

The Relationship between Logistic Capability and Logistic Performance among Logistic Industry in Johor

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Abstract

The logistics sector is crucial to Malaysia's economy, particularly in Johor, which has made significant investments in infrastructure supporting logistics. Despite this, the logistics industry continues to face challenges such as delivery delays, transportation capacity shortages, and inadequate infrastructure, which hinder its performance. Therefore, the purpose of this study is to identify the level of logistic performance, examine the level of logistic capability, and find out the relationship between logistic capability and logistic performance in the logistics industry in Johor. The quantitative research method was employed in this study, using an online survey questionnaire distributed to 162 managerial-level employees of Third-Party Logistics (3PL) providers in Johor; the valid responses were collected from 135 managerial-level employees. Descriptive analysis and Spearman's correlation analysis were conducted using SPSS software. The findings reveal that both logistics capability and logistics performance are rated highly among 3PL providers, with key dimensions of capability, which are innovation capability, responsiveness capability, and flexibility capability, showing significant influence. The correlation analysis indicates a strong positive relationship ($r = 0.662$) between logistics capability and performance, showing that logistics capability had a positive influence on logistics performance. These results offer valuable insights for logistics firms in Johor to enhance their operational efficiency and competitive advantage.

1. Introduction

Logistics in Malaysia plays a crucial role in the economy, with the country strategically positioned for international trade due to its location between the east and west trade routes (Omar *et al.*, 2022). The logistics industry in Malaysia has seen significant growth due to e-commerce, impacting courier companies' profitability. Factors like firm size, liquidity, leverage, inflation, and unemployment influence their performance (Abdul Manaf *et al.*, 2022). Logistics in Malaysia is a crucial sector with a focus on becoming a regional hub, leveraging its strategic location, advanced infrastructure, and initiatives for growth (Ramli & Shakir, 2021).

The performance of logistic industry was relied on the logistic capability. Logistics capability is critical for Third Party Logistics (3PL) Provider since they provide transportation and logistics services that significantly rely on logistics capabilities to deliver services to consumers (Wang, 2016). According to the theory of Research Based View, Firms use their capabilities and resources to develop competitive advantages (Wernerfelt, 1984; Yusuf *et*

al., 2004). The capability is an organization's ability to organize, integrate, and deploy resources to complete a task or activity (Daugherty *et al.*, 2009); resources are anything tangible or intangible that a firm owns or acquires (Hafeez *et al.*, 2002). Logistics capability is a significant firm capability in the integrative strategy process to build a competitive advantage (Wang, 2016; Wang, 2020). Logistic capability will influence logistic performance as it is crucial for transport and Third Party Logistics (3PL) Provider to effectively deliver value to all members in the supply chains. It has been widely recognized as a crucial element in attaining a competitive advantage (Chow *et al.*, 1994; Fawcett and Cooper, 1998). As the Third Party Logistics (3PL) Provider play a critical function in a supply chain system by delivering goods and information to link the each of the business partners in the supply chain (Wang *et al.*, 2015), logistics performance is a crucial factor of success for both Third Party Logistics (3PL) Provider and their customers (Khan *et al.*, 2019).

Logistic performance, defined as the efficiency and effectiveness of logistic processes in fulfilling customer requirements, is crucial to the success of logistic industry. However, there are several issues that influence logistic performance. According to Wang *et al.* (2021), delays and inefficiencies in delivery processes have a significant impact on efficiency and customer experience in the logistic industry. It is supported by Wang *et al.* (2022), insufficient capacity for transportation, which makes it challenging for Third Party Logistics (3PL) Provider to effectively fulfil demand of customers. It is also state by Azmi *et al.* (2021), the logistic company in Malaysia faces challenges related to driver shortages and impacting the efficiency and safety of the logistic industry. These shortages can disrupt supply logistic processes, which would result in delivery delays and inefficiencies. In addition, there also have infrastructure challenges, such as poor road conditions and inadequate transportation networks, which make these delays and inefficiencies even worse (Nugroho *et al.*, 2019). It is supported by Mohamad *et al.* (2020), Malaysia road transport faces infrastructural challenges that affect logistic efficiency. The inefficiencies in the logistic process will impact the logistic performance and result in financial loss to the logistic company. Hence, based on various issues that were discussed earlier, there are needs to be overcome to ensure the effectiveness and efficiency of logistic performance. Logistics capability plays a significant role in achieving excellent logistic performance and maintaining a competitive advantage (Kara & Ipekci, 2022). Based on Wang (2020), firms with great logistic capability have better delivery reliability, faster response times, and higher customer satisfaction rates, thereby confirming the critical role of logistic capability in driving success in the logistic industry. According to the previous study from different researchers, logistic capability is essential for overcome logistic issues and increase the logistic performance. However, there is a limitation of the study focused on the relationship between logistic capability and logistic performance among logistic industry in Johor, most of the study was conducted in foreign countries (Kara & Ipekci, 2022; Wang 2020; Evangelista *et al.*, 2023).

