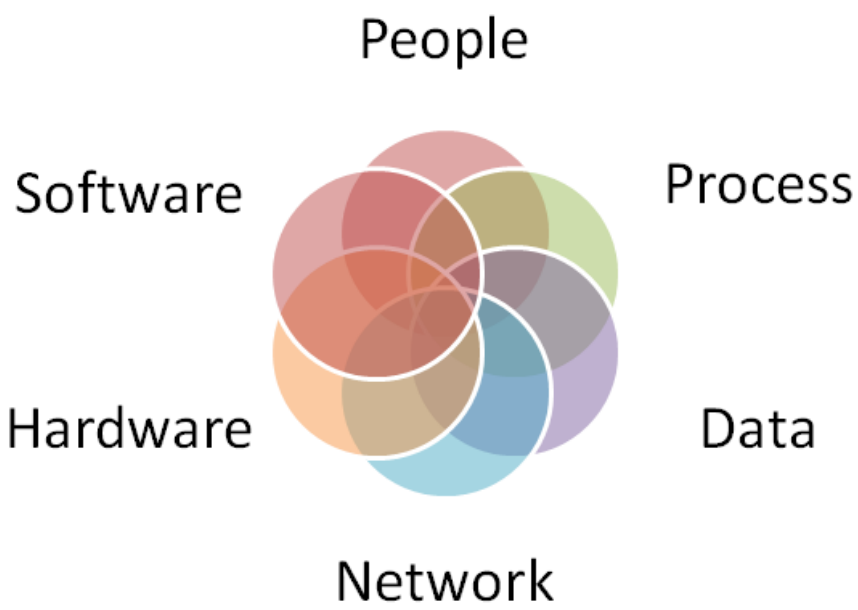
OAJIS
Open Access
Journal of
Information
Systems
is.its.ac.id/pubs/oajis/

ISSN 1979-3979

jurnal sisfo

Inspirasi Profesional Sistem Informasi

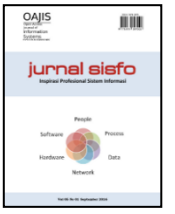


Vol. 10 No. 03 Juli **202**3

OAJIS
Open Access
Journal of
Information
Systems
is.its.ac.id/pubs/oajis/

jurnal sisfo

Jurnal Sisfo Vol. 10 No. 03 (2023) i–iv



Pimpinan Redaksi

Reny Nadlifatin

Dewan Redaksi

Faizal Mahananto

Mudjahidin

Penyunting

Rizal Risnanda Hutama

Sekretariat

Jurusan Sistem Informasi – Fakultas Teknologi Informasi
Institut Teknologi Sepuluh Nopember (ITS) – Surabaya
Telp. 031-5999944 Fax. 031-5964965
Email: editor@jurnalsisfo.org
Website: http://jurnalsisfo.org

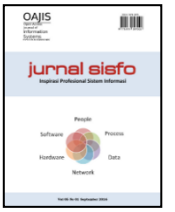
Jurnal SISFO juga dipublikasikan di *Open Access Journal of Information Systems* (OAJIS)

Website: http://is.its.ac.id/pubs/oajis/index.php

OAJIS
Open Access
Journal of
Information
Systems
is.its.ac.id/pubs/oajis/

jurnal sisfo

Jurnal Sisfo Vol. 10 No. 03 (2023) i–iv



Mitra Bestari

Riyanto Jayadi, S. Kom, M.IM., Ph.D. (Universitas Bina Nusantara)

Yogantara Setya Dharmawan, S.Kom., MBusProcessMgt. (Institut Teknologi Sepuluh

Nopember)

Prof. Erma Suryani, ST., MT., Ph.D. (Institut Teknologi Sepuluh

Nopember)

Nisfu Asrul Sani, S.Kom., M.Sc. (Institut Teknologi Sepuluh

Nopember)

Arif Wibisono, S.Kom., M.Sc. (Institut Teknologi Sepuluh

Nopember)

Ilma Mufidah, S.T., M.T., Ph.D. (Telkom University)

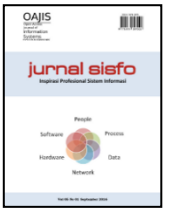
Satria Fadil Persada, S.Kom., M.BA., Ph.D. (Universitas Bina Nusantara)

Izzat Aulia Akbar, S.Kom., M.Eng., Ph.D. (Institut Teknologi Sepuluh Nopember)

OAJIS
Open Access
Journal of
Information
Systems
is.its.ac.id/pubs/oajis/

jurnal sisfo

Jurnal Sisfo Vol. 10 No. 03 (2023) i-iv



Daftar Isi

Evaluasi Gim Edukasi Berbasis Kerangka Berpikir MDA

Nisfu Asrul Sani, Ilham Cahya Suherman 1

Pembuatan Purwarupa Digital dengan Pendekatan Design Thinking Sebagai Strategi Bisnis di PT XYZ

Helena Hanindya Kartika Putri, Febby Candra Pratama 9

Digital Information Utilization to Evaluate Financial Performance in Mining Industry

Riza Rizqiyah 23

Transformasi Digital Startup: Pendekatan Berorientasi pada User

Riefky Prabowo, Febby Candra Pratama 41

Implementation of Website-Based Network Administration Automation within the Ministry of Social Affairs

Gumilar Santioko Mukti, Made Kamisutara 51

OAJIS
Open Access
Journal of
Information
Systems
is.its.ac.id/pubs/oajis/

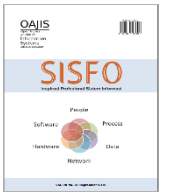
jurnal sisfo

Jurnal Sisfo Vol. 10 No. 03 (2023) i-iv

Halaman ini sengaja dikosongkan

OAJIS
Open Access Journal of Information Systems
is.its.ac.id/pubs/oajis/

SISFO
Inspirasi Profesional Sistem Informasi
Jurnal SISFO Vol.10 No.03 (2023) 23–40



Digital Information Utilization to Evaluate Financial Performance in Mining Industry

Riza Rizqiyah[1]

Entrepreneurship Department, BINUS Business School Undergraduate Program, Bina Nusantara University, Jakarta 11480, Indonesia

Abstract

This study uses the digital information of financial service authority to evaluate the finances of several mining companies in Indonesia. Digital information at this stage will be the used of data to evaluate company finances, especially during a change in strategy of holding, holding strategy is kind of strategy to centralize the managerial of shares in several enterprises into one board of direction. That strategy of holding has implemented in the current of 2 (two) years since the last year of 2017. The main problem that existed before in previous study is about the reason of holding strategy implementation is including problem of financial performance, and this study would be measured the impact of holding strategic to financial performance in the mining industry with the quarter period start from March 2015 until September 2019. Research analysis of this study will start from 3 (three) stages of pre-analysis, in order to find out the problem of financial performance in each mining enterprise, the result of financial performance found that there is any development point in efficiency towards measuring in data envelopment analysis, and also for financial distress measurement there is also has development of financial performance. The second analysis is about the relationship of holding strategy and financial performance through the analysis reliability and validity test, there is a continuity of relationship between holding strategic and financial performance. The results found for reliability test as much 0.935. For validity towards correlation statistical analysis is as much 0.895 these result value means that holding strategic has good relationship with financial performance so the hypotheses of this study about correlation is already proved. The last analysis is logistic regression measurement, that measurement analysis is about the benchmark whether the holding strategic can develop some financial performance in mining industry and get the result that there is any good impact and perfect correlation in the holding strategic and financial performance. This Study is able to fulfill all hypotheses.

