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Guide Professionalism, Guide Services, Ship Security, and Shipping Safety for Smooth Ship Traffic at Indonesia's Main Ports

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Abstract: This research aims to analyze the quality of professionalism, guide services related to shipping safety, ship security which influences the smoothness of ship traffic in Indonesia's main ports. Sea ports that serve ships for loading and unloading activities, both for inter-island and international transportation, are generally required to guide. This research method uses descriptive quantitative with data collection techniques using questionnaires distributed to scouts and stakeholders at the port. The R-Square value for smooth ship traffic is 0.762, indicating that the variables of professional pilotage, pilotage services, shipping safety and ship security are able to explain around 76.2% of the variation in smooth ship traffic. This means that the professional factors of pilots, pilotage services, shipping safety and ship security have a major contribution to the smoothness of ship traffic. The R-Square value for shipping safety is 0.626, indicating that the professional guide and guiding service variables are able to explain around 62.6% of the variation in shipping safety. This shows a moderate contribution to the smoothness of ship traffic. The R-Square value of guiding services is 0.425 indicating that guiding professionals explain around 42.5% of the variation in guiding services. This indicates that although there is a fairly strong relationship, there are other factors that also influence guiding services. The R-Square value of ship safety is 0.580, the pilot professional and pilot service variables explain around 58% of the variation in ship safety. This shows quite a significant influence, indicating that professional pilotage and pilotage services are an important factor in ship safety.

Keywords: Guiding Services, Mandatory Guiding Ports, Ship Safety, Shipping Security, Smooth Ship Traffic Flow.

INTRODUCTION

Shipping is an important activity throughout human history, where prosperity depends on inter-regional and international trade activities. In reality, transportation activities, as one cornerstone of globalization, are completely isolated from the influence of economic

movements from other countries. Global GDP growth is still on a healthy track where 77% of global trade (total 13.2 billion tonnes) is transported by sea (seaborne trade). We also need to know that of the total 77%, no less than 43% is a type of transportation related to energy resources, both dry and liquid bulk. Meanwhile, container transportation occupies third position. Meanwhile, transportation of liquid bulk cargo in the form of LNG is a commercial activity that continues to grow. On the other hand, increased trade, better rates and cheaper ship building costs remain the main choices, with the hope that the growth of container ships will continue to increase, while the growth of chemical and wood cargo products will continue to lead at the forefront. Currently, the development of the container fleet will shift from 5,000 TEU ships to larger container ships. The transition in question takes the form of rejuvenating the commercial fleet or ships related to the technical age of the ships. This rejuvenation is in the interests of safety, security and services in the world of shipping, therefore regulations related to the interests of the world of shipping will continue to be issued by both the IMO and local countries which can force the rejuvenation of ships and the replacement of technically old vessels, including the need to increase the skills of seafaring human resources.

Maritime transport is the backbone of the global supply chain, according to UNCTAD (2022) estimates, maritime trade volume recovered in 2021, but in 2022 it faces a complex operating environment full of risks and uncertainties After experiencing a decline of 3.8 percent in 2020 , international maritime trade bounced back in 2021 with an increase in forecast growth of 3.2 percent, and overall shipments of 11 billion tonnes (figure 1). This is slightly below pre-COVID-19 levels, as trade remains hampered by the prolonged pandemic, an unprecedented bottleneck in global logistics caused by a huge increase in demand and an acute shortage of supply-side capacity. Since the Chinese authorities confirmed that they had identified a new virus called novel coronavirus (2019-nCoV) on January 7 2020, and until March 11 2020, WHO declared COVID-19 (n Corona Vdisease) a pandemic.

Therefore, at this time we should be aware of the spread and impact caused by the corona virus. The impact of this virus is very large, not only the impact on health, but also the impact on finances and society as a whole. The Indonesian government has issued a new normal protocol for offices and industry in dealing with the corona virus or Covid-19 pandemic which is regulated in the Decree of the Minister of Health Number HK.01.07/MENKES/328/2020 concerning Guidelines for Preventing and Controlling Covid-19 in Places Office and Industrial work to support business continuity in pandemic situations. Government Regulation Number 21 of 2020 concerning Large-Scale Social Restrictions (PSBB) in the context of accelerating the handling of Covid-19 has stated that PSBB is carried out, one of which is by closing workplaces. As is known, most commodities are transported via sea transportation which is managed by shipping companies. Based on data from the International Chamber of Shipping, the shipping industry is responsible for transporting commodities around 90% of total world trade. Thus, the emergence of COVID-19 has had a major impact on the shipping industry at this time, especially in the logistics sector, namely exports and imports. In its Maritime Transport Outlook for 2022, the United Nations Conference on Trade and Development (UNCTAD) projected global maritime trade growth will moderate to 1.4 percent this year and remain at that level in 2023.