Therefore, to achieve the research objectives, the level of logistic performance and logistic capability among the logistic industry in Johor are determined. Consequently, the relationship between logistic capability and logistic performance among the logistic industry in Johor is identified.

2. Literature Review

2.1 Logistic Performance

According to the Wang *et al.* (2010), logistic performance measuring the efficiency and effectiveness of logistics operations in gaining a competitive advantage. Therefore, logistics performance of a delivery is crucial to a firm's competitiveness, which is timely delivery, cost reduction, and customer satisfaction (Takwi & Mavis, 2020). Furthermore, Logistics performance is a crucial factor of success for both Third Party Logistics (3PL) Provider and their customers (Wilding & Juriado, 2004). Logistics performance is also an important economic indicator for logistics activities, and logistics capabilities influence the overall logistics performance of companies (Hua *et al.*, 2022).

2.2 Logistic Capability

According to Haider & Siddiqui (2018), logistics capability was defined as the transport and logistics firm's ability to provide value and services to customers. Additionally, logistic capability was also defined as a logistics firm's ability to effectively use the resources to meet customer needs (Zainal & Rasi, 2021). Thus, Logistics capability plays a significant role in achieving excellent logistic performance and maintaining a competitive advantage (Kara & Ipekci, 2022). According to Wang *et al.* (2020), logistic capability is measured through three dimension which are innovation capability, responsiveness capability, and flexibility capability. These three dimensions will be discussed in the following subtopic.

2.2.1 Innovation Capability

Innovation was defined as a firm's ability to convert information and ideas into new processes, systems and products that bring advantages to the firm (Wang, 2016; Yang, 2012). While Korucuk *et al.* (2020) also defined that innovation capability is the ability of logistics firms to develop and implement new ideas, processes,

technologies that enhance their operations and services. Therefore, in this rapidly changing and uncertain business environment, innovation capability significantly impacts logistic firm effectiveness and achieve a competitive advantage (Iqbal, 2024). This capability allows logistic firms to develop and implement innovative solutions that enhance their operational efficiency and effectiveness. Furthermore, Innovation capability can enhance logistics performance by streamlining operations, automating tasks and maximising resource utilisation (Arsawan, 2023). Consequently, improving the level of innovation capability in logistic operations will improve logistic performance (Deng & Noorliza, 2023).

2.2.2 Responsiveness Capability

The responsiveness capability was defined as the speed at which services are delivered to customers (Negassa & Japee, 2023). Responsiveness capability is the ability to respond or solve the needs of the customers, and customer satisfaction is highly affected by the responsiveness capability in the logistics process (Adebayo, 2022). Responsiveness capability is crucial to customer satisfaction, customer satisfaction increases significantly when their needs and expectations are met immediately (Sharma *et al.*, 2020). Thus, Effective responses to customers can recognize operational inefficiencies and implement appropriate improvements, leading to enhanced logistics performance by streamlining processes, reducing delays, and increasing overall customer satisfaction (Munawar, 2021). Additionally, enhancing responsiveness capability in logistics can quickly respond to customer needs and can make logistics operations more efficient and effective, resulting in improve overall logistic performance (Siagian & Johono, 2022). This capability enables logistic firms to quickly solve customer needs, thereby improving operational efficiency.

2.2.3 Flexibility Capability

Flexibility capability was defined as the ability to respond to changes (Jain *et al.*, 2013). According to Sorkun *et al.* (2020), flexibility capability in logistics is the ability to adapt and respond efficiently to changes in customer needs and market situations, which is critical for improving operational logistics service quality. Thus, flexibility capability is the ability of a company to manage and react to unexpected conditions or events (Naim *et al.*, 2010). This capability allows logistic firms to adjust their operations to unexpected conditions and maintain service levels to meet market demands. In addition, flexibility capability also optimises the logistics operations by improving supply chain service quality, customer satisfaction, and added value (Guliman & Gavrilina, 2018). As a result, flexibility capability improves the logistic performance for reaching customer and firm objectives (Liao, 2020).