Keywords: Digital Information data, Holding Strategy, Impact, Measurement of Financial Performance, Indonesia Mining Industry

Abstrak

Penelitian ini menggunakan informasi digital otoritas jasa keuangan untuk mengevaluasi keuangan beberapa perusahaan pertambangan di Indonesia. Informasi digital pada tahap ini akan menjadi data yang digunakan untuk mengevaluasi keuangan perusahaan, terutama pada saat terjadi perubahan strategi holding. Strategi holding merupakan salah satu jenis strategi untuk memusatkan pengelolaan saham di beberapa perusahaan menjadi satu dewan direksi. Strategi holding tersebut telah diterapkan dalam kurun waktu 2 (dua) tahun terakhir sejak tahun terakhir tahun 2017. Permasalahan utama yang ada sebelumnya pada penelitian sebelumnya adalah tentang alasan penerapan strategi holding termasuk masalah kinerja keuangan, dan

[1]Corresponding Author
Email address: riza.rizqiyah@binus.edu (Riza Rizqiyah)
https://doi.org/10.24089/j.sisfo.2020.11.003 (DOI)

penelitian ini akan diukur dampak holding strategis terhadap kinerja keuangan pada industri pertambangan dengan periode triwulan mulai Maret 2015 hingga September 2019. Analisis penelitian ini akan dimulai dari 3 (tiga) tahap pra-analisis, guna mengetahui permasalahan kinerja keuangan pada masing-masing perusahaan pertambangan. Hasil kinerja keuangan menunjukkan adanya perkembangan titik efisiensi terhadap pengukuran dalam analisis data envelopment, dan juga untuk pengukuran financial distress juga terdapat perkembangan kinerja keuangan. Analisis yang kedua mengenai hubungan strategi holding dengan kinerja keuangan melalui uji reliabilitas dan validitas analisis, terdapat kesinambungan hubungan antara strategi holding dan kinerja keuangan. Hasil yang ditemukan untuk uji reliabilitas sebanyak 0,935. Untuk validitas terhadap analisis statistik korelasi adalah sebesar 0,895 nilai hasil ini berarti bahwa holding strategis mempunyai hubungan yang baik dengan kinerja keuangan sehingga hipotesis penelitian tentang korelasi ini sudah terbukti. Analisis yang terakhir adalah pengukuran regresi logistik, yaitu analisis pengukuran yang menjadi tolak ukur apakah strategi holding dapat mengembangkan kinerja keuangan pada industri pertambangan dan mendapatkan hasil bahwa terdapat dampak yang baik dan korelasi yang sempurna antara strategi holding dan kinerja keuangan. Penelitian ini mampu memenuhi seluruh hipotesis.

Kata Kunci: Data Informasi Digital, Strategi Holding, Dampak, Pengukuran Kinerja Keuangan, Industri Pertambangan Indonesia

© 2023 Jurnal SISFO.

Histori Artikel: Disubmit 28-03-2023; Direvisi 04-04-2023; Diterima 06-07-2023; Tersedia online 31-07-2023

1. Background

Formatting of the existing strategy in the enterprise is a form of progress and resolution of the enterprise to achieve the target or goal, a study before implementing strategy is important [1]. many enterprises may do it, as well as by evaluating the strategy, every enterprise must have an evaluation activity for the better strategy and mature [1], the study of strategy evaluation becomes very important, because in this way entrepreneurs can find out how far the strategy succeeded or failed, will be continued, or will be stopped. The government strategic of holding is about their decisions for several mining state-owned enterprises [2], in addition has observed before, the government of Indonesia believe that holding strategic could developing an industry [3]. As the most best consultant company in the world called Price Water House Coopers Consulting Indonesia has pro sight to support the realization of the holding strategic for several mining state owned enterprises (towards public consultant and public auditor PWC -Price water house Coopers Consulting Indonesia). After reviewing some of the financial report that already exist in digital information platform we called it OJK (Financial Services Authority) in several mining state owned enterprises in Indonesia, this study found that some of them has declining in some of financial report one of the financial report that want to be shown in this study is about the reporting of the sales, there are has declining of sales activities start and between year of 2011 until 2016 so that it might happened some bad in efficiency of production activities before the strategy of holding was implemented [4] ,the condition of the decline in sales could also have an impact in income and financial instability. As the problem that mention before this study want to make sure that the strategic of government to make several mining state owned enterprises has one board of direction is could be efficient enough and make the enterprises at least have improvement especially in term of financial performance [5], so it could be interesting to measuring about the evaluation analysis of the several mining state owned enterprises because the implementing the government strategy of holding and that impact of that strategy implementing to financial performance. The strategy of holding already implemented in 2017, as the description before, holding strategic also as the main reason to recovering the problem of financial performance in mining industry, towards those all reason in above, this study would be

built, The main aim of this study is to know the impact of the holding strategic in mining industry state owned enterprises in Indonesia, is there good enough or no for financial performance in mining industry, and some following questions as the point of this study:

1. Is there any correlation and positive impact between the strategic of holding and financial performance?
2. Is there Financial Efficiency Measurement Have Correlation to Development of Financial Performance?
3. Is there Strategic Enterprises of holding have correlation and positive impact to Development of Financial Performance?
4. Is Mining Industry having positive or negative results of efficiency measurement, in before and after holding strategic was implemented?

Whether the strategy Holding or combining the enterprises corporation into one as long as to make the efficiency of financial performance, this study would discuss about Indonesia government strategy to enterprises development, the research would be implementing in several enterprises in the mining sector towards financial performance, with the intent of proving that the government's strategy can bring a positive impact to enterprises development in term of financial performance, because that reason this study will be started.