This compares with forecast growth of 3.2 percent in 2021 and an overall shipping volume of 11 billion tonnes, compared with a decline of 3.8 percent in 2020. For the entire 2023-2027 period, growth is forecast at an annual average of 2.1 percent, more slower than the previous three-decade average of 3.3 percent, UNCTAD said, adding that downside risks weighed heavily on this forecast.

Recovery in maritime transport and logistics is now at risk from the war in Ukraine, the continuing grip of the pandemic, prolonged supply chain constraints, as well as China's cooling economy and zero-COVID policy, along with inflationary pressures and cost of living pressures, UNCTAD said in the report. A surge in consumer spending in 2021 pushed the

container shipping market to record levels with the support of ports around the world, also partly due to the effects of lockdowns. UNCTAD said "bottlenecks in logistics will disappear with the rebalancing of demand and supply forces", but added the risk of industrial action in hinterland ports and transport had increased.

UNCTAD calls for investment in maritime supply chains to enable ports, shipping fleets and hinterland connections to be better prepared for future global crises, climate change and the transition to low-carbon energy.Growth is primarily driven by increased demand for container cargo, gas and Dry bulk shipments also increased while crude oil shipments decreased. The volume of trade by sea reached 10.7 billion tons in 2017, or covering more than 80 percent of the total global trade volume. In the global supply chain, ports play an important role in cargo transportation, as cargo is moved between sea and land transportation at the port. Due to the growth of seaborne trade, the number and size of ships that need to be serviced at ports continues to increase. As a result, ship traffic at the port is becoming increasingly dense, giving rise to congestion mitigation challenges for ship traffic service operators in relation to shipping safety services (Vessel Traffic Service).

According to (Melnyk et al., 2022; Pramesti et al., 2021) Maritime safety and security here is the main policy that must receive priority in shipping in supporting the smooth maritime transportation of Indonesia as an archipelagic country. Indonesia has sovereignty over the entire Indonesian sea area, so that the sea has a significant role both as a means of unifying the nation and territory of the Republic of Indonesia, as well as the sea as an invaluable national asset and Indonesia's future. Control over the sea has the consequence that the Government is obliged to carry out governance in the field of law enforcement at sea, both against threats of violations, utilization of waters, as well as maintaining and creating optimal shipping safety. Thus, it is important to emphasize maritime safety and security policies in Indonesia, namely a situation that guarantees the safety and security of various activities at sea including shipping activities, exploration and exploitation of natural and biological resources as well as environmental preservation. Therefore, it is necessary to have maritime governance and law enforcement at sea to ensure safety, security, order, and protection of the marine environment so that it remains clean and sustainable as a source of life for all Indonesian people and supports the smooth running of shipping traffic.

Ports are one of the important assets for a country because through ports loading and unloading of imported and exported goods is carried out and also between islands which have an impact on the economy of a region and the country. Indonesia is an archipelagic country with more than 17,508 islands which is spread from Aceh in the west to the city of Papua in the east. The role of ports and sea transportation has strategic value in the distribution of goods at ports which also drives the national economy (Rakhman et al., 2020).

Ports as maritime transportation infrastructure have a very important and strategic role in the growth of industry and trade and are a business segment that can contribute to the economy and national development because they are part of the chain of transportation and logistics systems. Therefore, port management is required to be carried out effectively, efficiently, and professionally so that port services are smooth, safe, and fast (Adris.A.Putra & Djalante, 2011). Sea transportation plays a very important role in the distribution of goods and services in Indonesia, especially on remote islands in the archipelago. Ports as transportation infrastructure that supports the smooth running of the maritime transportation system have functions that are closely related to social and economic factors. Economically, ports function as one of the driving forces of the economy because they are facilities that facilitate the distribution of production results. Meanwhile, socially, ports are public facilities where interactions between users (society) take place, including interactions that occur due to economic activities (Ahmadi et al., 2018; Anggrahini, 2019).

