Government Regulation and Hinterland Connectivity as a Moderating Variable Between Port Performance and Port Logistics Costs

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Abstract. This study examines the effect of Port Performance on Port Logistics Costs based on Human Capital Quality and IT System Alignment moderated by government regulation and Hinterland Connectivity. The population of this study is 167 shipping line companies. This study used a saturated sampling technique. Data collected through surveys were analyzed using Importance Performance Analysis (IPA) and Structural Equation Modeling (SEM). The results show that the Quality of Human Capital and IT System Alignment have a significant effect on Port Performance. In addition, IT System Alignment and Port Performance significantly affect Port Logistics Costs. Meanwhile, the Quality of Human Capital has an insignificant effect on Port Logistics Costs. Furthermore, Hinterland Connectivity and government regulation can moderate the effect of Port Performance on Port Logistics Costs. The main novelty in this study lies in the role of Hinterland Connectivity and government regulation as a moderating variable in the relationship between Port Performance and Port Logistics Costs.

Keywords: IT system alignment, government regulation, hinterland connectivity, port performance, port logistics costs

1. Introduction

Ports are an important trade chain for both inter-island and international trade; they are used for exports, imports, and other economic activities [1]. Ports are also important for other reasons. First, it deals with the transportation aspect, in which ports act as an interface, gateway, and industrial entity in industrial development. Second, it deals with the service aspect, where ports provide services related to trade and industrial development, including transit facilities. Third, it deals with hinterland connections, which have the potential for industrial development. For Indonesia as a maritime country, a port offers a great opportunity. Port strategic management, divided into three stages of strategy formulation, implementation, and evaluation, is needed [2].

Human capital is needed in handling loading and unloading at the port as a determinant of success [3]. Human capital is defined as individuals and work teams with personal relationships inside and outside the company [4]. Increasing human capital can be balanced by utilizing the information technology system, a set of tools that help perform tasks related to information data processing. This can improve individual performance and help provide information to make decisions in a company while still paying attention to system alignment. To increase efficiency, reduce costs, improve customer and supplier relationships, and create new business solutions, it

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is necessary to align business and information technology (IT) strategies by companies such as ports.

Improving performance in the future by implementing a competency and performance-based HR management system is PT Pelindo II's commitment to creating value by increasing the performance and agility of HR and culture in the organization. The Indonesian National Ship Owner Association (INSA) complained about the high costs at the port for transporting goods by sea, reaching 60% of the total shipping costs. The Indonesian Toy Association (AMI) considers the increase in container service rates at Tanjung Priok Port to be inappropriate and burdensome for entrepreneurs.

According to data from the Ministry of Finance in 2019, Indonesia's logistics expenses remain relatively high, accounting for 23.5% of GDP. This number is significantly greater than that of other nations, including Singapore (8%), the US (8%), the EU (9%), Japan (9%), South Korea (9%), India (13%), Malaysia (13%), and China (15%), according to the Pelindo I-IV consolidation research. Arif Suhartono, President Director of Pelindo II, stated that a number of factors, including a deficiency of favorable Government Regulations, inefficiencies in the land and maritime value chain, suboptimal port operations and infrastructure, and an imbalance in supply and demand, contributed to the high costs associated with logistics.

This study examines the effect of Port Performance on Port Logistics Costs based on Human Capital Quality and IT System Alignment. We also examine the influence of Port Performance on Port Logistics Costs moderated by Government Regulation and Hinterland Connectivity. PT Pelindo II, as a party closely related to port activities, is the right choice to be used as a research subject.

2. Literature Review

2.1. Human Capital Quality

Human capital is defined as the aggregation of investments that increase individual productivity in the labor market, as well as in non-market activities. The most significant component of contemporary socioeconomic development that raises people's standards of living is human capital. Human resources can provide innovative economic development and increase productivity and intellectual abilities in their work [5]. According to [6], some measures describe the quality of human capital in a company, namely talent, strategic integration, cultural relevance, knowledge management, and leadership.

2.2. Information Technology (IT) System Alignment

IT is a set of tools that help work related to information processing aimed at solving problems, fostering creativity, and increasing effectiveness and efficiency in carrying out a job [7]. [8] and Pelindo II Internal Data (2021) state that there are six main indicators for system quality, namely:

a. Accessibility measures the extent to which the information system can be accessed with relatively low effort.
b. Reliability measures the extent to which the system is reliable (for example, technically available) over time.
c. Response time measures the extent to which the system offers a quick response to a request for information or an action.
d. Flexibility, measuring the extent to which the system can adapt to varying user needs and changing conditions.
e. Integration measures the extent to which the system facilitates the combination of

information from multiple sources to support business decisions.

f. SOP (Standard Operating Procedure) is a documented process that the company has to ensure that services and products are delivered consistently.

2.3. Government Regulation

Government Regulation is delegated statutory provisions designed by subject matter experts to enforce primary regulations. The goal is to control society with certain limitations. Government activities at the port include the functions of regulation and guidance, control and supervision of port activities, and shipping safety and security. In addition, there are functions of customs, immigration, quarantine, and other government activities that are not permanent. These functions are carried out in accordance with the provisions of laws and regulations.

