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Evaluating the Prospect of Financial Performance After Merger at PT Pelabuhan Indonesia (Persero)

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ABSTRACT

Port is a gateway which facilitates connection between regions, islands and even continents as well as between nations that can develop the hinterland area behind or also known as the area of influence. Previously, to manage ports in Indonesia, four state-owned ports were formed that play a role in the development and operation of national ports which were divided based on different regions, namely PT Pelabuhan Indonesia I (Persero)/Pelindo I, PT Pelabuhan Indonesia II (Persero)/Pelindo II, PT Pelabuhan Indonesia III (Persero)/Pelindo III, and PT Pelabuhan Indonesia IV (Persero)/Pelindo IV which have their respective operating areas coverage.. The separation of BUMN Ports into several operating areas contributes to the challenges of the national port industry. The merger of SOE Ports is expected to have significant benefits for stakeholders such as the government.

This research aims to evaluate the prospect financial performance of PT Pelabuhan Indonesia (Persero) after merger by comparing the financial ratio before and after merger , as well as comparing the financial ratio of PT Pelabuhan Indonesia (Persero) with another 12 Global Port Company using descriptive analysis and K-Means Clustering.

The research result shows that the financial performance before merger decreased, the company ‘s financial performance cluster before merger is low (in the 3rd cluster) and the company financial performance after the merger is stable on the 3rd cluster. Therefore, PT Pelabuhan Indonesia (Persero) need to formulate several strategy to increase their financial performance especially in optimizing their assets and inventory to have more efficient operational to generate higher sales.

Keywords: Port, Merger, Financial Performance, Financial Ratio

INTRODUCTION

Port is a gateway which facilitates connection between regions, islands and even continents as well as between nations that can develop the hinterland area behind or also known as the area of influence. Hinterland area is an area that has economic, social and defense interests, known as a naval military base in an area (Triatmodjo, 2010; Anggun et al., 2022; Awaluddin, 2022; Chahal et al., 2021; Febrina & Fitriana, 2022; Iskamto, 2020).

Previously, to manage ports in Indonesia, four state-owned ports were formed that play a role in the development and operation of national ports which were divided based on different regions, namely PT Pelabuhan Indonesia I (Persero)/Pelindo I, PT Pelabuhan Indonesia II (Persero)/Pelindo II, PT Pelabuhan Indonesia III (Persero)/Pelindo III, and PT Pelabuhan Indonesia IV (Persero)/Pelindo IV which have their respective operating areas coverage. Each Pelindo has branches and subsidiaries to manage its business. Pelindo I, II, III, IV are non-listed state-owned companies whose shares are 100% owned by the Ministry of SOEs as the State Shareholders of the Republic of Indonesia. The separation of BUMN Ports into several operating areas contributes to the challenges of the national port industry, including: 1) Poorly coordinated national ports 2) Inefficient and non-standardized operations 3) Suboptimal financial balance and capex 4) Varied HR Development Programs 5) Various IT systems. In order to realize a stronger national port industry, the government has an agenda to restructure port SOEs through corporate actions so that Port SOEs have better strategic control, standardized operations, more optimal allocation of capex, and better equity story (Pelindo,2021).

Merger is the most suitable option because it can maximize synergies and create added value based on studies that have been carried out on the option of restructuring BUMN Ports. In addition, the merger scheme was also selected taking into account the following factors: 1) The potential for value creation that is efficient and coordinated in a systematic way and can be maximized with a more agile organization; 2) Competency focus can be established per each business unit without diluting the current capabilities or competencies; 3) The level of disruption is not too high because there is a gradual adjustment of synergy from business as usual; 4) Cost of fund can be optimized by being a bigger and stronger entity; 5) The surviving entity will take over the assets and liabilities of the merged entity and will continue to have the status of a BUMN; 6) Although the merger of operations will be quite complex, it can be done quickly considering the businesses owned by Port SOEs are quite similar (Pelindo,2021) On October 1, 2021, 4 SOE Ports in Indonesia carried out a merger which was later named PT Pelabuhan Indonesia. The merger of SOE Ports is expected to have significant benefits for stakeholders such as the government, the community, Port SOEs, and industry players.

Given the importance of the function and role of ports in Indonesia, ports need to improve their performance in order to create ports that have effective and efficient operational services. Financial performance is the most appropriate indicator to measure the performance of a port. The higher the financial performance of a port, the better the performance of the port. There are several variable that will be use in this research, so that it can be seen whether the merger decision will increase the company's financial performance or not, these are : Current Ratio (CR) ,Quick Ratio (QR), Return On Equity (ROE), Return On Asset (ROA), Net Profit Margin, Debt To Asset Ratio (DAR) and Debt To Equity Ratio (DER). Additionally, in order to provide recommendations to PT Pelabuhan Indonesia to be able to compete with global port companies, it is necessary to analyze the position of the Pelindo cluster before and after the merger which can be done by grouping financial ratios using the K-Means Clustering method. Based on the description above, a few researches focused on the merger evaluation in the banking industry. There have been limited studies concerned on port industry merger. Therefore, this research intend to evaluate the prospect of financial performance after merger at PT Pelabuhan Indonesia (Persero). The objectives of this research are to find out the financial performance of PT Pelabuhan Indonesia (Persero) before the merger and to find out the clustering of PT Pelabuhan Indonesia (Persero) financial performance before and after merger.

LITERATURE REVIEW

Merger

Merger is one of the strategies taken by the company to develop and grow the company. Merger comes from the word "mergere" (Latin) which means to join together, unite, combine causing loss of identity due to being absorbed or swallowed by something. Merger is a merger of two or more companies where

only one company remains as a legal entity, while the others cease their activities or dissolve (Moin,2003).