It is no longer a new thing that safety issues are always in the spotlight and become material for evaluation by various countries, especially in the maritime world. The effect of the

safety system on ships depends on regular and optimal surveys and inspections carried out by Class, Owner Surveyor and Port State Control in each country that has a port or is a destination for international trade. The rate of ship accidents is a consequence of lost control. Without warning, shipping agents/operators must be careful about accidents at sea. Ship accidents at sea not only result in loss of life but also costs that must be borne to cover the trend of ship accidents (Arsy, 2021; Dr. R. Luki Karunia, SE., 2019; Firdaus Suwestian et al., 2015)

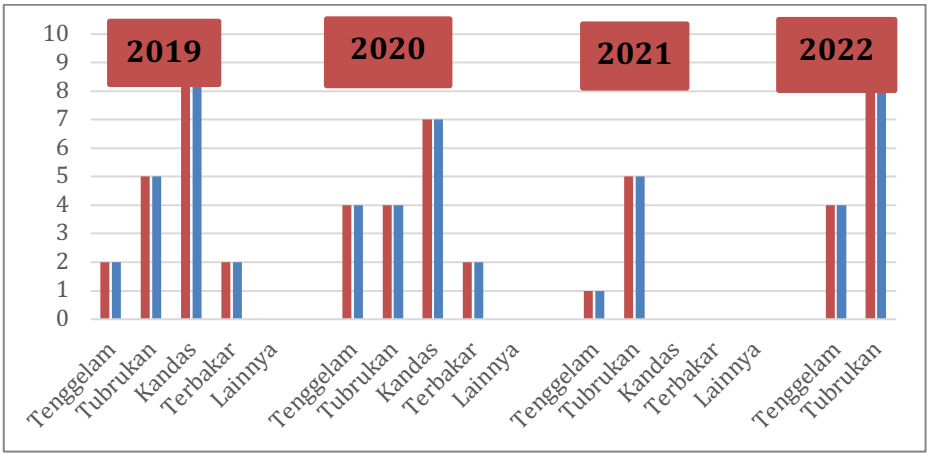

Figure 1 number of shipping accident cases in 2019 -2022
Source: RI Shipping Court 2022

The high number of maritime accidents in the world is a concern for all parties, not only ship owners, but also the government, related agencies and the community. The ship accident caused the loss of hundreds of Indonesian people's lives. The causes of accidents vary, from fire, overloading to the age of the ship being manipulated. This condition is exacerbated by the weak level of supervision from policy makers.

The main cause of maritime accidents is generally due to excess transportation over the specified carrying capacity, both goods and people. In fact, it is not uncommon for shipping service users to force themselves to board the ship even though the ship is already full with the determination to get a place on the ship. The implementation of shipping channels, which includes program activities, arrangement, construction, operation and maintenance, is aimed at being able to provide services and direction to users of sea transportation services to pay attention to the capacity and capability of the channel in relation to the weight of ships that will pass through the channel so that they can sail safely, smooth and comfortable. In order to integrate transportation facilities and infrastructure that meet transportation security and safety requirements, system and procedure standardization or regulations, as well as professional human resources are needed to create complete, effective and efficient transportation services. Therefore, a good governance system is needed where the government has the function of providing guidance to transportation services including regulatory aspects, supervisory aspects and control aspects. The regulatory aspect includes the determination of general policies and technical policies, including determining standards, norms, guidelines, criteria, plans, procedures including security and safety requirements. The supervision aspect includes monitoring activities, assessments, investigations, recommendations and corrective actions as well as law enforcement regarding transportation operations so that they comply with standards, norms, guidelines, criteria, procedures and planning that have been determined by statutory regulations. Control aspects include direction, guidance and guidance, licensing, certification and training as well as technical assistance in the fields of development and operation. To integrate transportation operations that meet security and safety requirements, it is necessary to have a strategic trend analysis of transportation accidents, in this case a trend analysis of maritime transportation accidents is needed (Thamrin, 2023).

The enactment of Law no. 17 of 2008 concerning Shipping and Government Regulation no. 61 of 2009 concerning Ports, Government Regulation no. 5 of 2010 concerning navigation along with implementing regulations regarding ship piloting which are regulated in chapter IX with 10 articles, meaning that piloting is part of the navigation task but technical guidance lies with the Directorate of Ports and Dredging of the Directorate General of Sea Transportation. Pilotage activities at ports are under the supervision of the Port Authority and Harbormaster at Main class ports, namely Belawan Harbor, Tanjung Priok port, Jakarta, Tanjung Perak Surabaya and Makassar port, while at class 1 to 5 ports it is under the supervision of the Harbormaster's Office and the Port Authority. With the Minister of Transportation Regulation Number 16 of 2023 concerning the Fourth Amendment to the Regulation of the Minister of Transportation Number PM 36 of 2012 concerning the Organization and Work Procedures of the Harbor Master's Office and Port Authority and this applies to Belawan port, Tanjung Priok port, Tanjung Perak port and Makassar port.