3. Research Methodology

3.1 Research Design

Research design serves as a framework that outlines methods for gathering and analysing the relevant information (Akhtar, 2016). In this study, employed both descriptive and quantitative research methods. According to Akhtar (2016), Descriptive study describes a person's current condition, attitudes, and perspectives about something. It is widely used in the physical and natural sciences, but it is most commonly used in the social sciences, such as socioeconomic surveys, employment, and activity analysis. Descriptive research will be used in this study to identify the level of logistic performance and examine the level of logistic capability among the logistic industry in Johor. Besides that, quantitative research is more reliable and objective, but it is a numerical analysis in which information is collected through questionnaires. In addition, quantitative research primarily involves collecting data that can be expressed in numerical form (Matthews & Ross, 2010). Quantitative research was used in this study because this method is quick and applicable to a wide range of situations.

This study was conducted in Johor, using a survey method within a quantitative research approach. The population of this study is Third Party Logistics (3PL) Provider in Johor. Based on the Johor Freight Forwarders Association (JOFFA), there are 272 Third Party Logistics (3PL) Provider in Johor. According to Krejcie and Morgan (1970) table, for a population of 272, the appropriate sample size for this study is 162 respondents. Thus, data for this research was gathered from 162 Third Party Logistics (3PL) Provider using questionnaires. Managerial level employees of Third Party Logistics (3PL) Provider in Johor would be the respondents in this study. The questionnaire is distributed online using Google form. This study will select for inclusion in the state of Johor because Johor has significant investments in infrastructure that support logistics, including the development of the Johor Port, Tanjung Pelepas Port, and Senai International Airport (Chee, 2019).

3.2 Research Population and Sample

According to Sekaran and Bougie (2016), the population is a group of people that the researcher wants to study. The population of this study is Third Party Logistics (3PL) Provider in Johor. Based on the Johor Freight Forwarders Association (JOFFA), there are 272 Third Party Logistics (3PL) Provider. Thus, the number of

populations is 272 Third Party Logistics (3PL) Provider in Johor. The sample size refers to the total number of individual observations or participants included in experiments or surveys. According to Krejcie and Morgan (1970) table, for a population of 272, the appropriate sample size for this study is 162 respondents. Thus, data for this research was gathered from 162 Third Party Logistics (3PL) Provider using questionnaires. Managerial level employees of Third Party Logistics (3PL) Provider in Johor would be the respondents in this study. The questionnaire is distributed online using Google form. Table 1 is a table for determining sample size (Krejcie & Morgan, 1970).

Table 1 Table for determining sample size (Krejcie & Morgan, 1970)

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3300	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

3.3 Sampling Method

Sampling is the process of choosing a group of individuals from a larger population to participate as respondents in a research study. Before conducting the research, the population must be determined first and select sampling method in order to achieve the objective. Sampling techniques can generally be classified into two categories which are probability and non-probability (Taherdoost, 2016). In this study, the researcher used probability sampling method known as random sampling to collect data through the questionnaire. In the random sampling method, the researcher will select a random managerial level employee working in Third Party Logistics (3PL) Provider in Johor through distribute a link to an online Google form questionnaire to them.

3.4 Data Collection

Data collection has been done through primary sources. Primary data is information gathered from first-hand experience by the researcher conducting the related study (Prada-ramallal *et al.*, 2018). In other words, It categorise as unpublished data and must be collected through field research. The data collection approach used in this study is the online questionnaire.

3.4.1 Primary Data

Primary data refers to newly collected information that serves the purpose of conducting research (Prada-ramallal *et al.*, 2018). The Data is collected by the researcher primarily to achieve the research objective and therefore contains obvious information about the research. With the help of primary data, researchers are able to obtain information that better fits their research questions and objectives. In this research, survey questionnaire was used as main sources to examine the level of logistic capability and level of logistic performance among logistic industry in Johor.

3.5 Pilot Study

Pilot studies are trial runs or small-scale version of planned investigations that are conducted to determine whether a questionnaire is feasible for use in a research (Doody & Doody, 2015). A pilot study often offers insights, method, and potential issues that may have been overlooked before conducting the main survey. Conducting a pilot study increases the chances of obtaining clearer results and eliminates issues that may mislead the research. (Prescott & Soeken, 1989). In this study, 30 respondents who are managerial level employees of Third Party Logistics (3PL) Provider in Johor for a pilot test was carried out to determine the reliability and validity of the questionnaire.