According to Kamaludin (2012) mergers are one way out to improve the company's overall performance. However, before the merger is carried out, careful consideration is needed, especially the impact after the merger, especially the overall financial impact.

Company Motive for the Merger

Companies merge with the aim of creating a synergy, meaning that the results obtained from the merger must be greater than if each company operates separately, or in other words it can be illustrated as 2+2=5. However, specifically, there are several other reasons why companies merge, including as stated by Sudana (2011) in the book Corporate Financial Management theory and practice are as follows:

1. Achieving economical operation
   Two or more similar companies, if operating as separate entities, in utilizing the assets owned by each company will often be less than optimal, because the asset capacity is greater than the needs of each company. In addition, many assets owned by each company are duplicate, and if the companies merge, the duplicate assets can be reduced.
2. Growth
   The merger of two or more companies will accelerate the company's growth. This is possible because the intensity of competition will decrease and the company's ability to compete will also increase. Companies can operate more efficiently, so the price of the products produced can be cheaper.
3. Diversification
   Diversification can be achieved through the merger of two or more companies operating in different industries. The goal is to reduce risk. This can be achieved because companies in different industrial groups have different characteristics. With a merger, when one company suffers a loss, the other company still earns a profit, so that the overall variability of the profit earned after the merger becomes more stable, or the risk becomes smaller.

Financial Statement

Financial statements are basically the result of reflection of the many money transactions that occur in a company. Transactions and events of a financial nature are recorded, classified, and summarized in an appropriate manner in units of money and then interpreted for various purposes (Adula & Kant, 2022; Hidayah, 2022; Iskamto, 2015; Iskamto et al., 2019).

Baridwan (2004) states that the financial report is a summary of a recording process, is a summary, and financial transactions that occur during the relevant financial year. Then, understanding in financial accounting standards, financial statements are part of the financial reporting process and complete financial statements usually include balance sheets, income statements, statements of changes in financial position (which can be presented in various ways, such as cash flow statements), notes , other financial statements, and explanatory material that are an integral part of the financial statements.

As described above, the financial statements are the result of the act of making a summary of the company's financial data. Financial statements consist of four basic reports, namely : Balance Sheet, Profit/loss statement, Report on changes in retained earnings/capital, and cash flow statement.

Financial Performance

The term performance or performance is often associated with the company's financial condition. According to Sukhemi (2007) suggests that "performance can be defined as the achievements achieved by the company in a certain period that reflects the level of health of the company". Performance is an important thing that must be achieved by every company because it reflects the company's ability to manage and allocate its resources. For that we need to know the meaning of performance itself.

Method of Performance Analysis using Financial Ratio

Financial statement analysis is a process in order to help analyze or evaluate the company's financial condition, results the company's past and future operations, with the aim of assessing the performance achieved by the company so far and estimate the performance company in the future (Sujarweni,2017). One of way to avoid the related problem of comparing companies of different sizes is to calculate and compare financial ratios. Ratio is a tool that compare one thing with another so that it can show relationship or correlation of a financial statement in the form of a balance sheet and income statement

(Ross, Randolph, & Bradford, 2009). Meanwhile, according to Harahap (2011), financial ratios are numbers obtained that have relationship that is relevant and significant (mean). Financial ratio or financial ratio is very important to be used to analyze the company's financial condition. Financial ratios can be divided into five categories: liquidity, activity and solvency are used to measure risk.

1. Liquidity Ratio : Liquidity is a measure of a company's performance in terms of its ability to company to meet financial obligations that must immediately repaid, namely financial obligations that mature up to 1 years (Sitanggang,2012). Liquidity ratio measures ability a company to meet its short-term obligations on time. There are three sizes that can be used in measuring company liquidity, namely : Current Ratio, Quick Ratio and Cash Ratio
2. Solvency Ratio : The solvency ratio is used to show the amount of debt company compared to the assets owned by the company (Sitanggang,2012). The more large ratio reflects that the company has significant obligations the greater it is. The ratios that affect solvency are: Debt to Equity Ratio (DER), Debt to Total Access Ratio (DAR), Long Term Debt to Equity Ratio
3. Activity Ratio : The activity ratio measures how effective the company's management is manage its assets. In other words, this ratio measures how much the speed with which company assets are managed in order to run his business. In the company's activities, all assets must be pursued to provide benefits to achieve company goals. Every asset must be operated according to their respective purposes so that assets provides a benefit so that assets are generally measured by turnover (Sitanggang,2012). Activity ratio consist of : Total Asset Turnover, Working Capital Turnover, Fixed Asset Turnover, Inventory Turnover Ratio, and Account Receivable Turnover Ratio.
4. Profitability Ratio : The profitability ratio measures the company's ability to make a profit. Companies that have sufficient profitability to to finance its operations, there is no need to increase the amount of debt from the company. Because the greater the company's profits, the greater the retained earnings that can be used in operations. Ratio of company's earning ability depending on which profits and capital are taken into account (Sitanggang,2012). In general, the profitability ratio in the company can be distinguished as follows: Gross Profit Margin, Operating Profit Margin, Net Profit Margin, Return on Asset, Return on Equity, and Earning Per Share.

Data Mining

Data mining is a data processing method to find hidden patterns from the data. The results of data processing with this data mining method can be used to make decisions in the future. Data mining is data processing on a large scale, so data mining has an important role in industry, finance, weather, science and technology. In this research, the type of data mining that will be used is clustering and K Means Clustering.