2.4. Hinterland Connectivity

Port connectivity, according to [9], is a transportation sub-network that encapsulates ports' capacity to control flows between the mainland and the hinterland. According to [10], Hinterland Connectivity is a network of services and transportation infrastructure that enables the movement of containers to and from ports. By lowering transportation costs, enhancing the quality of goods and services, and promoting intraregional trade and investment, the expansion of port-hinterland connections supports regional economic development and sustainability [11]. Effective transportation connections to the hinterland will also help integrate geographically underdeveloped regions, thereby boosting overall economic activity.

2.5. Port Performance

Port Performance is the amount of work produced, the degree of service success, and the utilization of port resources within a given time frame. The following elements show port performance. First, 90% of global freight transportation and international trade is drawn to ports due to their high volume and inexpensive cost in comparison to other modes of transportation. Second, ports are an essential component of the supply chain for global trade, and the efficiency of its ports influences a nation's competitiveness. Third, as shipping uses less fuel than other forms of transportation like rail and road, rising environmental consciousness may increase demand for ship transportation [12]. Finally, ports serve as economic support in terms of income and employment. According to a World Bank study, the ratio of direct employment in ports to indirect employment is roughly 1:9, and the ratio of direct revenue from port operations to indirect revenue from port-related activities is 1:5 [13].

2.6. Port Logistic Cost

Port Logistics Costs are a significant and relevant proportion of business costs and depend on the methods applied and the industry in question. Companies must be able to capitalize on the opportunities available to gain a competitive advantage over other companies and become successful in the market. Among the many possible activities, cost reduction in logistics is considered one of the core areas that present great opportunities [14]. In general, Port Logistics Costs are grouped into seven classifications, namely: Less than container load (LCL) charges, documentation fees, handling fees, storage fees, port due, and ocean freight, which are all included in the terminal handling charge (THC) [15].

3. Research Methods

This study employs a quantitative approach characterized by its systematic, well-planned, and structured research methodology. The research will be conducted at the Tanjung Priok Branch of PT Pelindo II. The study's target population encompasses all companies that have utilized the services provided by PT Pelindo II Tanjung Priok Branch, resulting in a total population size of 167 shipping line companies. The sampling technique employed is a saturated sampling method, a non-probabilistic approach in which every member of the population is included as a sample.

Data collection in this research involves the administration of surveys using a questionnaire as the primary research instrument, utilizing a Likert scale. The variables under investigation in this study include Infrastructure Quality, Superstructure Quality, Port Performance, and Port Logistic Cost. The data collected will undergo analysis using both Importance Performance Analysis (IPA) and Structural Equation Modeling (SEM). The research hypothesis model is depicted in Figure 1.

Based on the research model above, the hypotheses of this study are as follows.

H1: Human Capital quality has a significant effect on Port Performance
H2: Human Capital quality has a significant effect on Port Logistics Costs
H3: IT System Alignment has a significant effect on Port Performance
H4: IT System Alignment has a significant effect on Port Logistic Costs
H5: Port Performance has a significant effect on Port Logistics Costs
H6: Hinterland Connectivity moderates the effect of Port Performance on Port Logistics Costs
H7: Government Regulation moderates the effect of Port Performance on Port Logistic Costs