3.6 Research Instrument

A quantitative method was used in this research, employing a questionnaire survey as the instrument. The questionnaire is a tool for collecting structured data from respondents, making it an effective way to gather research data. The questionnaire is divided into three sections. Section A was asked about the demographic of respondents, while section B asked the question that was related to logistic capability and section C was a question that related to logistic performance. In this study, a five-point Likert scale was employed to ask respondents to indicate their level of agreement or disagreement with each survey item.

3.7 Data Analysis

All collected data was arranged into a systematic way for better understanding. The data analysis was conducted to determine the results of the study and whether the research objectives were met. The data collected from primary sources using questionnaires were analysed using descriptive and correlation analysis methods. In order begin with the data analysis, data that has been collected was entered into Statistical Package Social Science (SPSS) Software. Reliability analysis is the first step carried out in pilot studies and actual studies. After that, the descriptive analysis test for respondent response was carried out and correlation analysis was used to determine the relationship between logistic capability and logistic performance.

3.7.1 Descriptive Analysis

Descriptive analysis is employed to determine percentages, average mean values, and frequencies. In this study, the researcher utilised descriptive analysis to extract population information from the sample. The mean or average from collected data should be between one and five, as specified by the Likert scale. The statistical analysis of the data was conducted using Statistical Package Social Science (SPSS) software.

3.7.2 Correlation Analysis

Correlation analysis is used to determine relationships between variables. In this study, the researcher will use correlation analysis to know how to measure the extent of compatibility between variables. There are two correlation coefficients are commonly used to assess the degree of correlation. The Pearson correlation coefficient is the most widely used and is sensitive only to linear relationships between two variables, while the Spearman correlation coefficient is more responsive to nonlinear relationships. The data in the correlation coefficient could best be used to interpret there is very strong, strong, moderate, weak, or very weak to relationship between independent variable and dependent variable. The nominal degree of relationship used to examine the results is displayed in Table 2.

Table 2 Nominal degree of relationship

Correlation Coefficient	Strength Description
±0.81 – ±1.00	Very Strong
±0.61 – ±0.80	Strong
±0.41 – ±0.60	Moderate
±0.21 – ±0.40	Weak
±0.00 – ±0.20	Very Weak

3.8 Research Flow Chart

The research process flowchart for this study is shown in Fig. 1. The research started by identifying issues, and the research title was selected based on the problem statement that was identified by the researcher. After this, the research objectives were identified based on the research question. There are three research objectives in this research which is to identify the level of logistic performance among the logistic industry in Johor, to examine the level of logistic capability among the logistic industry in Johor and to find out the relationship between logistic

capability and logistic performance. The purpose is to determine the relationship between logistic capability and logistic performance among the logistic industry in Johor.

After identifying the research objectives, the literature review was prepared to explain about the logistic performance and logistic capability (innovation capability, responsiveness capability, flexibility capability). Primary data was collected for this study through questionnaires. Before starting data collection, the researcher had constructed a questionnaire and created it using the Google Forms method. The data collected was analysed by using the Statistical Package Social Science (SPSS) Software. Each result was organised and displayed using tables, bar charts, and pie charts. Following this, the conclusion and discussion related to the research objectives were explained. Finally, recommendations for future research and limitations of the study were presented.