1. Clustering is the process of grouping similar objects into different groups, or rather the partitioning of a data set into subsets, so that the data in each subset has a useful meaning. Where a cluster consists of a collection of objects that are similar to one another and different from objects in other clusters. The clustering algorithm consists of two parts, namely hierarchical and partitional. The hierarchical algorithm finds clusters sequentially where the clusters were previously defined, while the partitional algorithm determines all clusters at a certain time (Madhulata,2012).
2. The K-means algorithm is one of the partitional algorithms, because K-Means is based on determining the initial number of groups by defining the initial centroid value [8]. The K-means algorithm uses an iterative process to get a cluster database. It takes the desired number of initial clusters as input and produces the final centroid as output. The K-means method will choose k patterns as the starting point of the centroid randomly or randomly. The number of iterations to reach the centroid cluster will be influenced by the initial cluster centroid candidate randomly. So that there is a way in developing the algorithm by determining the centroid of the cluster seen from the high initial data density in order to get higher performance (Etlibi,2011).

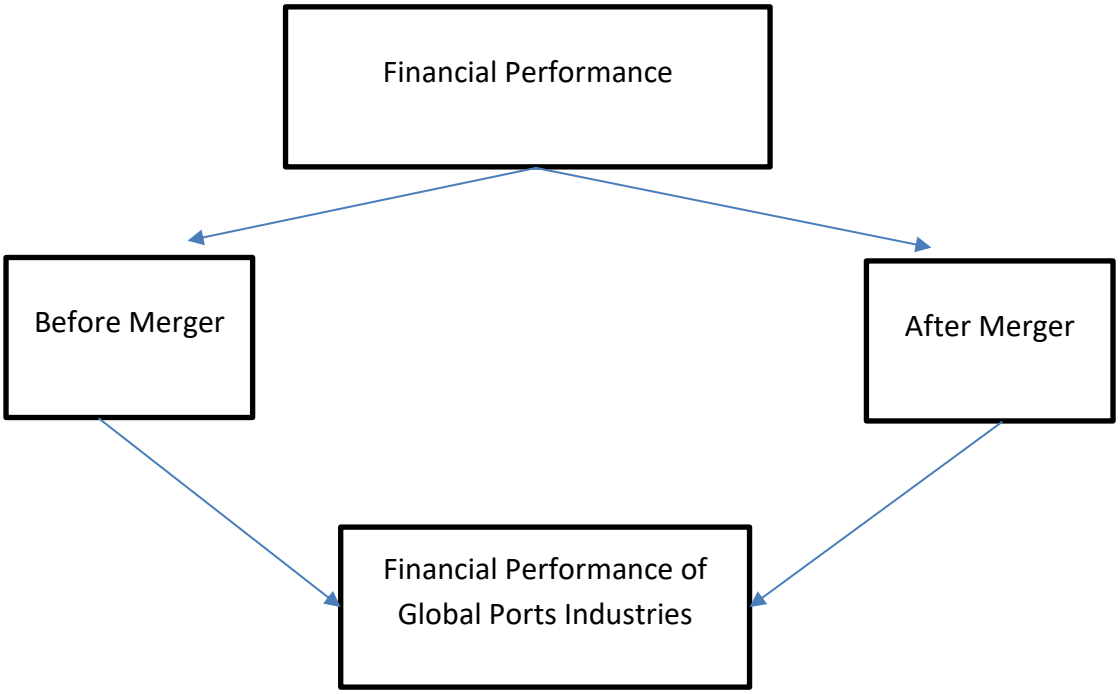
Port

Definition of Port According to Triatmodjo (2010) Port is an area of water that is protected against waves, which is equipped with marine terminal facilities including docks where ships can be moored for loading and unloading goods, cranes for loading and unloading goods, warehouses sea (transito) and storage places where ships unload their cargo, and warehouses where goods can be stored for a longer time while waiting for delivery to the destination or customer (Triatmodjo,2010).
Port services can be divided into two groups, namely vessel service which consist of anchoring, scouting, tug and kepil, and mooring services and goods service which consist of : pier services, stucking services and equipment rental services.

METHOD

Research Design/Framework

A good framework will explain theoretically the relationship between the variables to be studied. According to Sugiyono (2017), the framework of thinking is a conceptual model of how theory deals with various factors which have been defined as important problem. The framework of thought in this research is:



Research Variable

Variables used to measure the company's financial performance in this study using the following financial ratios:

1. The Liquidity Ratio is a ratio that describes the company's ability to meet short-term obligations (Kasmir,2018). In this study, the variable liquidity ratio is proxied by the Current Ratio (CR) and Quick Ratio (QR).
2. Profitability Ratio is a ratio to assess ability company in search of profit (Kasmir,2018). In this study, the profitability ratio is proxied by Return On Equity (ROE), Return On Asset (ROA) and Net Profit Margin.
3. Solvency Ratio or leverage ratio is the ratio used to measure the extent to which the company's assets are financed with debt (Kasmir,2018). In this study the solvency ratio is proxied with Debt To Asset Ratio (DAR) and Debt To Equity Ratio (DER).
4. Activity Ratio is the ratioto measures how effective the company's management is manage its assets (Sitanggang,2012). In this research the activity ratio is proxied by Turn Over Asset (TOA) and Turn Over Inventory (TOI).

Type of Research

The type of research used in this research is research comparative. Comparative research is research that compares the presence of one or more variables in two or more different samples, or at different times (Sugiyono,2017). Variables used in this research are Current Ratio (CR) ,Quick Ratio (QR), Return On Equity (ROE), Return On Asset (ROA), Net Profit Margin, Debt To Asset Ratio (DAR),Debt To Equity Ratio (DER), Turn Over Asset (TOA), and Turn Over Inventory (TOI).

