust and Attitude as essential variables, which may be included in current theories of organizational behavior and decision-making. Further, this study underlines the need to adopt trustworthy and established measuring instruments. Scholars may employ the Cronbach Alpha, Composite Reliability, and Average Variance Extracted values as standards for measuring the dependability and legitimacy of their research instruments.

5.2 The Study Methodological Implications

The study gives an example of rigorous data screening and analysis using the Statistical Package for Social Science (SPSS) software version 26, which might serve as a reference for researchers undertaking comparable investigations. It underlines the necessity of resolving outliers and missing data. Similarly, this study's comprehensive approach to evaluating reliability and validity establishes a methodological benchmark for future research. One more methodological relevance of this study's conclusion is that scholars should prioritize extensive validation methods to ensure the robustness of their findings. In another sense, our study findings established a precedent for scientific rigour, stressing the necessity of rigorous data collection, multivariate analysis, and the validation of measurement scales. Researchers might take inspiration from these methodological techniques when performing comparable investigations. Further, future researchers might employ this study technique to measure multicollinearity since it gives insights into the stability of regression findings.

5.3 The Study Practical Implications

This study has significance for SME owners and managers, particularly those interested in or intending to delve into outsourcing. Thus, generally, this work has theoretical, technical and practical consequences. In recent years, thanks to the expansion of outsourcing services, many primary and small multinational or local firms have learnt the benefits it provides them [4,15]. This study's findings express various practical consequences for SMEs in the logistics industry, policymakers, and logistic service providers. SMEs in the logistics sector might profit from this study by understanding the key significance of psychological elements. They may utilize this expertise to make better-informed decisions about outsourcing, notably developing trust, shaping positive attitudes, and understanding perceived behavioral control. Based on the data, logistic SME service providers should concentrate on creating trust with their clients, a crucial element affecting outsourcing ambitions. Establishing clear communication, consistent service quality, and reliability may develop confidence, improving outsourcing intents, reliability, and honesty in their offerings, thereby strengthening customer trust [33].

Through the findings of this study, SMEs in Kelantan, Malaysia, could have a better view of which psychological factors have more impact on their intention to logistics outsourcing, and it turns out that logistics outsourcing could bring overall benefits to every business when applying TPB in researches related with the purpose of logistics outsourcing. Similarly, logistic SME owners can also concentrate on building favorable views regarding outsourcing amongst their clientele. Logistic SMEs may illustrate the benefits and advantages of outsourcing logistical tasks. Logistic SMEs must also acknowledge the role of perceived behavioral control and adjust their services and support to fit their client's demands and skills, making outsourcing more controllable.

According to the findings, logistic SME service providers need to promote good attitudes among themselves. They highlight outsourcing benefits, cost-effectiveness, and efficiency gains to urge more SMEs to pursue this option in the future. The study's finding further gives a strategic consideration for SMEs to examine the psychological components highlighted in this study as part of their strategy planning. The results indicated the need for SMEs in logistics outsourcing to create trust with their clients aggressively, encourage good attitudes regarding outsourcing, and adapt services to increase perceived behavioral control. Further, our study findings would benefit logistics service providers. The outcomes of this research will promote probable additional value, attract outsourcing specifications ("everyone is doing it!") and affect the contracting party over the other party's readiness to accept outsourcing. Investing in the outsourcing relationship is recommended as a high trust level of the outsourcing partner leads to a willingness to outsource. Suppose an SME additionally outsources its primary business. In that situation, the service provider should be skilled in numerous logistics areas and provide services tailored to the customers' requests as SMEs implement outsourcing in almost every aspect of their business like HRM, information technology among others like operations.

5.4 The Study Policy Implications

Policy-wise and inferring from the study findings, policymakers might create supportive policies to increase SMEs' competencies and competitiveness in the logistics industry. These policies may comprise trust-building measures, training programs, and incentives to promote outsourcing. More so, authorities should prioritize training activities that educate SMEs with the information and skills needed to make effective outsourcing decisions, correlating with the findings on perceived behavioral control. In accordance with the finding, governments should also implement measures to encourage SMEs in recognizing the benefits and dangers of outsourcing logistics. Educational programs and tools can help SMEs make educated decisions to make the outsourcing procedures more manageable. Also, authorities can construct legislative frameworks to protect

SMEs' interests while outsourcing logistical services. Enacting laws in the sector may build confidence and promote fair and ethical conduct in the business. Finally, governments should consider providing support mechanisms or incentives for logistics SMEs, notably in trust-building and improving good attitudes towards outsourcing, which can stimulate the expansion of the SME sector. These supportive initiatives should include education and training programs for SMEs to strengthen their competencies and perceived behavioral control in logistics outsourcing decision-making.

5.5 Recommendations/ Suggestion for Further Investigation

Though the present research has limitations, the researchers have recommended additional investigations. Concerning this innovative study's conclusion, scholars are encouraged to perform more investigations as a form of validation and widen this study by exploring comparable occurrences in multiple sectors and countries. This approach can thereby extend the generalizability of the findings. Complementing this cross-sectional quantitative study with qualitative or a combination from SME owners and managers can give a better knowledge of the decision-making process on logistics outsourcing. On the other hand, longitudinal studies can provide valuable insights into how psychological aspects change and impact real outsourcing decisions of logistic SMEs, providing a fuller knowledge of the mechanisms in question. In addition, intervention studies by prospective scholars to study the efficacy of measures that foster trust, attitudes, and perceived behavioral control among SMEs, giving practical advice for execution, will be most relevant.