Through those all reasons and references which are related, why this study would be build and also would be researching. This study is also a new thing to evaluate, about the strategy that has been realized in several government enterprises, In this study would like to discuss about the reform of state owned enterprises its self, especially in term of financial performance in Indonesia mining industry, as the aim to knowing about the reform in mining sector industry in Indonesia before and after strategic was implemented.
As the chosen company to be board of direction PT Asahan Alumunium or INALUM had good result than others enterprises in term of financial efficiency, and others financial problem, the graphic below is about the efficiency result in previous study [6]

Table 1. Efficiency Results of 2014 until 2016

Name of Enterprises	Period		
	2014	2015	2016
PT Aneka Tambang Tbk (ANTAM)	0.0	0.0	0.0
PT Bukit Asam Tbk (BUKIT ASAM)	1.0	0.0	0.0
PT Indonesia Asahan Alumunium Tbk (INALUM)	1.0	1.0	1.0
PT Timah Tbk (TIMAH)	0.2	0.0	0.02

In that result towards measurement in Data Envelopment Analysis (DEA) only INALUM which has good score of efficiency in financial performance, as we knew DEA measure the efficiency of units by adding some input and output, in that result the input are sales, equity and asset and the output are return on asset (ROA) and return on equity (ROE), and conclude that the good result if the units of the result achieved 1.00, which mean 100% efficiency in financial performance, that’s way also may as the reason, that INALUM as the board of direction in mining industry.

2. Literature Review

Government in state owned enterprises has a vital role to creating strategic, including legitimacy, transparency, has accountable and real as implementing policy of country, In [7] that government has a good or the bad impact strategy in it, effective and ineffective but all of them is depending on what is incorporated during the governing practices and also based on the characteristic or quality values associated with it. In Indonesia there has some new regulation to several state-owned enterprises, one of them is about strategic of holding to get cost efficiency in state owned of mining enterprises. According to [8, 9] that a new strategic of opened networking operating such as holding would make new demands relative good and makes organizational abilities to work together with collaboratively, there is any challenging to manage their owned process with new environment, might also creating and sustaining competitive advantage through collaboration requires that the collaboration structures be understood, managed and also measured [9, 10].

Discussing about holding as new regulation to make efficiency in cost of enterprises [5], nowadays, several enterprises in mining industry also implemented that strategy, as we knew holding enterprises would be means as collaboration from several into one board of direction could be understood as an enterprise that aims to own shares in one or more other companies and regulate one or more other enterprises to create an economic unity [6].

Currently of time some sectors in Indonesia implemented strategic to holding, PT Indonesia Asahan Alumunium (INALUM) as board of direction, and was follow by several mining enterprises, namely PT Aneka Tambang TBK (ANTAM), PT Bukit Asam Tbk (BUKIT ASAM), PT Timah (TIMAH), which is in this case the establishment of the holding is to improve the uniqueness performance and financial efficiency described by [7], it proves that the holding is a strategy which is related for mining enterprises and has intention to fixing the performance of the destruction especially in the financial Performance. According to [8] in his study of efficiency, describe that efficiency measurement is a relative measurement for systems with multiple input and multi-output. It is meant to facilitate the comparison between the units of economic activity with each other and re-elaborated on three uses in measuring efficiency, the first, as a benchmark for obtaining relative efficiency [9]. The influence as well as follows the financial distress and profitability through the analysis of [6] was examines the impact of capital structure on enterprises financial performance. The relationship between the two performance measures (ROA and ROE) and growth opportunity is positive but not significant. Selection financial data in this study according to formula financial distress of Almant-Z score, include some financial data such as the following table on the next page.

3. Methodology

3.1 Flow Chart

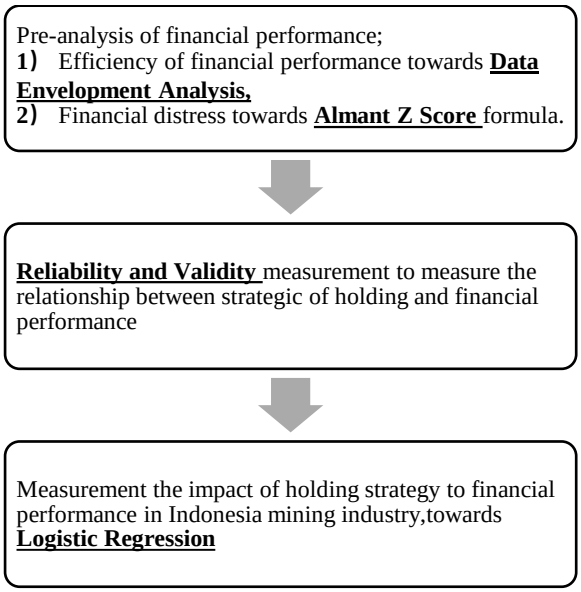


Figure 1. Research Path in this Study

Research design in this study would be classification into three steps such as pre-analysis of financial performance then the second one is reliability, and validity to find the relationship between holding strategic and financial performance and the third one is about the impact of holding strategic, this study would be describe in the following description:

3.1.1 Pre-Analysis of Financial Performance

Financial Efficiency

Financial efficiency in this study as the measure and proofing the fix condition in mining industry, cause following of [7] she was studied about the efficiency in mining sector before holding strategic realization and then found that there is any problem of financial efficiency especially for sales equity and sales problem, and found that ROA and ROE has a bad result of that current of time, so is very interesting if in this current of time exactly at the time when the realization of holding strategic [8] was developed as two years after the official announcement of that holding strategic. In this study measuring financial efficiency measurement towards data envelopment analysis (DEA) which is popularized by [11] later known with the term DEA-CCR. From his study, DEA is a management tool to evaluate the relative efficiency level of a non-parametric and multifactor Decision-making Units (DMUs), both of input and output.

Financial Distress

Other major initiators associated with the research of corporate bankruptcy [12] which presents a single variable approach (univariate) of discriminant analysis, which later expanded into a double variable approach (multivariate) [13][14] Processing short-term financial difficulties (unable to pay financial

obligations at maturity) is not appropriate then it will cause a bigger problem that is not solvable (number of the amount of debt is greater than the total assets) and eventually went bankrupt.

Altman Z-Score indicators to predict financial distress is shown by Table 2.