Type and Source of Data

1. Source of data used in this study is secondary data in the form of three-year financial statements before and after the merger financial reports obtained on the official website of PT Pelabuhan Indonesia (Persero).
2. The data collection technique in this research is documentation. Documentation is a record of events that have passed, documents can be in the form of writing, pictures, or monumental works of someone. The data used are in the form of financial statements before and after the merger which are obtained on the official website of PT Pelabuhan Indonesia (Persero).

Data Analysis Method

There are 2 (two) data analysis method in this research.

1. Descriptive Analysis / Financial Ratio Analysis
   Descriptive analysis is by explaining method of collecting qualitative data that is accurate and closely related to problem under investigation. This analysis is carried out through the ratio values of profitability, liquidity ,solvency and activity ratio (Sugiyono,2017). The values of this ratio will be compared before and after the merger. Then it is analyzed how big the difference is increasing or decreasing annually after the merger.
2. K-Means Clustering
   K-Means clustering technique is a method that tries to partition the data into several groups using the average value as the center of the cluster. The purpose of this grouping is to reduce diversity within a group and maximize diversity between groups (Cebeci,2015). This grouping aims to provide an objective function. The advantages of K-Means are that it can handle large data, and the cluster members can be customized, but it has drawbacks where the K-Means algorithm is sensitive to outliers, sensitive to data scale, and ineffective for various clusters (Feng and Zhang, 2020). K-means performs the division of objects into clusters that share similarities and are dissimilar to the objects belonging to another cluster.

RESULT AND DISCUSSION

Research Data Description

This study uses three ratios and their proxies, namely the Liquidity Ratio which is proxied by the Current Ratio (CR) and Quick Ratio (QR), Profitability Ratio which is proxied by Return On Equity (ROE), Return On Asset (ROA) and Net Profit Margin, Solvency Ratio which is proxied with Debt To Asset Ratio (DAR) and Debt To Equity Ratio (DER) and activity ratio which is proxied with Turn Over Asset (TOA) and Turn Over Inventory (TOI).

Table 1 : Liquidity Ratio Data Before Merger [13-16].

No	Company/Ratio	2018	2019	2020	CAGR
1	Pelindo I				
	Current Ratio	97.98%	107.74%	93.25%	-1.62%
	Quick Ratio	58.98%	76.6%	47.58%	-6.84%
2	Pelindo II				
	Current Ratio	446.6%	393.39%	380.22%	-5.17%

	Quick Ratio	397.0%	340.01%	325.0%	-6.39%
3	Pelindo III				
	Current Ratio	180.83%	165.4%	168.07%	-2.39%
	Quick Ratio	105.60%	111.61%	117.10%	3.47%
4	Pelindo IV				
	Current Ratio	205.21%	100.09%	142.01%	-11.44%
	Quick Ratio	162.81%	45.29%	81.51%	-20.41%

Source : Consolidated Financial Report Pelindo I-IV

Table 2 : Profitability Ratio Data Before Merger [13-16].

No	Company/Ratio	2018	2019	2020	CAGR
1	Pelindo I				
	ROE	13.99%	6.46%	10.80%	-8.19%
	ROA	6.39%	2.50%	4.23%	-12.72%
	NPM	21.65%	12.89%	21.92%	0.42%
2	Pelindo II				
	ROE	14.79%	13.81%	6.77%	-22.73%
	ROA	4.73%	4.81%	2.24%	-21.85%
	NPM	21.26%	22.47%	11.07%	-19.37%
3	Pelindo III				
	ROE	20.52%	16.63%	11.22%	-18.06%
	ROA	6.97%	5.97%	3.85%	-17.78%
	NPM	20.88%	18.79%	13.29%	-13.85%
4	Pelindo IV				
	ROE	1.51%	5.27%	4.35%	41.96%
	ROA	0.85%	3.02%	2.27%	38.14%
	NPM	2.63%	8.58%	7.34%	40.27%

Source : Consolidated Financial Report Pelindo I-IV

Tabel 3. Solvency Ratio Data Before Merger [13-16]

No	Company/Ratio	2018	2019	2020	CAGR
1	Pelindo I				
	Debt to Asset Ratio	1.19	1.47	1.55	9.17%
	Debt to Equity Ratio	2.86	3.50	4.74	18.14%
2	Pelindo II				
	Debt to Asset Ratio	2.13	1.87	2.02	-1.65%
	Debt to Equity Ratio	1.43	1.61	1.81	8.11%
3	Pelindo III				
	Debt to Asset Ratio	1.95	1.78	1.92	-0.51%
	Debt to Equity Ratio	3.12	3.64	3.82	6.96%
4	Pelindo IV				
	Debt to Asset Ratio	0.77	0.75	0.92	6.15%
	Debt to Equity Ratio	1.85	4.07	4.64	35.51%

Source : Consolidated Financial Report Pelindo I-IV

Table 4. Data Before and After Merger

No	**Financial Ratio**	**2020**	**2021**
1	Current Ratio	203.78%	172.72%
2	Quick/Cash Ratio	201.42%	171.12%
3	ROE	7.35%	7.55%

4	ROI	17.35%	90.23%
5	ROA	2.50%	2.73%
6	NPM	11.13%	11.02%
7	DER	1.94x	1.76x
8	DAR	0.66x	0.64x
9	TOA	0.23	0.27
10	TOE	32.2	33.8

Source : Restated Consolidated Financial Report Pelindo

Analysis of Financial Performance After Merger compared to Performance Before Merger

Liquidity Ratio

Based on table 4 of Research Data shows the Current Ratio in 2021 is 172.72 compared to 2020 which is 203.78. Whereas the Current Ratio shows a decrease of 15.24% after the merger. This is due to the large decrease in current liabilities compared to current assets because loans to banks have decreased from the previous period. The Quick Ratio in 2021 is 1.71 compared to 2.02 in 2020. The Quick Ratio shows a decrease of 15.46% after the merger, which means that Pelindo's ability to pay off debt in the short term is decreasing. So it can be concluded that in terms of the liquidity ratio there is a decrease in financial performance after the merger compared to before the merger.