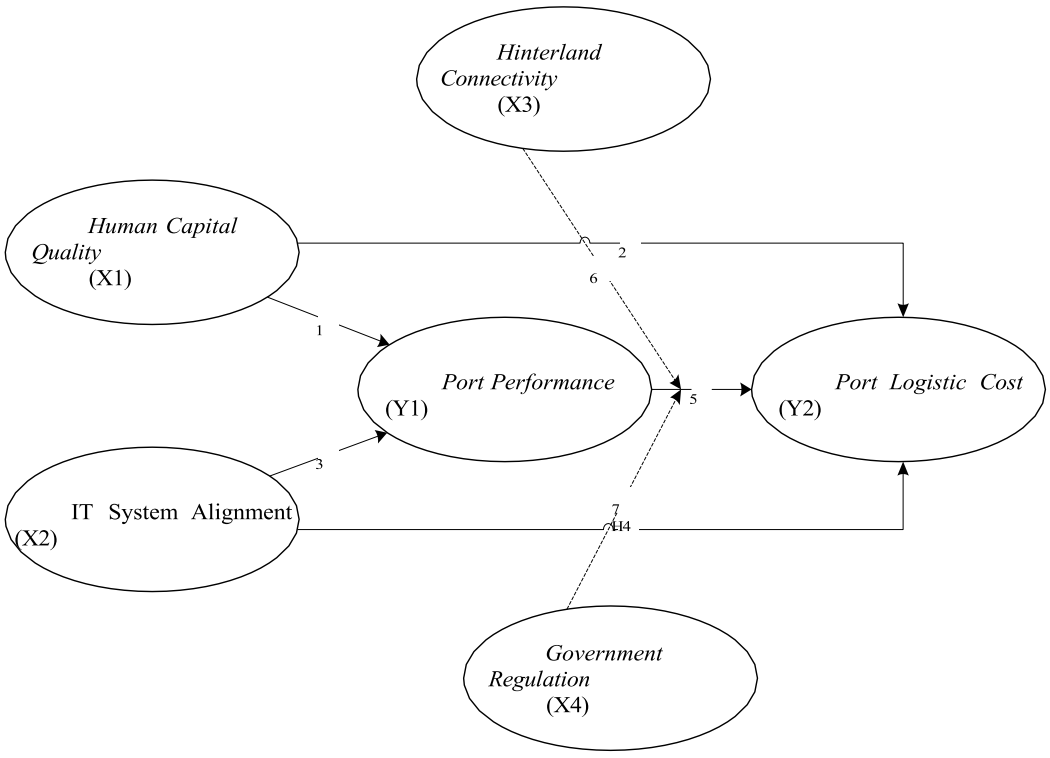

Figure 1. Research Hypothesis Model

4. Results And Discussion

4.1. Validity and Reliability Test Results

The research conducted an assessment to ascertain the accuracy and dependability of each item in the questionnaire for each variable. The validity of a questionnaire is established when the items within it effectively reflect the measurement it intends to capture. To meet the minimum validity criteria, the corrected item-total r must either be equal to or exceed the critical r value of 0.3. Reliability, on the other hand, indicates the consistency of measurement outcomes when the same conditions are re-measured using the same instrument. Items within the questionnaire are considered reliable if they exhibit a Cronbach Alpha (α) value greater than 0.60, as outlined by [16]. The outcomes of these validity and reliability assessments are presented in the subsequent table.

Table 1. Validity and Reliability Test Results

Variable	Indicator	Item	Correlation Coefficient	Conclusion	Cronbach Alpha	Decision
Human Capital Quality (X1)	X1.1	X1.1.1	0.584	Valid	0.713	Reliable
		X1.1.2	0.487	Valid		
		X1.1.3	0.437	Valid		
	X1.2	X1.2.1	0.392	Valid		
		X1.2.2	0.362	Valid		
		X1.2.3	0.589	Valid		
	X1.3	X1.3.1	0.587	Valid		
		X1.3.2	0.473	Valid		
		X1.3.3	0.619	Valid		
IT System Alignment (X2)	X2.1	X2.1.1	0.567	Valid	0.695	Reliable
		X2.1.2	0.532	Valid		
		X2.1.3	0.524	Valid		
	X2.2	X2.2.1	0.557	Valid		
		X2.2.2	0.520	Valid		
		X2.2.3	0.503	Valid		
	X2.3	X2.3.1	0.586	Valid		
		X2.3.2	0.455	Valid		
		X2.3.3	0.380	Valid		
	X2.4	X2.4.1	0.636	Valid		
		X2.4.2	0.487	Valid		
		X2.4.3	0.359	Valid		
	X2.5	X2.5.1	0.546	Valid		
		X2.5.2	0.404	Valid		
	X2.6	X2.6.1	0.496	Valid		
		X2.6.2	0.433	Valid		
	X3.1	X3.1.1	0.474	Valid		
		X3.1.2	0.648	Valid		
		X3.1.3	0.567	Valid		
		X3.1.4	0.631	Valid		

Variable	Indicator	Item	Correlation Coefficient	Conclusion	Cronbach Alpha	Decision
Hinterland Connectivity (X3)	X3.2	X3.2.1	0.629	Valid	0.670	Reliable
		X3.2.2	0.433	Valid		
	X3.3	X3.3.1	0.602	Valid		
		X3.3.2	0.427	Valid		
		X3.3.3	0.422	Valid		
		X3.3.4	0.590	Valid		
		X3.3.5	0.536	Valid		
	X3.4	X3.4.1	0.363	Valid		
		X3.4.2	0.582	Valid		
	X3.5	X3.5.1	0.563	Valid		
		X3.5.2	0.393	Valid		
		X3.5.3	0.393	Valid		
Government Regulation (X4)	X4.1	X4.1.1	0.423	Valid	0.723	Reliable
		X4.1.2	0.520	Valid		
		X4.1.3	0.403	Valid		
	X4.2	X4.1.4	0.464	Valid		
		X4.2.1	0.467	Valid		
		X4.2.2	0.644	Valid		
	X4.3	X4.3.1	0.576	Valid		
		X4.3.2	0.370	Valid		
		X4.3.3	0.513	Valid		
Port Performance (Y1)	Y1.1	Y1.1.1	0.382	Valid	0.811	Reliable
		Y1.1.2	0.421	Valid		
		Y1.1.3	0.577	Valid		
	Y1.2	Y1.2.1	0.589	Valid		
		Y1.2.2	0.410	Valid		
	Y1.3	Y1.3.1	0.470	Valid		
		Y1.3.2	0.354	Valid		
	Y1.4	Y1.4.1	0.571	Valid		
		Y1.4.2	0.460	Valid		
		Y1.4.3	0.592	Valid		
		Y1.4.4	0.556	Valid		
	Y1.5	Y1.5.1	0.618	Valid		
		Y1.5.2	0.606	Valid		
		Y1.5.3	0.380	Valid		
		Y1.5.4	0.609	Valid		
	Y1.6	Y1.6.1	0.625	Valid		
		Y1.6.2	0.430	Valid		
		Y1.6.3	0.526	Valid		
	Y1.7	Y1.7.1	0.465	Valid		
		Y1.7.2	0.602	Valid		
	Y1.8	Y1.8.1	0.426	Valid		
		Y1.8.2	0.521	Valid		
		Y1.8.3	0.638	Valid		