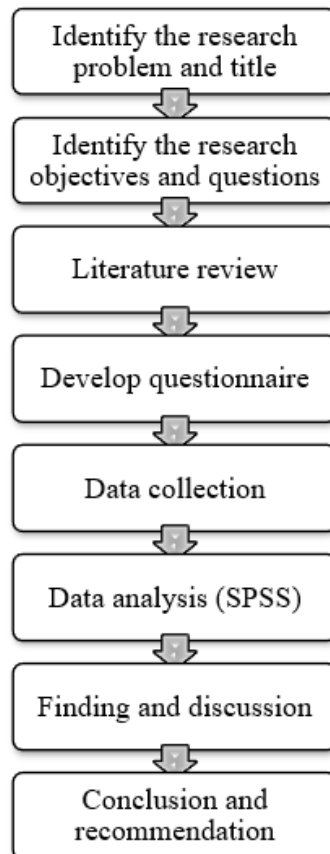


Fig. 1 Research flow chart

4. Results and Discussion

4.1 Survey Return Rate

In this study, the target respondents are managerial level employees of Third Party Logistics (3PL) Provider in Johor. According to the Johor Freight Forwarders Association (JOFFA), there are 272 Third Party Logistics (3PL) Provider in Johor. Based on the Krejcie and Morgan's Table (1970), with a population of 272, the sample size for this study is 162. Therefore, 162 questionnaires were distributed. However, the actual number of completed questionnaires received was 135, resulting in a valid return rate of 83.33%. This survey return rate is presented in Table 3.

Table 3 Survey return rate

Population	Sample Size	Questionnaire Distribute	Questionnaire Returned	Percentage
272	162	162	135	83.33%

4.2 Reliability and Validity Analysis

Reliability describes how consistently a method measures something. The measurement is considered reliable if the same result can be consistently achieved by employing the same techniques under the same conditions.

According to Sekaran and Boogie (2016), reliability is defined as the stability of a measurement under the various conditions under which the results are obtained. Table 4 shows the internal consistency of Cronbach's Alpha value.

Table 4 Cronbach's alpha value

Cronbach's Alpha (α)	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.9 \geq \alpha \geq 0.8$	Very Good
$0.8 \geq \alpha \geq 0.7$	Good
$0.7 \geq \alpha \geq 0.6$	Moderate
Below 0.6	Poor

4.2.1 Reliability and Validity Analysis of Pilot Study

The reliability test results for the pilot study are presented in Table 5, focusing on logistics capability (independent variable) and logistics performance (dependent variable). The result showed that Cronbach's alpha (α) value for logistics capability is 0.834, while for logistics performance, it is 0.824. These values demonstrate that research instruments can be adopted for the study. The questionnaire items used in this study are considered reliable, as both the independent and dependent variables have Cronbach's alpha values exceeding 0.8, which is deemed to be very good. Therefore, the results of the pilot study confirm that the questionnaire is reliable and ready to be applied in the main study.

Table 5 Reliability test for pilot study

Variable	Cronbach's Alpha	Result	N-Items in Scale	N-Respondents
Logistic Capability	0.834	Very Good	25	30
Logistic Performance	0.824	Very Good	12	30

4.2.2 Reliability and Validity Analysis of Actual Study

The reliability test results for the pilot study are presented in Table 6, focusing on logistics capability (independent variable) and logistics performance (dependent variable). The result showed that the Cronbach's alpha (α) value for logistics capability is 0.738, while for logistics performance, it is 0.705. Thus, the questionnaire items used in this study are considered reliable, as both the independent and dependent variables have Cronbach's alpha values exceeding 0.7, which is deemed to be good.

Table 6 Reliability test for actual study

Variable	Cronbach's Alpha	Result	N-Items in Scale	N-Respondents
Logistic Capability	0.738	Good	25	135
Logistic Performance	0.705	Good	12	135

4.3 Demographic Analysis

Based on Table 7, the demographic profile included 135 respondents from Third Party Logistics (3PL) providers in Johor. The majority of the respondents were female (51.9%), with male accounted for 48.1%. The largest age group is 31-40 years old (34.8%), followed by 41-50 years old (28.1%). In terms of race, the majority of respondents were Chinese (36.3%), followed by Malay (34.8%) and Indian (27.4%). In terms of job title, nearly half of the respondents hold middle management positions (46.7%). The most represented logistic sector is freight forwarder (41.5%), followed by transportation (32.6%).

Table 7 Demographic profile

Demographic	Category	Frequency	Percentage (%)
Gender	Male	65	48.1%
	Female	70	51.9%
Age	21-30 years old	24	17.8%
	31-40 years old	47	34.8%
	41-50 years old	38	28.1%
	50 years old and above	26	19.3%

Race	Malay	47	34.8%
	Chinese	49	36.3%
	Indian	37	27.4%
	Others	2	1.5%
Job Title	Supervisor	32	23.7%
	Middle Management	63	46.7%
	Senior Management	37	27.4%
	Others	3	2.2%
Logistic Sector	Transportation	44	32.6%
	Freight Forwarder	56	41.5%
	Customs	32	23.7%
	Others	3	2.2%

4.4 Descriptive Analysis for Logistic Performance

The questionnaire includes 12 questions to gather information on logistics performance, all items in the questionnaire are measured using a five-point Likert scale. Based on Table 8, the descriptive analysis for each of the items in logistic performance was interpreted as high, with standard deviations ranging from 0.69325 to 0.99490. Among the items analyzed, "Has short customer response time" had the highest mean 4.2889, with a standard deviation of 0.80915. The total average score for logistic performance is 4.1580, interpreted as high, with a standard deviation of 0.42896. These results indicate that the respondents had high level of agreement with each of the items measured in logistic performance.