As the spearhead of port activities, ship piloting services have the responsibility to provide technical input/advice to ship captains to move ships into or out of the port safely and efficiently. Good quality pilotage services are needed to avoid the risk of collisions/accidents, ensure the safety and smoothness of ship traffic at the port. From the table data below, it can be seen that the accident rate for pilotage services at the Tanjung Perak port in Surabaya is relatively very low, around 0.09%.

Table 1. Number of ship piloting service activities and accidents at Tanjung Perak Port, Surabaya

No.	Activities	Year 2017	Year 2018	Year 2019	Year 2020
1	Ship in	8070	11.762	13.549	13.150
2	Ship out	9480	12.137	13.267	12.904
3	The ship moved	8280	11.160	11.760	11.410
4	Amount	25.830	35.019	38.576	37.464
5	Accident	1 ship	1 ship	2 ship	3 ship

Source: KSU Tanjung Perak Surabaya, 2021

In this context, considering that pilots are part of the nautical seafarers who have competency certificates and pilot certificates issued by the Government, it is deemed important to carry out research to assess the professionalism of pilots, pilotage services, shipping safety, ship security regarding the smoothness of ship traffic at the main port. in Indonesia. From several previous writings generally related to performance achievements in port services and related to problems with pilotage services at several ports such as waiting times and pilotage service times on ships, the novelty in this research focuses on professional guides in carrying out their functions and roles as part of from the Government's duties in the field of shipping safety as a variable as well as pilotage services, where the factors of Shipping Safety, Ship Security as variables also determine the smoothness of ship traffic in ports, especially at the main ports in Indonesia (Andrianto et al., 2017; Rikiatun et al., 2023; Rudianto et al., 2023).

METHOD

This research was conducted from January to July 2024 on guides at the main ports of Indonesia, namely Belawan port, Tanjung Priok port, Tanjung Perak port, and Makassar port. These guides are used as references and guidelines for guide services in Indonesia.

Tanjung Priok Port is a barometer of port and ship operational activities, where every day there are almost 100 (one hundred) ship movements using pilots on board. Population and Sampling Techniques the population taken is from stakeholders at the port such as officials from the Harbor Master's Office and Port Authority, service users such as shipping companies, loading and unloading companies, and land transportation in addition to guides at the main Indonesian ports and random selection of respondents using a minimum of 80 respondents representing the types of pilotage area determination in Indonesia.

Data source: The data used in the research are primary and secondary data. Primary data is information collected directly from respondents from PT. Pelabuhan Indonesia as the parent company of Pandu itself, as well as from port service users such as shipping companies, ship agents and loading and unloading companies and the Harbormaster's Office and Port Authority. Secondary data was obtained from the Ministry of Transportation, Maritime Affairs Ministry, books, journals, guide associations and other scientific works, the internet and related literature from both within the country and abroad (Susanto, Yuntina, et al., 2024).

Data collection method: Data collection in this study used a questionnaire with interviews with the scouts for 7 days considering that the scouts work in shifts (12 hours) working at the main ports in Indonesia. The sampling method is random sampling (Susanto, Arini, et al., 2024), with the entire population being sampled because if the population is 80, then the entire population is sampled. Data collection was carried out by distributing questionnaires to 80 respondents.

Data Analysis Method: The data analysis method used is descriptive analysis and linear multiple regression. A description of the guide's characteristics is provided using descriptive analysis. The multiple linear analysis method aims to determine the influence of each independent variable on guiding services. The choice of this method is based on suitability to the research objectives. The software used for this analysis is Microsoft Office Excel and SPSS software. Various literature will be reviewed to understand the factors that influence the quality of pilotage services at ports, as well as efforts that can be made to improve the quality of pilotage services.

RESULTS AND DISCUSSION

Research data was collected by distributing questionnaires directly to respondents who were found. The questionnaire was obtained by the researcher meeting the respondents directly and providing a questionnaire to be filled out by the respondents who were the stakeholders carrying out activities at the Main Port consisting of: 1. Pandu Bandar Belawan Port, Tanjung Priok Port, Tanjung Perak Port and Makassar Port. 2. Officials and officers from the Harbor Master's Office and Tanjung Priok Port Authority in Jakarta. 3. Users of port services from shipping companies, ship agencies, and loading and unloading companies at Tanjung Priok port.