Variable	Indicator	Item	Correlation Coefficient	Conclusion	Cronbach Alpha	Decision
Port Logistic Cost (Y2)	Y2.1	Y2.1.1	0.415	Valid	0.725	Reliable
		Y2.1.2	0.504	Valid		
	Y2.2	Y2.2.1	0.502	Valid		
		Y2.2.2	0.528	Valid		
	Y2.3	Y2.3.1	0.490	Valid		
		Y2.3.2	0.636	Valid		
	Y2.4	Y2.4.1	0.376	Valid		
		Y2.4.2	0.504	Valid		
		Y2.4.3	0.548	Valid		
		Y2.4.4	0.531	Valid		
	Y2.5	Y2.5.1	0.491	Valid		
		Y2.5.2	0.385	Valid		
		Y2.5.3	0.597	Valid		
	Y2.6	Y2.6.1	0.392	Valid		
		Y2.6.2	0.576	Valid		
	Y2.7	Y2.7.1	0.573	Valid		
		Y2.7.2	0.476	Valid		
		Y2.7.3	0.638	Valid		

Table 1 shows that all items are said to have met the validity because they have a correlation value above 0.3. The table also shows that the Cronbach's alpha value of the six research variables is more than 0.6, so the questionnaire can be declared reliable, and the data can be analyzed at the next stage.

4.2. Importance-Performance Analysis (IPA)

IPA is used to measure the level of significance and performance of certain service characteristics. This measurement is carried out from the perspective of companies that have utilized PT Pelindo II's services. The degree of significance reveals the clients' expectations. In the meantime, the performance level reveals how the customer perceives the actual circumstances they have been given. The importance-performance findings for each study variable are listed below:

a. Human Capital Quality

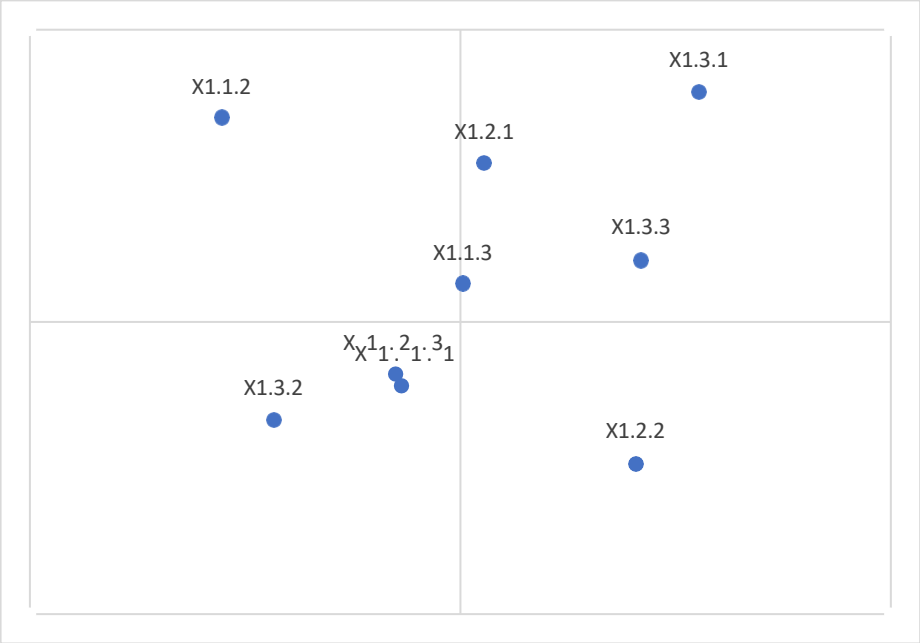

Figure 2. IPA Diagram of Human Capital Quality Variable (X1)

Figure 2 shows that on the Cartesian chart, there is one item in quadrant I, namely X1.1.2. This shows that originality (X1.1.2) is very important to respondents, but the performance level could be higher, so PT Pelindo II Tanjung Priok Branch needs to concentrate efforts on improving this item. In quadrant II, there are four items, namely elaboration (X1.1.3), good customer relations (X1.2.1), good memory (X1.3.1), and easy to conclude (X1.3.3). This shows excellent performance, so it must be maintained.

There are three items in Quadrant III, namely flexibility (X1.1.1), dexterity in solving problems (X1.2.3), and mastering work well (X1.3.2), which have low levels of importance and performance. In quadrant IV, there is one item, namely being able to operate digital tools well (X1.2.2), which shows its unimportant position but relatively high performance. Customer

satisfaction with the product's performance is positive, but excessive resource utilization requires review.

b. IT System Alignment

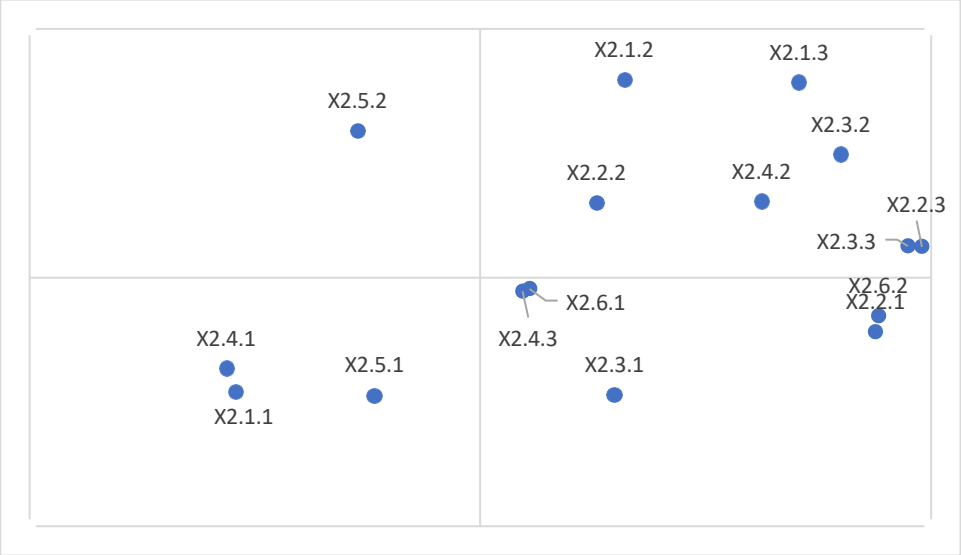

Figure 3. IPA Diagram of IT System Alignment Variable (X2)