Table 2. Altman Z-Score Variables in this Study [15]

Name of Financial Data	Definition
Working capital	Working capital is part of enterprises liquidity, operational efficiency and also short term of financial health, if the enterprise has positive working capital, then the enterprise has potential to invest and grow, in Altman Z score working capital would calculate divided by total assets.
Retained Earning	Retained earnings is part of income statement as exactly the financial activity after enterprise paid out their dividends to its shareholder, and enterprise would generate earnings that can be positive (profits) or negative (losses).
Earnings before Interest and Tax	Earnings before interest and taxes is also can describe as enterprise profitability. EBIT cold also referred by operating earnings, profit and profit before interest and taxes, in this study EBIT would measure the rate of financial distress which also adding in Altman z score formula divided by total assets.
Market Value of Equity	Market value of equity is a financial data for share value and also would mean as enterprises equity or market capitalization, the market value of equity is actually from multiplying the current stock price with the total number share which are outstanding. In this formula market value of equity would divide by total liabilities.
Sales	Sales or net sales is about the quantity of enterprise could got from the selling, and net sales itself would minus by returns, allowance and discounts, in this part of Altman z score sale or net sales would divide by total asset.
Total Assets	Total assets are kind of resource in enterprise with economic value inside, asset is also including current and total asset, in balance sheet total; asset create to increasing the enterprise value or benefit into the enterprise.
Total Liabilities	Total liabilities are the result of debts and obligation, about assets in enterprise are either owned by the entity and would classify as equity or also subject future of obligations and recorded as liabilities, in the balance sheet total liabilities plus equity are must equal to total assets.

3.1.2 Reliability Validity and Correlation Measurement

To make sure the correlation between holding strategic and financial performance, in this study also used reliability and validity measurement to proof about the questionnaires are credible to use and measure, this step would be interesting because we could know the correlation between holding strategic and financial performance towards questionnaires which were designed and distributed. In reliability test also including the theory about Cronbach Alpha, is about the theory developed by [15], as test to see if multiple-question Likert scale surveys are reliable, also often wrote as (α) Cronbach alpha sign is also sensitive to the number of items in a test, if alpha is high, this may mean redundant question, a low value of alpha may mean that there aren't enough questions on a test. Adding more relevant items to the test also could increase alpha.

Table 3. Cronbach Alpha Frontier Results

Cronbach Alpha > 0.90 for very high reliability
Cronbach Alpha 0.70 to 0.90 for high reliability
Cronbach Alpha 0.05 to 0.07 for Reliability is quite high
Cronbach Alpha < 0.50 = for low reliability

There are also has related study about linear regression in test reliability, for the basis result of decision making, such as if the value of Cronbach Alpha > 0.600 the questionnaire items dictated reliable and opposite result, if the value of Cronbach Alpha < 0.600 the questionnaire items dictated unreliable. This study analysis about bivariate analysis, such has measured the strength of association between two variables and the direction of relationship. Validity test is referring to measure some primary data as questionnaires were already develop and distributed before, as following steps towards SPSS tools, validity test is about claiming data is good enough or no to measure and also extent to which inferences, conclusion and decision maker on the basis of the test are appropriate and meaningful. The strength of relationship is as result value of the validity, and validity its self could be measured towards relationship which are built into correlation measurement, such between +1 (plus one) is the strength one and as the perfect degree and if the correlation value goes to 0 until -1 (minus one) the relationship between two variable will weaker Usually [16], in statistics, there are any four types of validity of correlations such as Pearson correlation, Kendall rank correlation, Spearman correlation, and the Point-Biserial correlation. This study prefers to use Pearson correlation cause according to [17], the Pearson correlation coefficient (PCC) is utilized to detect the correlation characteristics of current derivatives. Pearson *r* correlation is the most widely used correlation statistic to measure the degree of the relationship between linearly related variables.

Pearson *r* correlation is used to measure the degree of relationship between the two. The point-biserial correlation is conducted with the Pearson correlation formula except that one of the variables is dichotomous. The following formula is used to calculate the Pearson *r* correlation:

$$r_{xy} = \frac{n\sum x_i y_i - \sum x_i \sum y_i}{\sqrt{n\sum x_i^2 - (\sum x_i)^2}\sqrt{n\sum y_i^2 - (\sum y_i)^2}}$$

Figure 2. Pearson *r* Correlation Formula

In the Pearson *r* correlation coefficient, both variables should be normally distributed, and each variable has a bell-shaped curve in normally distributed. Other assumptions include linearity and homoscedasticity. Linearity assumes a straight-line relationship between each of the two variables and homoscedasticity assumes that data is equally distributed about the regression line.

3.1.3 Logistic Regression Measurement

Logistic Regression as the measurement of the impact analysis measurement of holding strategic to financial performance in mining industry state owned enterprises. In this part, this study use logistic regression to make sure that there are any impact of holding strategic [18], cause the logistic regression would measure the classification problem and such kind of tool which is give the result about the contribution of the impact in it, and according to [19], she also studied about the strategic of marketing and measure about the impact

in financial performance, such as to return on asset measurement, and success give the result about the highest and good impact of green marketing strategic to development of return on asset in some enterprises in Wuhan City.

Regarding logistic regression, which has to develop in [20], in this logistic regression development has binary logistic to estimate the probability. The logistic regression could also call as a qualitative response or discrete choice model in the terminology of economics. In this study logistic regression measure about the impact between the categorical dependent variable and categorical independent variables by estimating probabilities using logistic function, which is the cumulative logistic distribution. Logistic regression in this study also will get the result about the fix impact of holding strategic, the data is could be find from previous analysis in this study, according to [21], there are some advantages of using logistic regression model that it cannot only for predict the probability but also to estimate the marginal effect of each exploratory variable [22]. In this study, the effect between holding strategy to financial performance in mining industry is calculated using the formula shown in the Figure 3.

$$Log_e\left(\frac{p}{1-p}\right) = a + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + \ldots\ldots\ldots + a_iX_i$$

Figure 3. Analytical Formula of Logistic Regression

Following description are such for "p" sign is probabilty "a_i" is the parameter to be estimated and "x_i" is for independent variable. In addition to fulfill data in logistic regression test, this study needs the result study in previous analysis in this study such as 3 steps pre-analysis of financial performance and also the quarters duration in 3 years before and 3 years after implementing holding strategic such as between 2014-2019, especially for financial performance and the duration of holding strategic would measure with estimating the score between 0 (zero) or 1 (one).

Sample Descriptive Analysis

This study would measure about sample descriptive analysis, is kind of proofing the current of sample to measure the impact of holding strategy to financial performance in mining industry, is mean also this study would describe about sample with description statistics, description statistic towards SPSS tool help describe and understand the features of a specific data set by giving short summaries about the sample and measures of the data [19].