Profitability Ratio

Return on Equity in 2021 is 15.55 compared to 2020 of 14.20, which means that ROE shows an increase compared to before the merger. Return on Investment in 2021 is 174.33 compared to 162.54 in 2020. That ROI showed an increase of 7.25% after the merger. Return on Assets in 2021 is 2.73 compared to 2020 of 2.50 ROA, an increase of 9.51% after the merger. Meanwhile, the NPM in 2021 is 11.02 compared to 11.13 in 2020. NPM decreased by 0.94%. So it can be concluded in terms of the overall profitability ratio of Pelindo has increased, this is due to an increase in revenue, an increase in assets and an increase in post-merger equity which is the effect of the merger and the effect of increasing container throughput in 2021

Solvency Ratio

The Debt to Equity Ratio in 2021 is 1.76x compared to 2020 which is 1.94x, that DER shows a decrease of 9.28% compared to before the merger. Debt to Asset Ratio in 2021 is 0.64x compared to 0.66x in 2020, that DAR shows a decrease of 12.97% compared to before the merger. So it can be concluded that Pelindo's solvency ratio has increased. This shows that the company's level of financial independence related to debt is getting better.

Activity Ratio

The Turn Over Asset Ratio in 2021 is 0.27x compared to 2020 is 0.26x, the TOA show an increase of 4.1% comprared to before the merger. Turn Over Inventory in 2021 is 2.87 days compared to 2.89 days, the TOI shows a decrease of 0.5% compared to before the merger. So it can be concluded that Pelindo need to conducted a strategy to manage their assets to be more effective

Comparison of Financial Performance Clusters Before and After Merger using K-Means Clustering

To compare the financial performance of the company before and after merger can be carried out by utilizing clustering techniques to group the company by profitability, liquidity and solvency ratio. One method that is often used to group objects based on their attributes is the K-Means algorithm as a non-

hierarchical clustering algorithm where the grouping begins by determining the number of clusters to be formed. Therefore, the analysis using the K-Means algorithm based on the DER, ROE and NPM with the sample data from 13 Global Port company including Pelindo as the main object of this research.

Table 5 : List of 13 Global Ports

No	Code	Company
1	Rotterdam	Port of Rotterdam
2	PSA	Port Singapore Authority
3	Dublin	Dublin Port
4	Pelindo	PT Pelabuhan Indonesia (Persero)
5	DP World	DP World, Uni Emirate Arab
6	Hutchison	Hutchison Port, Hongkong
7	CMA CGM	Compagnie Maritime d'Affrètement (CMA) and Compagnie Générale Maritime (CGM), French
8	Cosco	Cosco Shiping Lines , China
9	Dallian	Port of Dallian
10	QHD	Qinhuangdao Port
11	CM Port	China Merchant Port Holding Company
12	Klang	Port Klang, Malausia
13	Tianjin	Port of Tianjin

To analyse the data, we can use several profitability, liquidity, solvency and activity ratio, in this study, the three ratios that been used are DER (Debt on Equity Ratio), ROE (Return on Equity) NPM (Net Profit Margin), Turn over Asset (TOA) and turn Over Inventory (TOI) with the data input as follow :

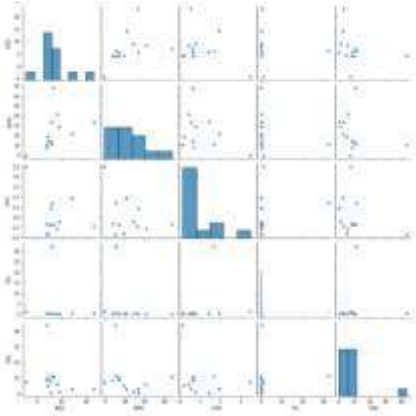
Table 6: *Financial Ratio of Global Port Company in 2020*

	COMPANY	ROE	NPM	DER	TOI	TOA
0	Rotterdam	5.73	33.87	1.44	0.13	0.51
1	PSA	9.08	28.51	0.78	0.18	1.19
2	Dublin	8.22	41.68	0.45	0.14	5.87
3	Pelindo	14.20	21.51	1.94	0.26	2.89
4	DP World	6.12	11.04	1.69	32.39	11.30
5	Hutchison	4.41	18.80	0.21	0.13	5.13
6	CMA CGM	-4.26	-0.72	3.47	1.14	7.39
7	Cosco	4.06	10.21	0.14	0.36	43.72
8	Dallian	4.18	13.47	0.64	0.19	10.01
9	QHD	5.59	13.93	0.63	0.33	8.72
10	CM Port	6.92	67.98	0.64	0.06	10.70
11	Klang	23.08	33.14	2.55	0.35	3.17
12	Tianjin	4.17	7.33	0.69	0.33	8.72