Figure 3 shows that on the Cartesian chart, there is one item in quadrant I, namely X2.5.2. This shows that the quality of information collection (X2.5.2) is very important to respondents, but the performance level is quite low, so PT. Pelabuhan Indonesia (Pelindo) II Tanjung Priok Branch needs to concentrate improvement efforts on this item. In quadrant II there are seven items, namely the ease of accessing the system (X2.1.2), the convenience of accessing the system (X2.1.3), the reliability of the results (X2.2.2), the reliability of performance (X2.2.3), the availability of information in a timely manner (X2.3.2), the speed of returning answers (X2.3.3), and adjusting to new conditions (X2.4.2). This shows very good performance, so it must be maintained.

There are three items in Quadrant III, namely the availability of the system to access (X2.1.1), useful for all needs (X2.4.1), and the availability of data integration (X2.5.1), which have a low level of importance and performance. In quadrant IV, there are five items, namely operational reliability (X2.2.1), time to respond to requests (X2.3.1), multifunctionality (X2.4.3), ship service (X2.6.1), and freight service (X2.6.2) which show their unimportant position but relatively high performance. Customers are satisfied with the performance of these items, but the excessive use of resources needs to be reconsidered.

c. Hinterland Connectivity

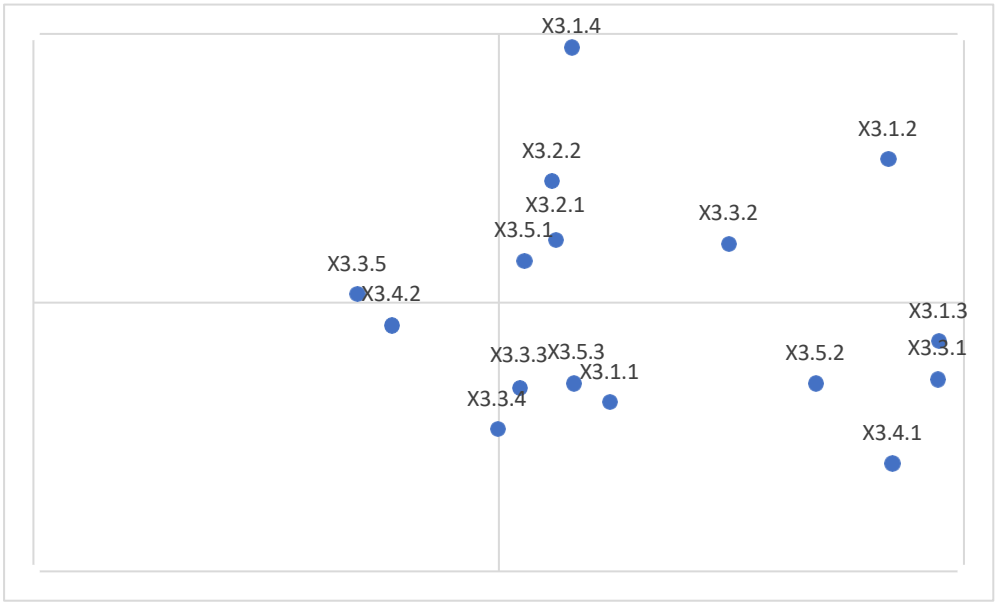

Figure 4. IPA Diagram of Hinterland Connectivity Variable (X3)

Figure 4 shows that on the Cartesian chart, there is one item in quadrant I, namely X3.3.5. This shows that transit time (X3.3.5) is very important to respondents, but the performance level is quite low, so PT Pelindo II Tanjung Priok Branch needs to concentrate improvement efforts on this item. In quadrant II there are six items, namely unloaded containers are re-exported abroad (X3.1.2), stored containers are re-exported abroad (X3.1.4), container terminals can measure hinterland volume (X3.2.1), data from the terminal at the port is in accordance with the volume of containers (X3.2.2), capacity of the services (X3.3.2), and connect all areas (X3.5.1). This shows very good performance, so it must be maintained.