Table 8 Descriptive analysis for logistic performance

Items Code	Items	Mean	Std. Deviation	Interpretation
P1	Maintains low operating costs	4.1333	.88773	High
P2	Has low frequency of disruptions	4.1185	.77317	High
P3	Has low frequency of delays	4.2667	.69325	High
P4	Has less damaged freight	4.1185	.88984	High
P5	Has less lost freight	4.2444	.88492	High
P6	Has low rate of customer complaint	4.0519	.99490	High
P7	Has on-time and accurate delivery	4.1037	.94848	High
P8	Has higher customer satisfaction	4.1333	.97583	High
P9	Has short customer response time	4.2889	.80915	High
P10	Has reputation in the industry	4.1407	.91556	High
P11	Has accurate billing information	4.1037	.89170	High
P12	Has accurate transit and delivery information	4.1926	.90187	High
Total average scores		4.1580	.42896	High

4.5 Descriptive Analysis for Logistic Capability

The questionnaire includes 25 questions to gather information on logistics capability, the logistic capability divided into three dimensions which is innovation capability, responsiveness capability, and flexibility capability. Specifically, innovation capability is measured using 7 questions, responsiveness capability is assessed through 9 questions, and flexibility capability is also evaluated with 9 questions. All items in the questionnaire are measured using a five-point Likert scale.

4.5.1 Innovation Capability

Based on Table 9, the descriptive analysis for each of the items in innovation capability was interpreted as high, with standard deviations ranging from 0.86815 to 1.22743. Among the items analyzed, "adopting technologies and innovative solutions for problem solving" had the highest mean score of 4.1926, with a standard deviation of 0.86815. The total average score for innovation capability is 4.0878, interpreted as a high, with a standard deviation of 0.51062. These results demonstrate that the respondents had high level of agreement with each of the items measured in innovation capability.

Table 9 *Innovation capability*

Items code	Items	Mean	Std. Deviation	Interpretation
I1	Applies creative techniques in freight movement and distribution	4.0963	.87991	High
I2	Regularly improves company's operational systems	4.1852	.93987	High
I3	Adopts technologies and innovative solutions for problem solving	4.1926	.86815	High
I4	Provides a tracking and tracing services	3.7704	1.22743	High
I5	Applies simplification of operations	4.0963	.87139	High
I6	Applies standardisation of operations	4.1185	.88984	High
I7	Applies protection for freight safety and risk	4.1556	.88829	High
Total average scores		4.0878	.51062	High

4.5.2 Responsiveness Capability

Based on Table 10, the descriptive analysis for each of the items in responsiveness capability was interpreted as high, with standard deviations ranging from 0.72261 to 0.92074. Among the items analyzed, "Offers customized logistics services" had the highest mean score of 4.3852, with a standard deviation of 0.72261. The total average score for responsiveness capability is 4.2214, interpreted as high, with a standard deviation of 0.39541. These results demonstrate that the respondents had high level of agreement with each of the items measured in responsiveness capability.

Table 10 *Responsiveness capability*

Items code	Items	Mean	Std. Deviation	Interpretation
R1	Has a customer service management system	4.1630	.90774	High
R2	Capable to respond to customers' requests	4.2593	.77231	High
R3	Company's service flexibility is capable to meet customers' needs	4.2000	.92074	High
R4	Capable to keep low freight damage	4.1778	.87985	High
R5	Capable to keep low loss rate	4.1259	.88461	High
R6	Capable to maintain consistent on-time delivery for all customers	4.1556	.82739	High
R7	Offers customised logistics services	4.3852	.72261	High
R8	Capable to handle problems and complaints	4.2741	.78635	High
R9	Provides an advance notification (e.g. delivery /problem notification)	4.2519	.82605	High
Total average scores		4.2214	.39541	High

4.5.3 Flexibility Capability

Based on Table 11, the descriptive analysis for each of the items in flexibility capability was interpreted as high, with standard deviations ranging from 0.74780 to 1.23551. Among the items analyzed, "Has widespread delivery coverage" had the highest mean score of 4.3111, with a standard deviation of 0.74780. The total average score for flexibility capability is 4.1374, interpreted as high, with a standard deviation of 0.41866. These results demonstrate that the respondents had high level of agreement with each of the items measured in flexibility capability.