Table 7: *Financial Ratio of Global Port Company in 2021*

	COMPANY	ROE	NPM	DER	TOA	TOI
0	Rotterdam	8.41	49.19	1.38	0.1	0.6
1	PSA	9.74	30.58	0.61	0.2	1.9
2	Dublin	6.69	39.55	0.60	0.1	6.4
3	Pelindo	15.55	22.70	1.76	0.3	2.9
4	DP World	7.21	10.78	1.36	33.8	10.8
5	Hutchison	7.44	26.63	0.30	0.2	4.3
6	CMA CGM	26.18	5.64	2.49	1.0	7.1
7	Cosco	4.12	10.09	0.17	0.5	39.3
8	Dallian	4.32	14.28	0.57	0.2	7.5
9	QHD	5.90	15.22	0.64	0.3	8.7
10	CM Port	9.55	79.20	0.55	0.1	9.7
11	Klang	23.13	35.65	0.46	0.4	2.3
12	Tianjin	4.84	9.09	0.64	0.3	8.7

The scatter plot with pair plot for each category look like this figure shown below



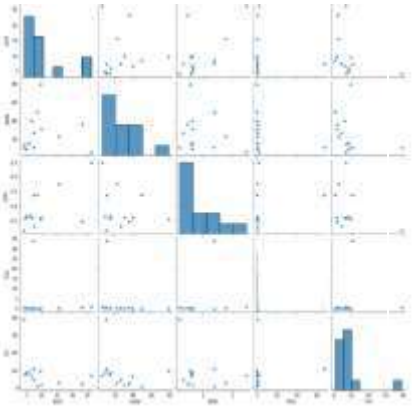


Figure 1. Scatter Plot year of 2020 Figure 2. Scatter Plot year of 2021

If we compare from the Scatter Plot above, we can see the difference between 2020 and 2021 the ROE and NPM values of Global Port Company are better than in 2021

Outlier

An outlier is an observation that lies an abnormal distance from other values in a random sample from a population. In a sense, this definition leaves it up to the analyst (or a consensus process) to decide what will be considered abnormal.

Table 10: Outlier Data of Global Port Company in 2020

	ROE	NPM	DER	TOI	TOA
count	13.000000	13.000000	13.000000	13.000000	13.000000
mean	7.038462	23.134615	1.020769	2.768462	9.178462
std	6.315882	18.099270	0.915510	0.904296	10.977949
min	-4.260000	-0.720000	0.140000	0.060000	0.510000
25%	4.180000	11.040000	0.550000	0.140000	3.170000
50%	5.730000	18.800000	0.640000	0.260000	7.390000
75%	8.220000	33.140000	1.440000	0.350000	10.010000
max	23.080000	67.980000	3.470000	32.390000	43.720000

Table 11: Outlier Data of Global Port Company in 2021

	ROE	NPM	DER	TOA	TOI
count	13.000000	13.000000	13.000000	13.000000	13.000000
mean	10.236923	26.815385	0.886923	2.884615	8.476923
std	7.086528	20.630039	0.666751	9.292008	9.815902
min	4.120000	5.640000	0.170000	0.100000	0.600000
25%	5.900000	10.780000	0.550000	0.200000	2.900000
50%	7.440000	22.700000	0.610000	0.300000	7.100000
75%	9.740000	35.650000	1.360000	0.400000	8.700000
max	26.180000	79.200000	2.490000	33.800000	39.300000

Normalization

The min-max approach (often called normalization) rescales the feature to a hard and fast range of [0,1] by subtracting the minimum value of the feature then dividing by the range**.**

	NPM	DER	ROE	TOA	TOI
0	0.617359	0.476619	-0.215629	-0.821868	-0.308413
1	0.309122	-0.273728	0.336438	-0.757396	-0.302568
2	1.066488	-0.648901	0.194713	-0.313679	-0.307244
3	-0.093427	1.045064	1.180194	-0.596217	-0.293217
4	-0.695524	0.760841	-0.151359	0.201146	3.462495

	NPM	DER	ROE	TOA	TOI
0	1.128851	0.769719	-0.268329	-0.311915	-0.835233
1	0.189934	-0.432292	-0.072986	-0.300714	-0.697387
2	0.642491	-0.447902	-0.520954	-0.311915	-0.220227
3	-0.207631	1.362919	0.780358	-0.289513	-0.591351
4	-0.809022	0.738498	-0.444579	3.462949	0.246328

K- means Clustering

Elbow method is used for defining optimal K number of cluster

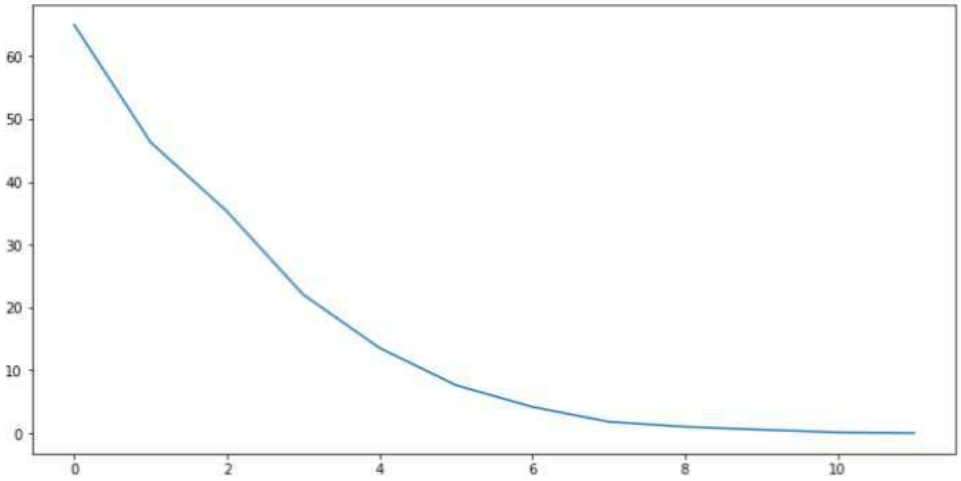


Figure 3. Elbow Method in the year of 2020

From the elbow method figure above we can get that k = 3 for optimum value and we can use clustering with k = 3 mean cluster for the year of 2020.