- *Econometric Model Analysis in Logistic Regressions*

In this study would get the result about parameter estimation and its interpretation, is about maximum estimation of likelihood, in the table of result in logistic regression would show as *variable in the equation* [19], In that table of logistic regression measurement would describe result about the significant impact between all variable were running in that SPSS tool which has equation sign as follow;

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)

Figure 4. SPSS Table in Logistic Regression

Based on Figure 4, the variable equation would be described as much as variable in it, such as;

- B equation is meaning the value of coefficient for the constant, and would be predicting the dependent variable from the independent variable, there is any correlation or no between them, as following researching, this study would describe about that value.
- S.E is means Standard Error, and would be testing around the coefficient for the constant, and also would be testing weather the parameter is significantly different from 0, and this study would be testing also by dividing the parameter estimate by the standard error in t-value.
- Wald test in variables equations means Wald chi-square test that test the null hypothesis that the constant equals 0 (zero)
- Df in this measurement is mean as degrees of freedom for Wald chi-square test. There is only one degree of freedom because there is only one predictor in the model, namely the constant.
- Sig is about the Score test that is used to predict whether or not an independent variable would be significant in the model. Looking at the p –values (located in the column labeled "sig") we can see that each of the predictors would be statistically significant except the first dummy for sets.
- Exp(B) is about the exponentiation of the B coefficient, which is an odds ratio. This value is given by default because odds ratios can be easier to interpret than the coefficient, which is in log-odds units.

Logistic regression in this case plays an important role in measuring how far the impact and significant results between independent and dependent variables, it is very necessary for the writer to be able to prove all hypotheses, as in [19] which also analyzes financial analysis to prove marketing strategy in some enterprises and the analysis is has good results, the two variables are significantly related, in other words both of them affect and influence, the measurement of logistic regression in the analysis is also proven in the calculation of Return on Assets.

3.2 Sample Selection

After collecting the digital information from the financial service authority, apart from the pre-analysis presented above, the main study in this analysis is that it will go through two stages of measurement, which include linear and logistic regression. In primary data, this study has selected several decision-makers namely as many as 10 peoples [20], who comes from the government namely the ministry of mineral oil gas and mining sector, as well as expert staff working in government for mining enterprises in Indonesia, of which those 10 peoples will fill in a number of questions provided regarding the strategic relationship and financial performance [21]. Enterprises in the mining industry, including PT Antam, PT Timah, PT Bukit Asam and PT Inalum, those all enterprises has duration period in this study, such as during the quarter of 2 (two) years before and 3 (three) years after the holding strategic implemented as exactly in quarters period start from March 2014 – until September 2019.

The data collection would distinguish between primer and secondary data, in pre analysis performance, reliability and validity data test also logistic regression, for clearer description about data collection this study conducts to make a table which are including all data collections.

3.3 Hypotheses

According to Figure 4, this study would be classification the hypotheses into 3 statements;
H_1; Strategic Enterprises of Holding has Correlation and Positive impact to Financial Efficiency Measurement.

H_2; Financial Efficiency Measurement has Correlation to Development of Financial Performance.
H_3; Strategic Enterprises of Holding has Correlation and Positive impact to Development of Financial Performance.

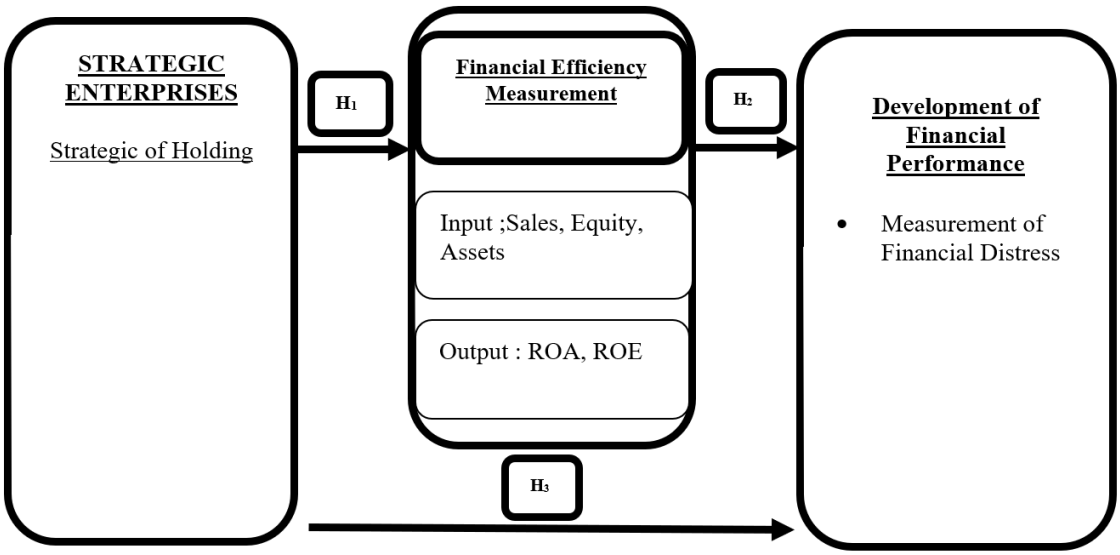


Figure 4. Hypotheses and Conceptual Framework

In those hypotheses also describing about dependent and independent variables; the dependent variable is one variable affected by a change in the independent variable [21]. In this study, part of the dependent variable is whether the result of financial efficiency measurement and development of financial performance could increase after implementing holding strategic, in another word holding strategic is a dependent variable because it is part of variable which would be measured about that impact towards financial performance, and then for the Independent variables are the model are driving factors of financial performance measurement including Financial Efficiency, and Financial distress. Assumes that there is any impact of holding strategy to financial performance in the mining industry in Indonesia.

To further description about the variable's description, the Table 4 below could show some of information about the variables.

4. Result

4.1 Financial Performance Measurement

Reliability and Validity Measurement towards SPSS

In this part are some results from the analytical in questionnaires, which have designed and contributed about the correlation between strategic and financial performance, which also already measured in SPSS tool and has main goal to knew about the correlation between holding strategic and financial performance, in this study previously measured reliability and validity test in advance through SPSS tool and as following steps of reliability and validity test, in this study has the result of reliability statistics as much as 0.940 is mean

94% of the questionnaire is reliable and useful to be implementing and distributing, according to [8] that reliability usually measures through Cronbach's coefficient measurement. There is should more than 0.5 or 50%, so this study has very good reliability test and would be acceptable to do another analysis.