There are two items in Quadrant III, namely the minimum number of intermediate stops (X3.3.4) and truck queues for terminals (X3.4.2), which have low levels of importance and performance. In quadrant IV, there are eight items, namely short sea shipping containers (X3.1.1), modified containers re-exported abroad (X3.1.3), frequency of the link (X3.3.1), number of competing services provided (X3.3. 3), minimum number of intermediate stops (X3.3.4), port access roads (X3.4.1), led by a coordinator (X3.5.2) and supported by a consultative forum (X3.5.3) which shows its unimportant position but relatively high performance. Customers are satisfied with the performance of these items, but the excessive use of resources needs to be reconsidered.

d. Government Regulation

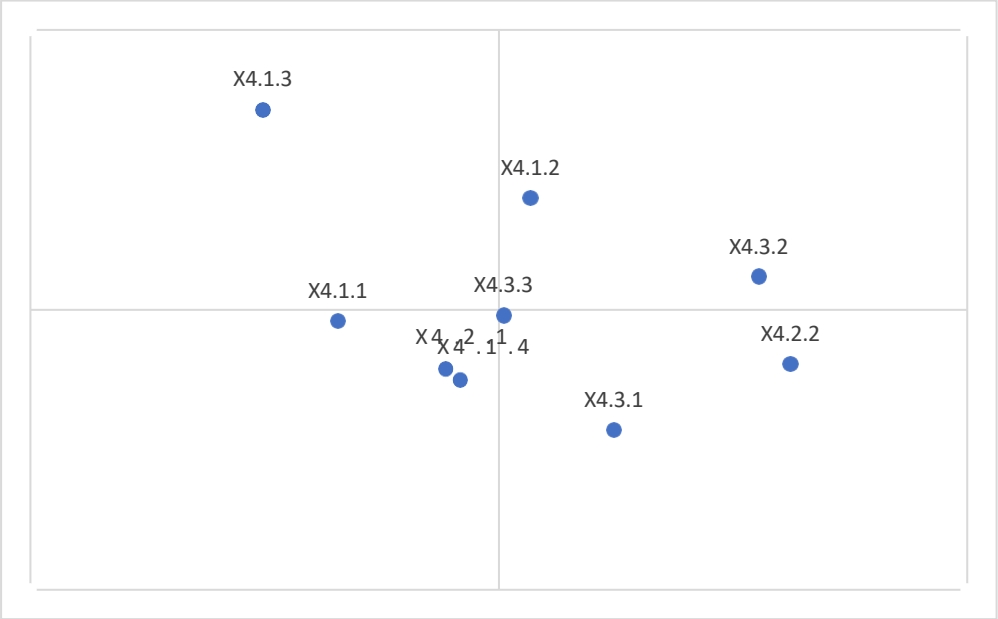

Figure 5. IPA Diagram of Government Regulation Variable (X4)

Figure 5 shows that on the Cartesian chart, there is one item that is in quadrant I, namely X4.1.3. This shows that the facility provides benefits (X4.1.3) that are very important to customers, but the performance level is quite low, so PT Pelindo II Tanjung Priok Branch needs to concentrate improvement efforts on this item. In quadrant II, there are two items: the government provides these facilities to the right targets (X4.1.2), and the form of development looks significant (X4.3.2). This shows very good performance, so it must be maintained.

There are three items in Quadrant III, namely, the Government provides facilities as a means of development (X4.1.1), the facility is sustainable (X4.1.4), and the Government has a policy in conducting development (X4.2.1), which has a low level of importance and performance. In quadrant IV, there are three items namely the government has a policy in balancing the implementation of development (X4.2.2), government steps in carrying out development have a significant impact (X4.3.1), and obstacles from forms of development can be overcome (X4.3.3), which shows its unimportant position but relatively high performance. Customers are satisfied with the performance of these items, but the excessive use of resources needs to be reconsidered.

e. Port Performance

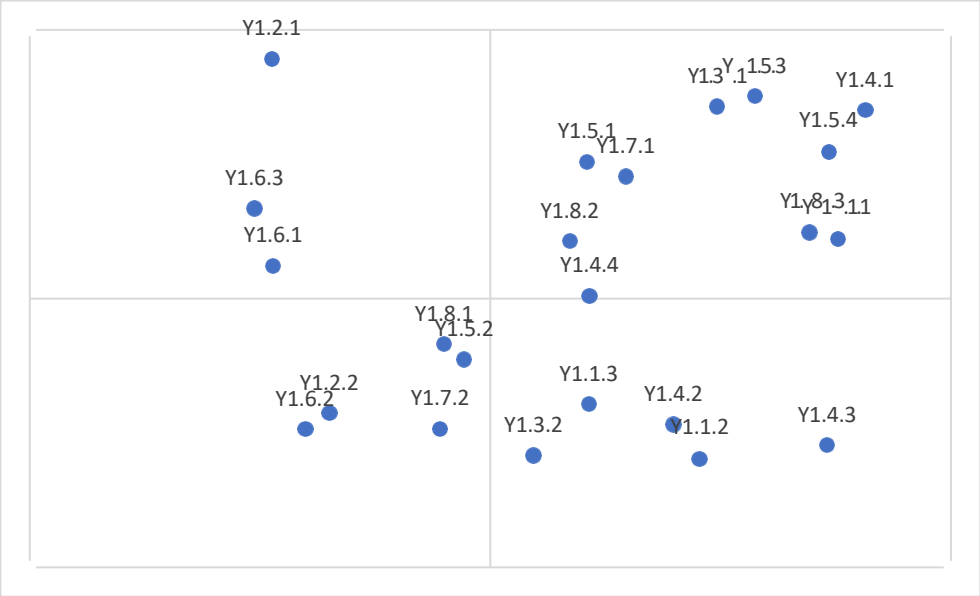

Figure 6. IPA Diagram of Port Performance Variable (Y1)

Figure 6 shows that on the Cartesians chart, there are three items in quadrant I, namely berth availability (Y1.2.1), cargo loss (Y1.6.1), and labor competency (Y1.6.3). This shows that the item is very important to customers, but the performance level is quite low, so PT Pelindo II Tanjung Priok Branch needs to concentrate improvement efforts on this item. In quadrant II there are ten items, namely free cargo dwell time (Y1.1.1), ship's turnaround time (Y1.3.1), ship's scheduling (Y1.4.1), customs clearance process (Y1.4. 4), ship's movement (Y1.5.1), cargo tracking (Y1.5.3), online transaction (Y1.5.4), capacity of quay cranes (Y1.7.1), transport equipment capacity (Y1.8.2) and staking equipment capacity (Y1.8.3). This shows very good performance, so it must be maintained.