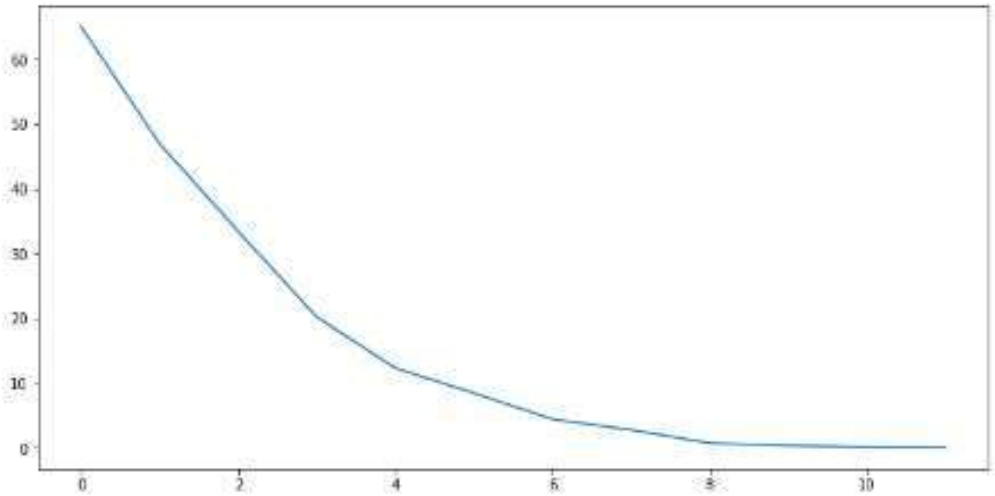


Figure 4. Elbow Method in the year of 2021

From the elbow method figure above we can get that k = 3for optimum value and we can use clustering with k = 3 mean cluster for the year of 2021.

3D Scatter Plot

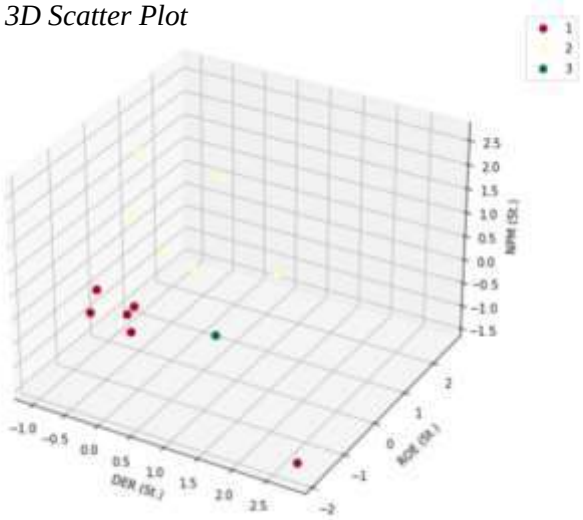


Figure 5. 3D Scatter Plot in the year of 2020

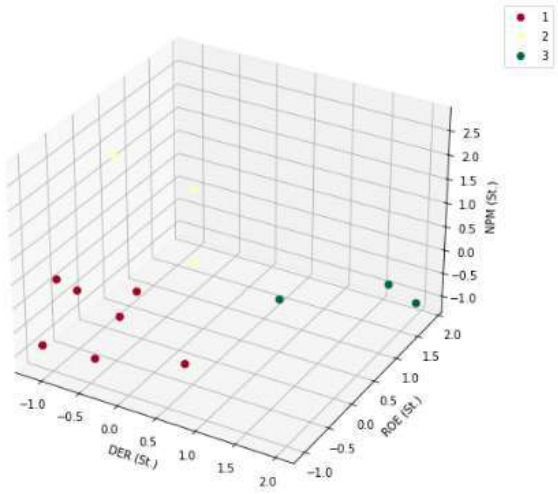


Figure 6. 3D Scatter Plot in the year of 2021

Table 12: *Result Data of Global Port Company in 2020*

	COMPANY	ROE	NPM	DER	TOI	TOA	category
0	Rotterdam	5.73	33.87	1.44	0.13	0.51	2.0
1	PSA	9.08	28.51	0.78	0.18	1.19	2.0
2	Dublin	8.22	41.68	0.45	0.14	5.87	2.0
3	Pelindo	14.20	21.51	1.94	0.26	2.89	2.0
4	DP World	6.12	11.04	1.69	32.39	11.30	3.0
5	Hutchison	4.41	18.80	0.21	0.13	5.13	1.0
6	CMA CGM	-4.26	-0.72	3.47	1.14	7.39	1.0
7	Cosco	4.06	10.21	0.14	0.36	43.72	1.0
8	Dallian	4.18	13.47	0.64	0.19	10.01	1.0
9	QHD	5.59	13.93	0.63	0.33	8.72	1.0
10	CM Port	6.92	67.98	0.64	0.06	10.70	2.0
11	Klang	23.08	33.14	0.55	0.35	3.17	2.0
12	Tianjin	4.17	7.33	0.69	0.33	8.72	1.0