Table 4. List of Data Collection

Variable	Definition	Assignment	Regression Assignment
Holding Strategy	Comparing part before and After regulation strategic of holding was implemented during 2014-2019	For linear regression assignment the writer used likert scale to measure that relationship variable with other variable, with -+ 10 respondents who are fill 27 questions. For logistic regression the writer used number of enterprises which already implemented holding strategy at those current of time such as in 2015 until 2018	Reliability, Validity and Correlations measurement. 1= very not agreed 2= not agreed, 3= just so 4= agreed 5=very agreed Logistic Regression. 0 = Not yet implemented Strategic 1= Implemented Strategic
Financial Efficiency	As the measurement require result to efficiency strategic, has input and output sub variable, in the 2 years before and 2 years after strategic of holding implemented	The results of the efficiency can be greater than 1 (one) indicating the level of efficiency increases, equal to 1 (one) meaning no efficiency change occurs, and less than 1 (one) indicating a decrease in efficiency between year t and t + 1	Reliability, Validity and Correlations measurement. 1= very not agreed 2= not agreed, 3= just so 4= agreed 5=very agreed Logistic regression 0 = Not Improved 1= Improved
Financial Distress	Financial Measurement to make sure that there is nothing problem in financial performance in current of years before and after strategic implementation.	Z <1.8 it includes enterprises experiencing financial distress 1.8 <Z "<3.00 including enterprises in the gray zone (cannot be determined whether the enterprise is healthy or experiencing financial distress), Z "> 3.00 including companies that are not experiencing financial distress, or safe from the threat of financial distress	Reliability, Validity and Correlations measurement. 1= very not agreed 2= not agreed, 3= just so 4= agreed 5=very agreed Logistic regression The scores of the result

Validity

Construct validity measures what the calculated scores mean, and if they can be generalized, this study would construct validity uses statistical analysis, such as correlations, to verify the relevance of the questions. Especially in this study to proving the correlation part in hypotheses study. If the scores are highly correlated, it is called convergent validity [22], and that also means the construct validity is supported. Towards SPSS 21, the result of correlation was found, and the value is significant for those currents of variable such as variable X_1 is for financial efficiency variable, X_2 is for financial performance, and variable Y is for holding strategic, there is good result in correlation measurement. Between X_1 to X_2; has meaningful correlation with score of correlation is 0.895 and value of significant is also good with score such as 0.001 that score is below 0.05 that means the correlation between X_1 and X_2 are strong and good enough. Between X_1 and Y, the correlation score also has good final result with the total score such as 0.935 and also the total in significant such as 0.000 is very meaningful in correlation measurement. Move to the correlation measurement between X_2 and X_1 there are very acceptable also, with the score such as 0.895 is similar with the correlation between X_1 to X_2 before and for X_2 to Y the correlation also strong enough with total score such much as 0.725.

That's make the correlation between them is acceptable and good enough to do another way of analysis, and the score of significant also has good result with the total score such 0.027 is also below 0.05 in Sig. (2 - tailed) is mean the correlation between them is very significant, and for the last one in TOTAL Y is as exactly same with score correlation which has describing before that with X_1 and X_2 variable with both of them variable Y has enough score of validity in correlation scores. This study has a good result in the classification table with the percentage as much 93.8% is mean that the data of holding strategic are very correctly to predict [23]. In that classification table above also describe about the holding strategic has percentage correct data to be able predict with another variable such as financial efficiency and development financial performance, and according to data of financial efficiency and development of financial performance before, there also has some improvement, could be conclude that there are many improvements of holding strategic implementation to financial performance.

Interpretation analysis

- **Strategic Enterprises of holding has correlation and positive impact to Financial Efficiency Measurement**.

In table result of financial efficiency has established that the development of financial efficiency in each enterprise of the mining industry happened at the time when holding strategic already implemented. Before the implementation of the holding strategy is known, there is still not any financial efficiency, so that is mean the hypotheses of financial performance in the mining industry are going to be supported by the results of the financial efficiency measured through Data Envelopment Analysis. With the results indicating the efficiency of point 1.00 or 100% in Data Envelopment Analysis in particular data is shown in the quarter period of 2018 and 2019, which strategic holding has been implemented after a year of running. However, there is still not yet Efficiency in the year of 2017 which is the beginning of the start of a strategic holding, there are still has not yet experienced financial efficiency, in some enterprises of mining industry, but as we can see, the result of efficiency is increasing at the time after the quarters period of 2017.

This Study is able to correct its access to financial efficiency during the first year of strategic holding, namely in the quarter's period of 2017- 2018, in every mining enterprise in Indonesia experienced financial

efficiency. In other words, this study was proofing that there is any financial efficiency in each enterprise of mining industry, according to [16], is useful to an enterprise that has new strategic, then could be developing their financial efficiency, is mean that Strategic is applicable enough to do. From that analysis, one of the main points of research was proved. Move to the result of correlation measurement, is also was proved that there is any correlation point in correlation test, with the total effect of correlation such as 0.935 which has a strong correlation between holding strategic and financial efficiency measurement, and According to a significant point in correlation test, there are also has the meaningful result, with point such as 0.000 the meaning the hypotheses of correlation is acceptable.

This study also has the result of correlation and the positive impact through logistic regression analysis, we knew towards the table logistic regression before, that there are any correlation and positive impact between holding strategic and financial efficiency With positive result as much.0.935 Through all results above, this study finally could complete hypotheses 1 (one), with the statement hypotheses of "Strategic Enterprises of Holding has correlation and positive Impact to Financial Efficiency Measurement" is already proved. The last analyzing in logistic regression where is proving about the significantly impact between two variable which are holding strategic and financial efficiency measurement in the table of B value and also in table of the significant level is there any relationship between those two variables which value such as 5.191 in B value with significantly level as much 0.050 which is also mean that the value of result is very significant and would be got the mean that the increasing of financial efficiency, one of the reason is that the implementation of holding strategic. From those all analyses, this study is finally proved that the hypothesis of "Strategic Enterprises of holding has correlation and positive impact on Financial Efficiency Measurement" is quietly truth.

- **Financial Efficiency Measurement has Correlation to Development of Financial Performance.**

Started from pre-analysis in financial efficiency towards Data envelopment analysis and financial distress analysis towards Altman Z score formula [23], this study has the conclusion that there is any some relation between all result in pre-analysis there has development result in current time after holding strategy was implemented, as exactly quarter period of 2018 and quarter period of 2019, some effect of efficiency measurement and financial distress also cash flow measurement has developing value in it. As the following table comparison below, this study proved that there is any developing result after implementing the holding strategy. This part would come including some results analysis according to the description above, that is about financial efficiency and financial performance also the result about the relationship between them, with in-depth description in the following part.

Financial Efficiency

The table below shows about increasing score in financial efficiency measurement. There are some increasing especially in the quarter of period 2017 until 2019 which are the period when holding strategic already implemented, the result of this analysis towards the data envelopment analysis reflects the value between 0 (zero) until 1 (one) which mean that the zero is less efficiency and the continues values are more efficient.