Determining if cultural variations affect the links between trust, attitude, and outsourcing intentions might yield significant cross-cultural insights. Consequently, additional research might address external economic and industry-specific factors impacting SMEs' outsourcing decisions. Future studies might also analyse the influence of particular initiatives on SMEs' logistics outsourcing aspirations in Malaysia and Kelantan and compare the findings to different nations like Singapore, which is noteworthy as the hub for outsourcing in Southeast Asia and other countries. This initiative will assist policymakers in deciding regarding logistic SME outsourcing intention and performance.

This study gives useful insights into the psychological variables driving logistics SMEs' outsourcing inclinations. It offers practical suggestions for service providers and governments while offering areas for additional research to enhance our understanding of this complicated phenomenon. Nonetheless, scholars should study different psychological elements when utilizing TPB in research on intention-related studies. We underline the three parts of TPB (i.e., attitude, subjective norm, and perceived behavioral control) with the addition of trust to

bridge the research gap and in context. Factors like brand and digital word of mouth might aid future studies on SMEs' logistics outsourcing intention. In addition, researchers can explore how other logistical activities like delivery, storage, packaging, material handling, completion of orders, production planning, purchasing and procurement, and customer service uniquely or combined to promote outsourcing and with other variables that mediate or moderate the relationship.

6 Limitations and Conclusion

This study, like any other research, has some limitations. In light of these limitations, readers should see the limits as possibilities for further inquiry. A few of the obstacles found by this study include that the study admits constraints such as the sample size and data gathering technique. Thus, this study exploited a comparatively small and presumably homogeneous sample size of 293 SMEs in the Kelantan State of Malaysia. Hence, further research should strive for more expressive, more varied samples and, where appropriate, investigate mixed-method techniques to strengthen generalizability since the dependence on a questionnaire-based data collection method may create response bias. The data for this study was additionally evaluated using SPSS version 26 to conduct multiple regression analysis and needed other analytical processes.

Additionally, future studies might study the interactions of these psychological elements over time through longitudinal research. More significantly, intervention studies can boost the success of initiatives to improve trust, attitudes, and perceived behavioral control among logistic SMEs, delivering practical advice for adoption. Despite the constraints, this study succeeded in its purpose and contributed to the greater literature on logistics outsourcing, especially on the Kelantan in Malaysia. Findings from this research can inform outsourcing practitioners' judgements regarding selecting logistics service providers. In addition, the study could help the service providers understand which psychological aspects raise SMEs' inclination to outsource. In addition, the study could benefit logistic SME service providers understand which psychological aspects raise SMEs' inclination to outsource.

In conclusion, this study highlights the relevance of psychological elements embedded in the TPB of SMEs' decisions to outsource logistics. By acknowledging and addressing these characteristics, SMEs, policymakers, and logistic service providers may build a more suitable climate for logistics outsourcing in the SME sector with other variables like reputation, communication, and satisfaction as mediating or moderating variables.

Conflicts of Interest Statement

The authors certify that they have NO affiliations with or involvement in any organization or entity with any financial

interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

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Appendix (Questionnaire)

Kindly fill the demographic information in section A and rank the questions in section B from 1-5; 5 – Strongly Agree; 4 – Agree; 3 – Neutral; 2 – Disagree; 1 – Strongly Disagree

Section A – Demographics	
1.	Age: a. 20-25 yrs b. 25-30 yrs c. 30-40 yrs d. More than 40 yrs
2.	Gender a. Male b. Female
3.	Job Position a. Executive level b. Managerial level c. Non Managerial level
4.	Size of Organization a. Tertiary b. Community c. Area health service office d. other
5.	Years working in Logistics since professional graduation a. 2 yrs b. 2-5 yrs c. 5 -7 yrs d. >= 7 yrs
6.	Has managerial role at work? a. Yes b. No
7.	Daily hours spent on at work a. less than 8 hours b. 8 hours c.10 hours d. More than 10 hours
Section B – Research questions	
Attitude (AT)	
1. Outsourcing logistics is a viable option for in-house logistic firms. 2. The outsourcing of logistical tasks is commonly a wise choice. 3. Our company receives an increase in value due to the advantages of outsourcing our logistical services. 4. Overall, our firm benefits from the outsourcing of logistical activities.	
Perceived Behavioral Control (PC)	
1. Based on our expertise, we can outsource logistics. 2. We are in charge of making choices about outsourcing logistics. 3. We can determine the necessary capabilities for logistics outsourcing. 4. We can find potential logistical outsourcing partners from the available supplier options.	
Subjective Norm (SU)	
1. The people who impact my decision-making process mostly believe I should continue outsourcing logistics. 2. Those who are essential to me recommend I should keep outsourcing logistics. 3. The majority of individuals, including us, outsource the function of logistics. 4. Most of those whose opinions I respect would probably agree with my choice to outsource the logistics.	
Trust (TRU)	
1. Logistics outsourcing is trustworthy. 2. Logistics outsourcing is reliable. 3. We choose high-integrity logistic firms to outsource our logistic activities. 4. We believe in the policies involved in logistics outsourcing.	
Logistic SMEs Intention to Outsource (LSMEIO)	
1. With access to logistics outsourcing providers, we will use them more often. 2. In the future, and with logistics outsourcing services, we will use them more. 3. In the future, we plan to increase our time in utilizing logistics outsourcing. 4. We are interested in continuing to outsource logistics-related functions.	