Table 11 *Flexibility capability*

Items Code	Items	Mean	Std. Deviation	Interpretation
F1	Has widespread delivery coverage.	4.3111	.74780	High
F2	Has global delivery coverage	4.1778	.94527	High
F3	Has flexible delivery scheduling and routing	4.1630	.79370	High
F4	Has skilled and qualified personnel	4.2148	.80470	High
F5	Has reverse logistics timing (e.g. receiver pays pickup)	3.8519	1.16874	High

F6	Capable to offer routine services	4.2074	.83841	High
F7	Capable to provide fast delivery service	3.8963	1.23551	High
F8	Capable to raise delivery frequency	4.2148	.84980	High
F9	Has extensive operation hours (e.g. after hours or weekend pickup, delivery)	4.2000	.97583	High
Total average scores		4.1374	.41866	High

4.6 Descriptive Analysis for Average Mean Score for Logistic Capability and Logistic Performance

Based on Table 12, the descriptive analysis focused on logistics capability as the independent variable and logistics performance as the dependent variable. The findings revealed that both variables interpreted as high. The average mean score for logistics capability was 4.1489 with a standard deviation of 0.34266, while logistics performance recorded an average mean score of 4.1580 with a standard deviation of 0.42896. Thus, the respondents agreed to the items in logistic capability and logistic performance. These findings indicate that the level of logistic capability and level of logistic performance within the logistic industry in Johor had high level of agreement among respondents.

Table 12 Average mean score for logistic capability and logistic performance

Variable	N	Minimum	Maximum	Mean	Std. Deviation	Interpretation
Logistic Capability	135	3.19	4.90	4.1489	.34266	High
Logistic Performance	135	2.92	5.00	4.1580	.42896	High

4.7 Normality Test

The results in Table 13 show that both variables, logistic capability and logistic performance, have p-values less than 0.05 in both the Kolmogorov-Smirnov and Shapiro-Wilk tests. This means the data for both variables do not follow a normal distribution. Since the data is not normal, this study will use Spearman's rank correlation to examine the relationship between the variables. Spearman's correlation is a good choice because it does not require the data to be normally distributed, it can measure the strength and direction of the relationship between variables even when normality is not present (Mohamad, 2016). By using Spearman's correlation, this study can better understand the connection between the variables without relying on the normality assumptions required for parametric tests.

Table 13 Normality test

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Logistic Capability	.111	135	<.001	.943	135	<.001
Logistic Performance	.110	135	<.001	.954	135	<.001

4.8 Correlation Analysis

Based on Table 14, the results show that the correlation between logistic capability and logistic performance is significant. The value of Spearman's rho correlation between logistic capability and logistic performance is 0.662. Thus, correlation coefficient indicates a strong positive relationship between the two variables. The significant p-value (0.000) confirms that this relationship is statistically significant at the 0.01 level (2-tailed). This showed that logistics capability had a positive influence on logistics performance.

Table 14 Spearman's rho correlation coefficient

		Logistic Capability	Logistic Performance
Spearman's rho	Logistic Capability	Correlation Coefficient	1.000
		Sig. (2-tailed)	.000
		N	135
	Logistic Performance	Correlation Coefficient	.662**
			1.000

Sig. (2-tailed)	.000	.
N	135	135

** . Correlation is significant at the 0.01 level (2-tailed).

5. Recommendations and Conclusion

The first research objective of this study is to identify the level of logistic performance among the logistic industry in Johor. Based on the descriptive analysis, the average mean score for logistic performance is 4.1580, categorizing it as a high-level logistic performance. The results show that most respondents agreed with the statement "Has short customer response time" influenced the level of logistic performance. This finding is consistent with Negassa & Japee (2023), who emphasized that the ability to provide quick customer response times is crucial for improving operational performance and customer satisfaction. Similarly, Adebayo (2022) highlighted that prompt responses to customer needs, reduce delays, enhance trust, will improve overall logistic performance. Additionally, Takwi & Mavis (2020) stressed the importance of logistic performance in enhancing customer satisfaction, reducing costs, and ensuring timely deliveries, while Hua *et al.* (2022) emphasized that logistic performance serves as a critical economic indicator, reflecting the overall efficiency and effectiveness of logistics operations. Furthermore, logistic performance is a key factor of success for both logistics' providers and their customers, emphasizing the importance of maintaining reliability and meeting customer expectations (Khan *et al.*, 2019).