Collecting data directly by meeting respondents through direct conversations and discussions is expected to be more effective in increasing the response rate of respondents in this research. A questionnaire survey was conducted in June 2024 with 80 (eighty) respondents, including 40 bookie guides, 20 people from the Tanjung Priok Port KSOP Office and 20 people from port service users. The technique used in sampling is the Sample Quota method technique. Namely, sampling is based on a predetermined amount. This sampling is based on subjects that are easy to find, so that data collection is easy and the predetermined quantity (quotum) is met. Thus, the requirements for data processing using the SPSS sample analysis tool can be met.

The variables that measure the level of validity and reliability consist of: ship safety, smooth ship traffic, shipping safety, guiding services and professional guides. The measurement of convergent validity refers to the loading factor and Average Variance Extracted (AVE) values. Factor loadings measure the correlation between individual items and the variables they measure. A high factor loading indicates that each item is able to reflect the variable being measured. Generally, a loading factor value > 0.70 is considered to have good validity. Next, AVE measures the amount of variance captured by the construct relative to the amount of variance caused by error. An AVE value > 0.50 indicates that the construct has good convergent validity.

In reliability testing, we use the Cronbach's Alpha (CA) measure, which is a measure of internal consistency, or how well the items in one variable correlate with each other. A higher CA value, generally > 0.70, indicates that each item is consistent in measuring the same

variable. Apart from that, also pay attention to the Composite Reliability (CR) measure. CR is a reliability measure that is superior to CA because it considers different factor loadings of each item. A CR value > 0.70 also indicates that the variable being measured is reliable. A summary of the results of validity and reliability testing is presented in Table 2 below this.

Table 2 Validity and Reliability

Variable	Item	Loading Factor	AVE	CA	CR
Ship Security	KK1	0.775	0.581	0.896	0.901
	KK2	0.735			
	KK3	0.806			
	KK4	0.744			
	KK5	0.772			
	KK6	0.726			
	KK7	0.828			
	KK8	0.702			
Smooth Ship Traffic	KLLK1	0.783	0.534	0.854	0.857
	KLLK2	0.746			
	KLLK3	0.763			
	KLLK4	0.702			
	KLLK5	0.724			
	KLLK6	0.689			
	KLLK7	0.704			
Shipping Safety	KPel1	0.782	0.574	0.907	0.911
	KPel2	0.780			
	KPel3	0.778			
	KPel4	0.795			
	KPel5	0.773			
	KPel6	0.762			
	KPel7	0.713			
	KPel8	0.736			
	KPel9	0.693			
Guiding Services	LP1	0.743	0.589	0.884	0.885
	LP2	0.768			
	LP3	0.769			
	LP4	0.758			
	LP5	0.753			
	LP6	0.824			
	LP7	0.757			
Guide Professional	PP1	0.732	0.603	0.917	0.923
	PP2	0.744			
	PP3	0.759			
	PP4	0.786			
	PP5	0.716			
	PP6	0.793			
	PP7	0.834			
	PP8	0.808			
	PP9	0.806			

Based on the table above, all items in the ship safety variable have good loading factor values, namely between 0.702 to 0.828. This shows that each item has a significant contribution to the measurement of ship safety variables. Likewise, the AVE value is 0.581, which indicates that more than 58% of the variance can be explained by this construct and meets the minimum criterion of 0.5. Furthermore, the CA value is 0.896 and the CR value is 0.901, which indicates excellent internal consistency.

In measuring the smoothness of ship traffic variables, all items have loading factors between 0.689 and 0.783, which is still in the good category, although the KLLK6 item

produces a loading factor value of 0.689 < 0.70. The value 0.689 is still considered valid because the AVE value is 0.534 > 0.50. Furthermore, the value for this variable is 0.534 which indicates adequate convergent validity. In the reliability measurement, the CA value is 0.854 and the CR value is 0.857 which indicates good internal consistency.

In measuring the shipping safety variable, all items have a good loading factor (between 0.693 to 0.795), which is still in the good category, although the Kpel9 item produces a loading factor value of 0.693 < 0.70. The value of 0.693 is still considered valid because the AVE value is 0.574 > 0.50, which indicates that convergent validity is met. Furthermore, the CA value is 0.907 and the CR value is 0.911, indicating excellent reliability.

In the guiding service variable, all items have good loading factors (between 0.743 to 0.824) with an AVE value of 0.589 > 0.50. This means that convergent validity is fulfilled well. The CA value is 0.884 and the CR value is 0.885, indicating good reliability.