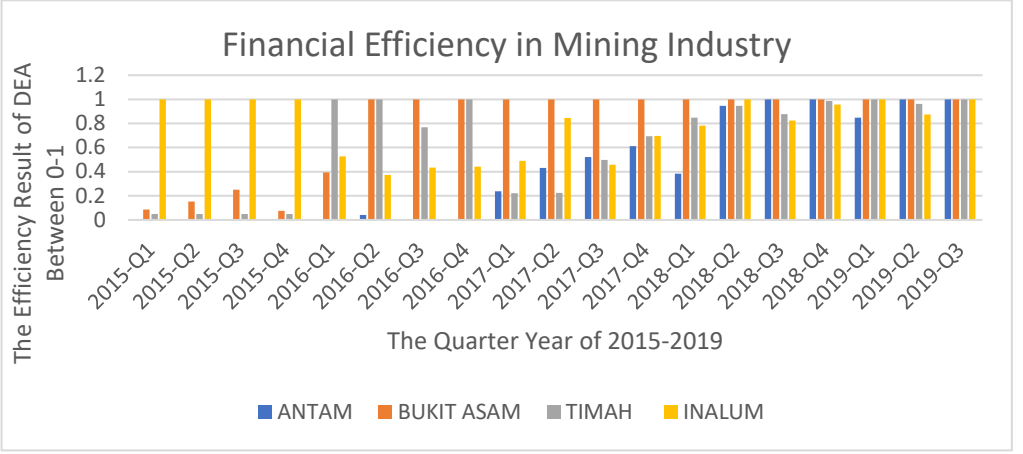


Figure 6. Financial Efficiency in Mining Industry

The first is from financial efficiency, there are had developing part of efficiency as exactly at the time when holding strategic was implemented, is shown in the quarter period of 2017, 2018 and 2019, but still this study is needed to be proved that the developing point is from the holding strategic managerial system.

Financial distress

For financial distress increasing we can see in the Figure 6, the average score of financial distress measurement, that there also any increasing part of score in financial distress accumulative score, that is mean that every enterprise in the mining industry could be covering financial distress problem especially in the current of time in after holding strategy was implemented such as in the quarter period of September 2017 until September 2019. The frontier classification of healthy and bankrupt. Based on the Z-score model Altman Modification the frontier classification is:

` Table 5. Altman Z score Frontier Results

The frontier number	Explanation
< 1.8	Then including companies experiencing financial distress.
1.8-3.00	Then including the gray zone or in a position close to financial distress.
> 3.00	Then including companies that are not experiencing financial distress, or safe from the threat of financial distress.

Source; Prof. Altman E I. about Financial Ratios [23]

If the value of Z "<1.8 then it includes enterprises experiencing of financial distress, If the value of 1.8 <Z "<3.00 then including enterprises in the gray zone (cannot be determined whether the enterprise is healthy or experiencing financial distress), and the last one if value Z "> 3.00 then including enterprises do not experience financial distress is mean the enterprises is safe from the financial distress.
the following table below would describe about that average score.

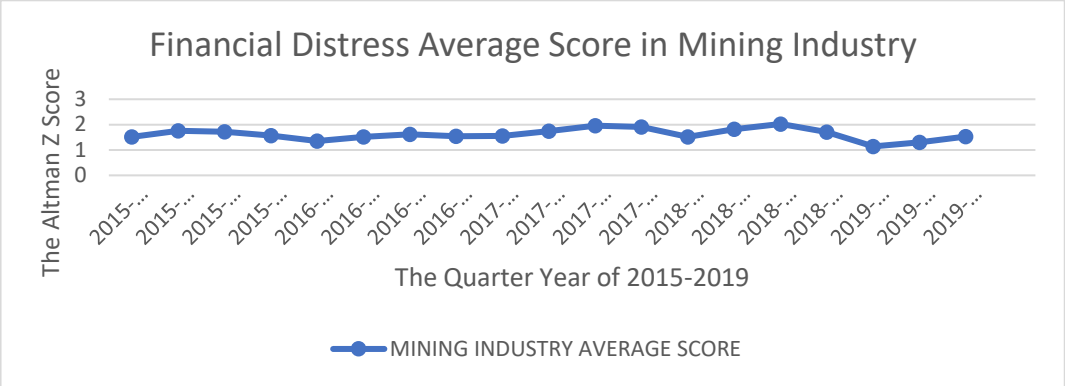


Figure 7. Financial Distress Average Score in Mining Industry

- **Strategic Enterprises of holding has correlation and positive impact to Development of Financial Performance.**

In this study also has the result about the correlation and positive impact between strategic enterprises of holding and development of financial performance, the first one is toward pre-analysis in development of financial performance such as including financial distress measurement and cash flow statement analysis, there is any developing part of financial distress measurement in the current of time 2017-2018 which are at the time when holding strategic already implemented. Next approval from this study is to hypotheses 3 (three), that is about the measurement in correlation test, the correlation value between holding strategic and development of financial distress, with the current value of correlation as much 0,725, and also from the correlation significant from 2-tailed standardized the value is below 0.05 such as 0.027, that is mean the holding strategic is has correlation value which is also significant with development of financial performance. In B value of logistic regression test, the holding strategy also proved that it has a positive correlation and impact on the development of financial performance [23], with a score in an effective percentage of development of financial performance as much 93.8% correctly percentage. Then this study also has completed approved to hypotheses 3 (three) such as "Strategic Enterprises of holding has correlation and positive impact to Development of Financial Performance" is already proved.

5. Conclusion

In this study the author discusses that utilizing the digital information is would be help the analysis measurement for the strategy of holding to efficiency and development financial performance in the mining industry state owned enterprises, which is also from this study has successfully measured the financial efficiency of 4 mining Enterprises. The result of efficiency performance such as any 2 (enterprises) have experienced efficiency in after the first year of the implementation holding strategy, and in the last quarter of period in September of 2019, 3 enterprises from 4 enterprises in the mining industry has experienced financial efficiency in Data Envelopment Analysis especially in measurement of sales equity assets to ROA (return on asset) and ROE (return on equity). Is good enough to implementing the holding strategy in mining industry, but still the mining industry should keep pay attention in cash flow statement, in addition, to make the value of enterprises specially to build more image after implementing holding strategy, the cash flow would be increased, one of the reasons is that each enterprise in the mining industry could manage their financial performance especially in term to manage the input and output of that return of liquidity cash. The analysis correlation measurement in the SPSS tool, and has found the correlation between holding strategic

financial efficiency and development of financial efficiency. With a very significant value that is as much as 0.895 and significantly value of 0.001 these value are correlation between financial efficiency and development of financial performance, the next correlation value as much 0.935 and significantly as much as 0.000 these value are fore valid correlation between the financial efficiency and the strategic holding and the last one is correlation between development of financial performance and holding strategic, as much as 0.725 and the value significances as much as 0.027.