There are five items in Quadrant III, namely handling services (Y1.2.2), customs service (Y1.5.2), cargo damage (Y1.6.2), Cargo handling to (Y1.7.2) and storage yard capacity (Y1.8.1), which have a low level of importance and performance. In quadrant IV there are five items, namely total cargo handling time (Y1.1.2), ship's turnaround time (Y1.1.3), land side accessibility (Y1.3.2), cargo handling facilities (Y1.4.2) and cargo delivery time (Y1.4.3) which show their unimportant position but relatively high performance. Customers are satisfied with the performance of these items, but the excessive use of resources needs to be reconsidered.

f. Port Logistic Cost

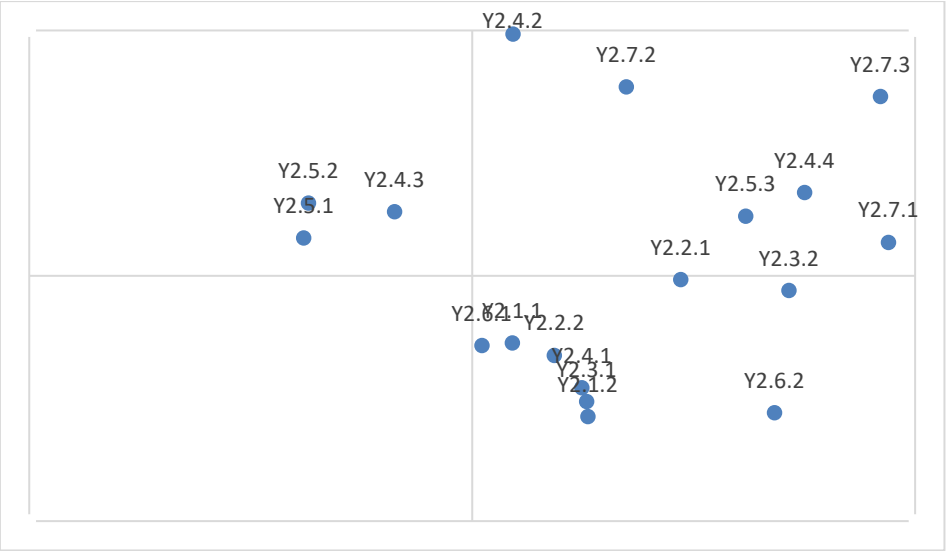

Figure 7. IPA Diagram of Port Logistic Cost Variable (Y2)

Figure 7 shows that on the Cartesians chart, there are three items in quadrant I, namely container unloading cancellation fees (Y2.4.3), Inventory service costs (Y2.5.1), and Storage space costs (Y2.5.2). This shows that the item is very important to customers, but the performance level is quite low, so PT Pelindo II Tanjung Priok Branch needs to concentrate improvement efforts on this item. In quadrant II there are six items, namely the cost of extra container movement services (Y2.4.2), the cost of rehandle container services (Y2.4.4), inventory risk costs (Y2.5.3), appropriate pickup costs (Y2.7.1), cheap distribution transportation costs (Y2.7.2), and the cost of each mode of transportation is cheap (Y2.7.3). This shows very good performance, so it must be maintained.

Moreover, Quadrant III contains nothing. The nine items in quadrant IV are as follows: port service fees for ship services (Y2.4.1); fees due more than 30 (thirty) days from the time the agreement is signed (Y2.6.1); fees exceeding the billing code's due date (Y2.6.2), which indicates its unimportant position but relatively high performance; overhead costs are reasonable (Y2.2.1); operational costs of loading and unloading goods are expensive (Y2.2.2); ICT costs are reasonable (Y2.3.1); distribution administration costs are reasonable (Y2.3.2); and so on. Consumers are pleased with how well these products' function, but there is a need to think twice about the excessive resource usage.

4.3. Structural Equation Modeling (SEM) WarpPLS Approach

Table 2 displays the WarpPLS SEM analysis results.

Table 2. Hypothesis Testing Results Inner Model SEM WarpPLS

Hypothesis	Effect Between Variables			Coefficient	p-value	Decision
H1	Human Capital Quality	□	Port Performance	0.308	<0.01	Significant
H2	Human Capital Quality	□	Port Logistic Costs	0.105	0.19	Not Significant
H3	IT System Alignment	□	Port Performance	0.400	<0.01	Significant
H4	IT System Alignment	□	Port Logistic Cost	0.423	<0.01	Significant
H5	Port Performance	□	Port Logistic Cost	0.518	<0.01	Significant

Table 2 presents the results of testing the inner WarpPLS SEM analysis model with the following interpretation.