In the professional guide variable, all items also have very good loading factors (between 0.732 to 0.834) with an AVE value of 0.603 > 0.50. This means that the professional guide construct has good convergent validity. Meanwhile, the CA value is 0.917 and the CR value is 0.923, indicating very good reliability.

Overall, all variables showed good internal consistency and reliability, as indicated by high CA and CR values. High factor loadings indicate that the items in each variable effectively measure the underlying construct. AVE values above 0.5 in all variables indicate that the construct has adequate convergent validity. This indicates that the measurements taken are consistent and reliable, and the variables used are valid for further interpretation.

The next validity test is discriminant validity which refers to the Heterotrait-monotrait Ratio of Correlations (HTMT) coefficient. Discriminant validity is fulfilled well when the correlation coefficient value between constructs is <0.90. The results of discriminant validity testing are presented in the table below.

Tabel 3 Validity Discriminant – HTMT

	KK	KLLK	Kpel	LP	PP
Keamanan Kapal					
Kelancaran Lalu Lintas Kapal	0.861				
Keselamatan Pelayaran	0.668	0.849			
Layanan Pemanduan	0.827	0.886	0.710		
Profesional Pandu	0.679	0.828	0.829	0.713	

Based on the table above, it can be seen that the correlation coefficient value between constructs is in the range 0.679 to 0.886. Because the correlation coefficient value is less than 0.90, it can be concluded that discriminant validity is met well. In other words, the constructs in the model truly represent different concepts and do not simply reflect the same or similar variables.

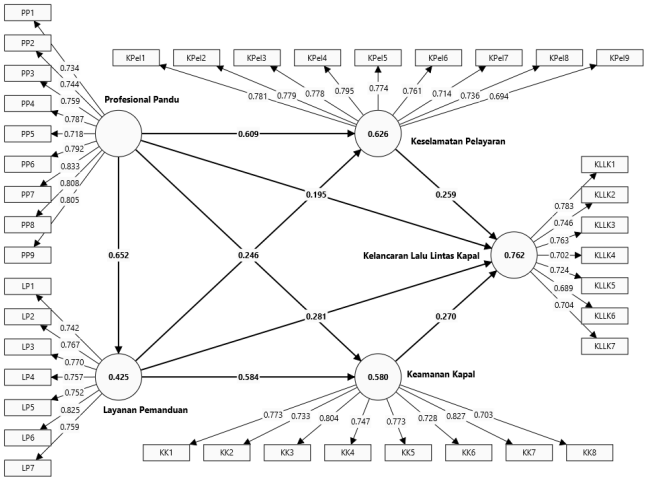

Figure 2 Inner Model

Multicollinearity testing in the structural model to prove whether the relationship in the structural model is free from high correlation. Multicollinearity testing uses the Variance Inflation Factor (VIF) value. The model is free from symptoms of multicollinearity when the VIF value is < 5. This research proves that the VIF-inner values in the structural model are all < 5 so that the model does not indicate high multicollinearity.

Table 4 Multicollinearity

	VIF-Inner	Cut-off	Decision
Professional Guides→Smooth Ship Traffic	2.788	< 5	Unbiased Model
Guiding Services→Smooth Ship Traffic	2.631	< 5	Unbiased Model
Shipping Safety→Smooth Ship Traffic	2.723	< 5	Unbiased Model
Ship Security→Smooth Ship Traffic	2.421	< 5	Unbiased Model
Professional Driver→Navigating Safety	1.739	< 5	Unbiased Model
Guiding Services→Navigating Safety	1.739	< 5	Unbiased Model
Guide Professional→Guide Services	1.000	< 5	Unbiased Model
Professional Guide→Ship Security	1.739	< 5	Unbiased Model
Guiding Services→Ship Security	1.739	< 5	Unbiased Model

This research tests the direct and indirect effects of the conceptual model. There are nine hypotheses tested directly and seven hypotheses indirectly. A summary of direct hypothesis testing is summarized in Table 4 and indirect hypotheses are summarized in Table 5.