The second research objective is to examine the level of logistic capability among the logistics industry in Johor. Logistic capability in this study is divided into three dimensions which are innovation capability, responsiveness capability, and flexibility capability. Based on the descriptive analysis, the average mean score is 4.1489, categorizing logistic capability as high-level. The results show that these three dimensions influenced the level of logistic capability. These findings are supported by Wang (2020), who emphasized that the integration of these dimensions enables logistics providers to improve their service delivery and maintain a competitive advantage. Iqbal (2024) further highlighted that in this rapidly changing and uncertain business environment, innovation capability significantly impacts logistic firm effectiveness and achieve a competitive advantage. This capability allows logistic firms to develop and implement innovative solutions that enhance their operational efficiency and effectiveness. Similarly, Siagian & Johono (2022) emphasise enhancing responsiveness capability in the logistics can quickly respond to customer needs and can make logistics operations more efficient and effective. Additionally, flexibility capability, as mentioned by Sorkun *et al.* (2020), refers to the ability to adapt and respond efficiently to changes in customer needs and market situations, which is critical for improving operational logistics service quality and strengthening overall operational effectiveness.

The third research objective is to find out the relationship between logistic capability and logistic performance among the logistics industry in Johor. Thus, correlation analysis was used to find out the relationship between logistic capability and logistic performance among the logistic industry in Johor. Based on the Correlation analysis, there is a strong positive relationship between logistic capability and logistic performance among the logistic industry in Johor. It was found that the value of Spearman's correlation coefficient between the two variables was 0.662 at a significant level of $p < 0.01$, as shown in Table 14 in the previous chapter. This indicates that logistics capability had a positive influence on logistics performance. This finding was aligned with the previous studies conducted by Wang (2020), which demonstrated a positive relationship between logistics capability and logistics performance, indicating that improvements in logistics capability can lead to significant enhancements in both operational and financial performance for logistic service providers. Similarly, Evangelista *et al.* (2023) emphasise that logistic capability significantly influences logistic performance by improving operational efficiency, customer satisfaction, and competitive advantage. Furthermore, firms with high innovation capability, which involves the ability to develop and implement new logistics processes and technologies, play a crucial role in achieving these performance improvements (Evangelista *et al.*, 2023). Additionally, responsiveness capability improves logistic performance by addressing operational inefficiencies and implementing targeted improvements. According to Munawar (2021), effective responsiveness helps streamline processes, reduce delays, and enhance overall customer satisfaction, thereby strengthening logistic performance. Kara and Ipekci (2022) further highlighted that flexibility capability allows firms to adapt quickly to dynamic market conditions and customer demands.

In summary, three objectives of this study have been successfully accomplished. The levels of logistics capability and logistics performance have been clearly identified among logistic industry in Johor. Moreover, the study has examined and established the relationship between logistics capability and logistics performance. The analysis demonstrated a strong positive correlation for the relationship between logistic capability and logistic performance among the logistic industry in Johor. Additionally, this research focused on the crucial role of logistics capability in enhancing logistics performance, focusing on key dimensions such as innovation capability, responsiveness capability, and flexibility capability. The results offer valuable insights for the logistic industry in Johor, emphasizing the importance of leveraging innovative practices, improving responsiveness to customer demands, and maintaining operational flexibility to achieve superior logistics performance. These insights not

only support the operational efficiency and competitiveness of the logistics industry but also pave the way for future research aimed at optimizing logistics capability and improving the performance of the logistics industry in Johor.

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Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

The authors confirm contribution to the paper as follows: **study conception and design:** Pang Yong Sheng and Nor Kamariah Kamaruddin; **data collection:** Pang Yong Sheng and Nor Kamariah Kamaruddin; **analysis and interpretation of results:** Pang Yong Sheng and Nor Kamariah Kamaruddin; **draft manuscript preparation:** Pang Yong Sheng and Nor Kamariah Kamaruddin. All authors reviewed the results and approved the final version of the manuscript.

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