a. The quality of human capital affects Port Performance with a path coefficient of 0.308 and p-value <0.01 (less than 0.05). This shows that there is a significant effect of Human Capital Quality on Port Performance. The path coefficient value is positive, meaning that the better the quality of human capital, the Port Performance will increase.
b. Human Capital Quality affects Port Logistics Costs with a path coefficient of 0.105 and a p-value of 0.19 (more than 0.05). This shows that there is an insignificant effect of Human Capital Quality on Port Logistics Costs. The path coefficient value is positive, meaning that the better the quality of human capital, the Port Logistics Cost will not be significantly more efficient and effective.
c. IT System Alignment affects Port Performance with a path coefficient of 0.4 and a p-value
d. <0.01 (less than 0.05). This shows that IT System Alignment has a significant effect on Port Performance. The path coefficient value is positive, meaning that the better the IT System Alignment, The Port Performance will increase.
e. IT System Alignment affects Port Logistics Cost with a path coefficient of 0.423 and p-value
f. <0.01 (less than 0.05). This shows that IT System Alignment has a significant effect on Port Logistics Costs. The path coefficient value is positive, meaning that the better the alignment of IT systems, the more efficient and effective Port Logistics Costs will be.
g. Port performance affects Port Logistics Cost with a path coefficient of 0.518 and p-value
h. <0.01 (less than 0.05). This shows that Port Performance has a significant effect on Port Logistics Costs. The path coefficient value is positive, meaning that the higher the Port Performance, the more efficient and effective the Port Logistics Cost will be.

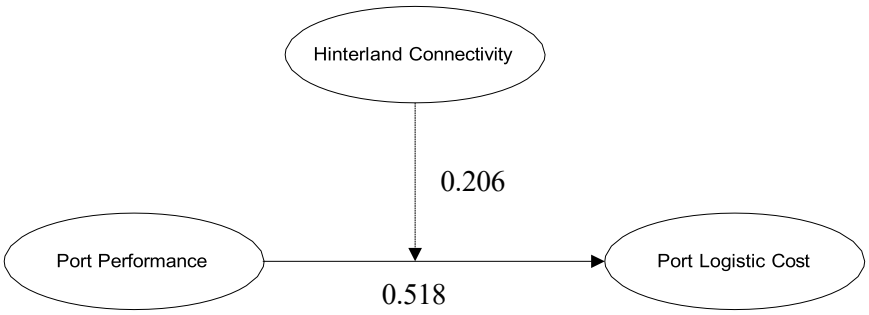

Figure 8. Moderating Effect of Hinterland Connectivity on the Relationship between Port Performance and Port Logistic Costs

The results of SEM-WarpPLS analysis obtained a moderation coefficient of 0.206 and a p-value of 0.02. Because the p-value <0.05, Hinterland Connectivity is a moderating variable between the effect of Port Performance on Port Logistics Costs. As a result, Hinterland Connectivity serves to reduce the large positive direct link between Port Performance and Port Logistics Costs. This shows that an increase in Hinterland Connectivity can directly strengthen the effect of Port Performance on Port Logistic Costs.

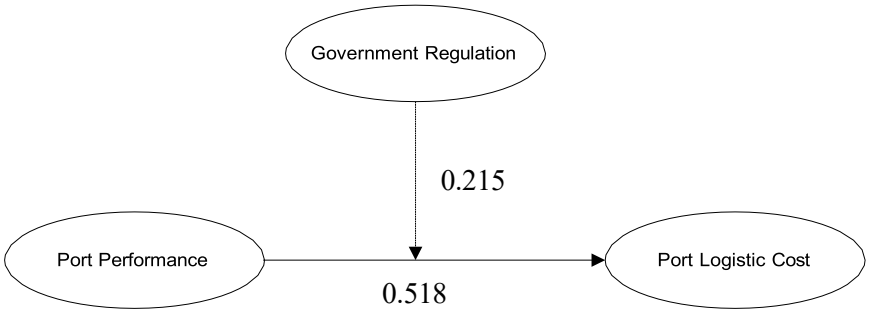

Figure 9. Moderating Effect of Government Regulation on the Relationship between Port Performance and Port Logistic Costs

The results of SEM-WarpPLS analysis obtained a moderation coefficient of 0.215 and a p-value of 0.025. Because the p-value <0.05, Government Regulation is a moderating variable between the influence of Port Performance on Port Logistics Costs. Government Regulation thereby limits a major beneficial direct effect on the link between Port Performance and Port Logistics Costs. This shows that the existence of good Government Regulation can directly strengthen the effect of Port Performance on Port Logistics Costs.

5. Conclusion and Recommendations

Based on the results of empirical analysis, it can be concluded that the quality of human capital and IT System Alignment have a significant effect on Port Performance. In addition, the alignment of IT systems and Port Performance has a significant effect on Port Logistics Costs.

Meanwhile, the quality of human capital has no significant effect on Port Logistics Costs.

Moreover, Government Regulation and Hinterland Connectivity may moderate the impact of Port Performance on Port Logistics Costs. The large and beneficial moderating effect shows the influence of Port Performance to realize effective and efficient Port Logistics Costs which can be directly strengthened by the presence of Hinterland Connectivity and strong Government Regulations.

The majority of the items in this study are located in quadrants II and IV, according to the findings of the IPA analysis. This shows that some item's performance is very good. Therefore, PT Pelindo II Tanjung Priok Branch must maintain this performance. Some items that show their position are not important, but their performance is relatively high. Customers are satisfied with the performance of these items, but the excessive use of resources needs to be reconsidered.

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