Tabel 5 Direct Hypothesis

Direct	STD	STDEV	T statistics	P values
H1. Professional Guides→Smooth Ship Traffic	0.195	0.095	2.063	0.039
H2. Guiding Services→Smooth Ship Traffic	0.281	0.121	2.313	0.021
H3. Shipping Safety→Smooth Ship Traffic	0.259	0.088	2.929	0.003
H4. Ship Security→Smooth Ship Traffic	0.270	0.111	2.439	0.015
H5. Professional Driver→Navigating Safety	0.609	0.120	5.059	0.000
H6. Guiding Services→Navigating Safety	0.246	0.116	2.124	0.034
H7. Guide Professional→Guide Services	0.652	0.091	7.146	0.000
H8. Professional Guide→Ship Security	0.239	0.100	2.390	0.017
H9. Guiding Services→Ship Security	0.584	0.087	6.722	0.000

H1: Professional Guides → Smooth Ship Traffic
The direct influence coefficient of 0.195 indicates that professional pilots have a positive impact on the smoothness of ship traffic. The t-statistic value of 2.063 and p-value of 0.039 indicate that this effect is statistically significant.
H2: Guiding Services → Smooth Ship Traffic
The coefficient of 0.281 indicates a greater influence of guiding services on the smoothness of ship traffic compared to professional guiding. With a t-statistic value of 2.313 and a p-value of 0.021, this effect is also significant.
H3: Shipping Safety → Smooth Ship Traffic
With a coefficient of 0.259, shipping safety has a significant influence on the smoothness of ship traffic, supported by a t-statistic value of 2.929 and a p-value of 0.003.
H4: Ship Security → Smooth Ship Traffic
A coefficient of 0.270 indicates that ship security also has a significant influence on the smoothness of ship traffic, with a t-statistic value of 2.439 and a p-value of 0.015.
H5: Professional Drivers → Shipping Safety
The influence of professional guides on shipping safety is very strong, with a coefficient of 0.609, a t-statistic value of 5.059, and a p-value of 0.000, which shows very high significance.
H6: Guiding Services → Shipping Safety

With a coefficient of 0.246, pilotage services also have a significant impact on shipping safety, as indicated by a t-statistic value of 2.124 and a p-value of 0.034.
H7: Guide Professionals → Guide Services
This hypothesis shows a very strong relationship with a coefficient of 0.652 and a t-statistic value of 7.146. A p-value of 0.000 indicates very high significance, indicating that professional guides significantly influence guiding services.
H8: Professional Guide → Ship Security
The coefficient is 0.239, with a t-statistic value of 2.390 and a p-value of 0.017, indicating that professional pilots also have a significant influence on ship safety.
H9: Guiding Services → Ship Security
Guiding Services have a very significant influence on ship safety, with a coefficient of 0.584, a t-statistic value of 6.722, and a p-value of 0.000.
From these results, it can be concluded that all the variables tested have a significant influence on other variables in this context. Guide professionals and pilotage services have an important role not only in the smooth flow of ship traffic, but also in shipping safety and ship security. This relationship is statistically significant, indicating that these factors are very important in managing and improving ship traffic operations and safety at sea.

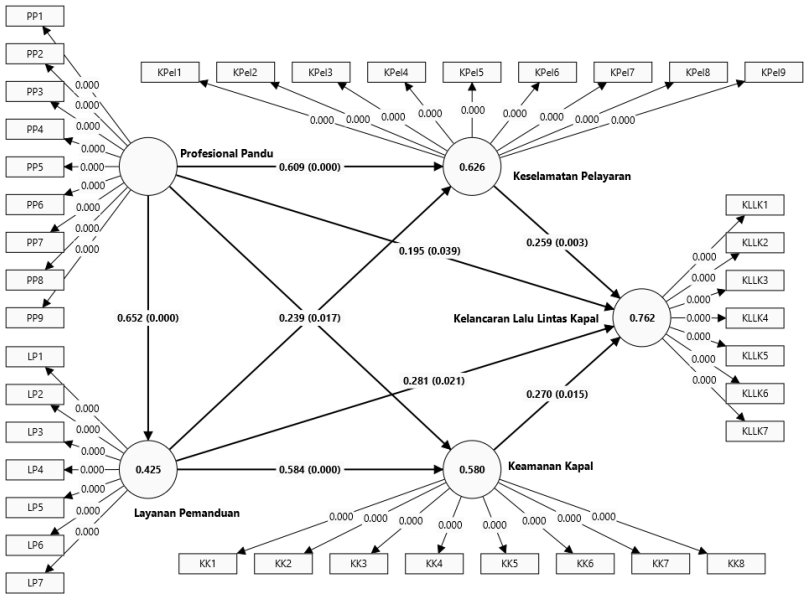

Figure 3 Structural Model

Table 4 shows the results of statistical analysis for indirect effects of several variables in the structural model tested. This indirect effect occurs when a variable influences another variable through an intermediary variable (mediator).