Table 13: *Result Data of Global Port Company in 2021*

	COMPANY	ROE	NPM	DER	TOA	TOI	category
0	Rotterdam	8.41	49.19	1.38	0.1	0.6	1.0
1	PSA	9.74	30.58	0.61	0.2	1.9	1.0
2	Dublin	6.69	39.55	0.60	0.1	6.4	1.0
3	Pelindo	15.55	22.70	1.76	0.3	2.9	2.0
4	DP World	7.21	10.78	1.36	33.8	10.8	3.0
5	Hutchison	7.44	26.63	0.30	0.2	4.3	1.0
6	CMA CGM	26.18	5.64	2.49	1.0	7.1	2.0
7	Cosco	4.12	10.09	0.17	0.5	39.3	1.0
8	Dallian	4.32	14.28	0.57	0.2	7.5	1.0
9	QHD	5.90	15.22	0.64	0.3	8.7	1.0
10	CM Port	9.55	79.20	0.55	0.1	9.7	1.0
11	Klang	23.13	35.65	0.46	0.4	2.3	2.0
12	Tianjin	4.84	9.09	0.64	0.3	8.7	1.0

Table 14 : Comparison Category

No	Company	2020	Place	2021	Place	Tren
1	Rotterdam	2	3rd	1	2nd	Increase
2	PSA	2	3rd	1	2nd	Increase
3	Dublin	2	3rd	1	2nd	Increase
4	Pelindo	2	3rd	2	3rd	Stable
5	DP World	3	1st	3	1st	Stable
6	Hutchison	1	2nd	1	2nd	Stable
7	CMA CGM	1	2nd	2	3rd	Decrease
8	Cosco	1	2nd	1	2nd	Stable

9	Dallian	1	2nd	1	2nd	Stable
10	QHD	1	2nd	1	2nd	Stable
11	CM Port	2	3rd	1	2nd	Increase
12	Klang	2	3rd	2	3rd	Stable
13	Tianjin	1	2nd	1	2nd	Stable

Based on table 14 , it can be seen that there are 4 companies whose has their category increase, 1 company decrease and the rest are still in the same place. In this case, Pelindo category is stable.

Comparison Pelindo's Financial Performance with Other Port in Cluster 1

To get the recommendation for Pelindo to have better Financial Performance could be done by comparing with one of the best performance Port in Cluster 1.

Table 15 : Financial Performance Comparison Pelindo and DP World

No	Ratio	Pelindo			DP World		
		2020	2021	Change	2020	2021	Change
1	Current Ratio	203.78%	172.72%	-15.24%	121.70%	137.89%	13.30%
2	Quick Ratio	2.02%	1.71%	-15.46%	1.17%	1.34%	14.36%
3	ROE	7.35%	7.55%	2.80%	6.12%	7.21%	17.93%
4	ROI	162.54%	174.33%	7.2%	6.98%	7.89%	13.01%
5	ROA	4.82%	5.62%	5.54%	2.52%	2.75%	9.16%
6	NPM	21.51%	22.70%	5.54%	11.04%	10.78%	-2.38%
7	DER	1.94x	1.76x	-9.28%	1.69%	1.36%	-19.54%
8	DAR	0.66x	0.64x	12.97%	5.80%	3.09%	-46.67%
9	TOA	0.26	0.27	4.15%	0.24	0.27	13.42%
10	TOI	2.89	2.87	0.23%	11.30	10.78	-4.60%

Source : Consolidated Financial Report of Pelindo and DP World

Comparison Analysis

1. Profitability Ratio
   In terms of profitability ratio, compared to DP World which is in the first rank cluster, Pelindo has higher ROE, ROA and NPM values than DP World, but DP World has a better growth rate compared to before the merger. DP World experience an increase of their ROE by 17.93%, ROI 13.01%, and ROA 9.16% while in Pelindo the increase is only 2.8% for ROE, 7.2% for ROI and 5.54% for ROA. This could be an early warning for Pelindo to develop a strategy to increase profitability in the coming year to be able to reach the higher growth as happen in DP World, one of which is by optimizing the core and non core business operations and optimizing their internal resources.
2. Liquidity Ratio
   In terms of liquidity ratios, Pelindo has a higher Current Ratio and Quick Ratio than DP World, this is because Pelindo experienced an increase in assets as the effect of consolidated asset from Pelindo I, II, III and IV. However, DP World current ratio is increase by 13.3% and quick ratio is increase by 14.36% while in Pelindo even if they have a higher value of current and quick ratio, their liquidity ratio experience a decrease of -15.24% and -15.46% for the current ratio and quick ratio respectively.
3. Solvency Ratio
   In terms of solvency ratios, Pelindo has a higher value than DP World. Pelindo's DER experience decrease by -9.28% while DP world decrease by -19.54% and for DAR Pelindo experience an increase by 12.97% while DP World experience decrease by -56.67%. This shows that Pelindo needs to review the effectiveness and strength of capital and assets to fulfill their debts and interest.

4. Activity Ratio
   In term of activity ratio, Pelindo has a lower value than DP world. Pelindo experience an increase of Turn Over Asset by 4.15% but DP World has a higher increase by 13.43%, in the Turn Over Inventory Pelindo has lower value which is only 2.87 days compare to DP World which has 10.78 days . This is show that Pelindo is less effective in optimizing their assets and inventory therefore. need to develop strategy to optimalize their asset to be more efficient to generate higher sales

CONCLUSION

Based on this study which aims to evaluate the prospect financial performance of PT Pelabuhan Indonesia (Persero) after merger, it can be concluded that the financial performance before merger decreased, the company ‘s financial performance cluster before merger is low (in the 3rd cluster) and the company financial performance after the merger is stable on the 3rd cluster. Therefore, PT Pelabuhan Indonesia (Persero) need to formulate several strategy to increase their financial performance especially in optimizing their assets and inventory to have more efficient operational to generate higher sales. For further research, it is recommended to increase the number of research data so that it is not limited to one year after the merger to increase the level of data accuracy, and the future researches may consider to use more variables that can be used to measure differences in the company's financial performance before and after the merger.

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