So this study could fulfill all hypotheses that exist in hypotheses 1; Strategic Enterprises of Holding has Correlation and Positive impact to Financial Efficiency Measurement, hypotheses 2; Financial Efficiency Measurement has Correlation to Development of Financial Performance, hypotheses 3; Strategic Enterprises of Holding has Correlation and Positive impact to Development of Financial Performance, with all the hypotheses realized, it can also be concluded that the strategic holding is a good strategic to doing mining industry, especially in state owned enterprises.

This study discusses the evaluation of holding strategy implementation through the measurement of financial performance in the mining industry, there are any 4 enterprises in it, the enterprise of PT Freeport Indonesia TBK is also member of mining industry in Indonesia state-owned enterprises, but that enterprise is not including in this research because the enterprise of Freeport just implemented the holding strategy at the end of the year period, towards that reason the authors could not fulfill the data because there is very limited to searching Financial report of PT Freeport Indonesia TBK, but in the next year it might be good to analysis and adding another period to analysis the impact of holding strategic in it.
For the last recommendation this study hope for another researcher is could be researching about more industry in Indonesia and should be pay attention to the impact of new strategy in it not only for holding strategy, in addition recommendation also according this study, another researcher could be researching about more impact of the holding strategic implementation, besides financial performance, the next researcher might be analyzing about sales, supply, and demand in mining product or another product in different industry.

6. List of References

1. M. Al-Ahdal W A, H.Mohammed ; Tabash I.Mosab ; Farhan H.S. Najib. (2020), The Impact of Corporate Governance on Financial Performance of Indian And Gcc Listed Firms: An Empirical Investigation [J]. Research In International Business And Finance, , 51
2. Wahyudin, A., & Solikhah, B. (2017), Corporate governance implementation rating in Indonesia and its effects on financial performance. Corporate Governance: The International Journal of Business in Society.
3. Li, J., Weng, J., Shao, C., & Guo, H. (2016). Cluster-based logistic regression model for holiday travel mode choice. *Procedia Engineering*, *137*, 729-737.
4. Ukko J S, Minna. (2019) Understanding The Practice of Performance Measurement In Industrial Collaboration: From Design To Implementation [J]. Journal of Purchasing and Supply Management.
5. Mehdi T. A (2016) Cost Efficiency Approach For Strategic Vendor Selection Problem Under Certain Input Prices Assumption, Measurement [J]. 85(175-183
6. Rizqiyah R. Analysis of Financial Distress and Efficiency In Indonesian Mining (2018) Industry [J]. International Conference Family Business and Economic,
7. Pekkola S, & Ukko, J, (2016). Designing A Performance Measurement System for Collaborative Network [J]. International Journal Of Operations & Production Management, 36(11)(1410-1434)
8. Permaia S D T, Heruna. (2018), Linear Regression Model Using Bayesian Approach For Energy Performance Of Residential Building [J]. International Conference on Computer Science and Computational Intelligence.
9. Ramadhani M, Fitrianah D. (2019), Implementation of Data Mining Analysis to Determine the Tuna Fishing Zone Using Dbscan Algorithm [J]. International Journal of Machine Learning and Computing, 9(5):
10. Ramli, N. A., Latan, H., & Solovida, G. T. (2019). Determinants of capital structure and firm financial performance—A PLS-SEM approach: Evidence from Malaysia and Indonesia. *The Quarterly Review of Economics and Finance*, *71*, 148-160.
11. Cronbach L J. (1951), Coefficient Alpha and The Internal Structure of Tests [J]. Psychometrika, 16(3): 297-334.
12. Zhang Y-J, Chen M-Y. (2018),Evaluating The Dynamic Performance Of Energy Portfolios: Empirical Evidence From The DEA Directional Distance Function [J]. European Journal Of Operational Research, 269(1): 64-78.
13. Charalambakis, E. C., & Garrett, I. (2019). On corporate financial distress prediction: What can we learn from private firms in a developing economy? Evidence from Greece. *Review of Quantitative Finance & Accounting*, *52*(2).
14. Charnes A, Cooper W W, Rhodes E. (1978), Measuring The Efficiency Of Decision Making Units [J]. European Journal Of Operational Research, 2(6): 429-44.
15. M. Al-Ahdal W A, H.Mohammed ; Tabash I.Mosab ; Farhan H.S. Najib. (2020), The Impact Of Corporate Governance On Financial Performance Of Indian And Gcc Listed Firms: An Empirical Investigation [J]. Research In International Business And Finance, , 51
16. Faqih A R, & Alfaqiih, A. (2018), The Existence Of Maslahah In The Establishment And Holding Of State Owned Enterprises In Indonesia [J]. Researchers World, 9(2)(153)
17. Cohen, I., Huang, Y., Chen, J., Benesty, J., Benesty, J., Chen, J., ... & Cohen, I. (2009). Pearson correlation coefficient. *Noise reduction in speech processing*, 1-4. Ghazvinia K Y, Masoud ; Firoozehb, Farzaneh ; Mansouri, Shamsoddin. (2019), Predictors of Tuberculosis: Application Of A Logistic Regression Model [J].
18. Zhang Y L, Yongli ; Song, Jinzhao ; Chen, Xiaolong ; Lu, Yeng ; Wang,Weikang (2019), Electrical Power And Energy Systems [J]. 116.

19. Mselmi N, Hamza T, Lahiani A, Et Al. (2019), Pricing Corporate Financial Distress: Empirical Evidence From The French Stock Market [J]. Journal of International Money And Finance, 96(13-27).
20. Liu C, Low A, Masulis R W, Et Al. (2017), Monitoring The Monitor: Distracted Institutional Investors And Board Governance [J]. European Corporate Governance Institute (Ecgi)-Finance Working Paper, 531)
21. Mohammed M A. (2019), Robust Logistic Regression In The Presence Of High Leverage Points [J]. Journal Of Al-Qadisiyah For Computer Science And Mathematics, 11(3): Page 1-11.
22. Kim, K. (2018). Matchmaking: Establishment of state-owned holding companies in Indonesia. *Asia & the Pacific Policy Studies*, *5*(2), 313-330.
23. Altman E I. (1968) Financial Ratios, Discriminant Analysis And The Prediction of Corporate Bankruptcy [J]. The Journal of Finance, 23(4)(589-609).