Table 6 Indirect Hypothesis

Indirect	STD	STDEV	T statistics	P values
Guide Professionals→Guiding Services→Ship Safety	0.380	0.088	4.340	0.000
Guiding Services → Shipping Safety → Smooth Ship Traffic	0.064	0.039	1.628	0.104
Professional Guides→Guiding Services→Smooth Ship Traffic	0.183	0.083	2.212	0.027
Professional Guide → Shipping Safety → Smooth Ship Traffic	0.158	0.063	2.516	0.012
Guide Professionals→Guide Services→Navigation Safety	0.160	0.079	2.033	0.042
Guiding Services→Ship Security→Smooth Ship Traffic	0.158	0.075	2.104	0.035
Professional Guide→Ship Security→Smooth Ship Traffic	0.065	0.036	1.805	0.071

Guide Professionals → Guide Services → Ship Safety

The indirect influence coefficient of 0.380 indicates that professional pilots have a significant influence on ship safety through guiding services as mediators. With a t-statistic value of 4.340 and a p-value of 0.000, this relationship is very statistically significant. This shows that pilotage services play an important role as a link in improving ship safety.

Guiding Services → Shipping Safety → Smooth Ship Traffic

The coefficient of 0.064 shows the indirect influence of pilotage services on the smoothness of ship traffic through shipping safety. However, with a t-statistic value of 1.628 and a p-value of 0.104, this relationship is not statistically significant, which means that this effect may not be strong or consistent in the sample tested.

Professional Guides → Guide Services → Smooth Ship Traffic

A coefficient of 0.183 indicates that professional pilots influence the smoothness of ship traffic through pilotage services. With a t-statistic value of 2.212 and a p-value of 0.027, this effect is statistically significant, indicating that guiding services are an important mediator in this relationship.

Professional Guides → Shipping Safety → Smooth Ship Traffic

The indirect effect of 0.158 shows that professional pilots influence the smoothness of ship traffic through shipping safety as a mediator. The t-statistic value of 2.516 and p-value of 0.012 indicate that this relationship is statistically significant, so that shipping safety plays an important role in smoothing ship traffic.

Guide Professionals → Guide Services → Shipping Safety

A coefficient of 0.160 indicates that professional guides influence shipping safety through guiding services. With a t-statistic value of 2.033 and a p-value of 0.042, this relationship is statistically significant, indicating that guiding services are a significant mediator.

Guiding Services → Ship Security → Smooth Ship Traffic

The indirect influence coefficient of 0.158 shows that pilotage services influence the smoothness of ship traffic through ship security. With a t-statistic value of 2.104 and a p-value of 0.035, this effect is statistically significant, which confirms the importance of ship safety in linking pilotage services with smooth ship traffic.

Professional Guides → Ship Security → Smooth Ship Traffic

The coefficient of 0.065 indicates a smaller indirect influence from professional pilots on the smoothness of ship traffic through ship safety. With a t-statistic value of 1.805 and a p-value of 0.071, this effect is not statistically significant, indicating that this relationship may be weak or less consistent.

From the table above, it can be seen that some indirect influence paths are significant, while others are not. The professional influence of pilots through pilotage services tends to be a significant pathway in improving ship security, shipping safety and the smoothness of ship traffic. However, some indirect effects, such as pilotage services through shipping safety on the smoothness of ship traffic, do not show strong enough statistical significance. This suggests that certain mediators have a more important role in influencing the final outcome than other mediators.

CONCLUSION

The role and function of port guides is to carry out their main duties in shipping safety for ships entering, leaving, or moving, in addition to providing port services. Ship guiding is a guide's activity in helping, providing advice and information to the Master regarding important local water conditions. so that shipping navigation can be carried out safely, orderly, and smoothly for the safety of ships and the environment. The job of guiding a ship is a job that requires human resources with special skills and has a high risk, but also requires responsibility for work performance, cooperation, initiative, honesty, obedience, and behavior in excellent physical condition in its implementation, in addition to the smoothness, security, and safety of the ship. Being guided is the main thing in the implementation of ship piloting because the consequences that can arise from negligence in ship piloting activities can affect the smoothness of ship traffic in the port, and even the waters and the environment.

Professionalism and pilotage services are part of the pilot's main duties by paying attention to ship safety factors and shipping safety to ensure smooth ship traffic in the port. What is meant by shipping safety and security is the condition of the ship that meets the requirements, including materials, construction, buildings, machinery, electricity, stability, ship layout and equipment.

Based on the results of data analysis, from the overall hypothesis, the variables used have a positive and significant influence. that the pilot professionalism variable may not directly have a positive and significant influence, including the presence of competency certification factors and ship guiding experience.

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