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# Comparison Between Risk and Return of Financial Conglomerates in Indonesia: Vertical, Horizontal and Mixed (TOPSIS Analysis)

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**Abstract**
Financial conglomeration in Indonesia is a unique form because Indonesia has three financial conglomeration types that existed. There are vertical, horizontal, and mixed types. In fact, many countries are implementing vertical financial conglomerates because the supervision is easier to carry out than other types. This study tried to compare the performance of vertical, horizontal, and mixed financial conglomerates. Is it true that a vertical financial conglomerate is the best financial conglomerate compared to a horizontal and mixed one with the TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) analysis? This study used return indicators and risk indicators to measure financial conglomerates' performance in the banking industry. The results showed that vertical financial conglomerates were the most superior compared to horizontal and mixed financial conglomerates. It might be attributed that vertical financial conglomerates usually have the same activities and have an explicit direct relationship between the parent company and subsidiary company so as it is more easily to supervising.

**Keywords:** Financial Conglomerations, Vertical, Horizontal, Mixed

## 1. Introduction

Financial Conglomerations in Indonesia are still discussing how to regulate and supervise their presence in Indonesia. Basically, financial conglomeration can not only be useful but also have an impact on the occurrence of risks. The benefits of financial conglomeration according to Claessens (2002), namely the achievement of economies of scale and efficiency, increased diversification and risk minimization, and reduced information costs and monitoring. Furthermore, the problems that arise with the existence of financial conglomerates include the possibility of double leveraging calculations (Bressan, 2017), opportunities for regulatory arbitrage (Avraham,

Selvaggi and Vickery, 2012), and an increase in intragroup transactions. In addition, there are differences in regulations in the financial sector, such as differences in the principles of prudence that allow systemic risk from one financial services institution to the entire financial conglomerate group (De Nicolo and Kwast, 2002). Therefore, the supervision of financial conglomerates is important especially to avoid systemic risk and arbitration in the regulatory and supervisory by financial services institution and to take appropriate supervisory.

The development of financial conglomerates rapidly in Indonesia has occurred since the supervision of the banking industry was only carried out by the central bank. At that time, Bank Indonesia only supervised the banking industry. As a result, financial institutions can independently set up subsidiaries in other financial services sectors. Since 2014, there have been 50 financial conglomerates in Indonesia that have controlled 70.5% of the total assets of the financial services industry. In addition, financial conglomerates in Indonesia have 3 variations, namely vertical, horizontal, and mixed financial conglomerations. In fact, in its development, many countries have implemented vertical financial conglomerations because the supervision is easier to carry out compared to horizontal and mixed types of financial conglomerations.

Since 2011, the Financial Services Authority (FSA) has been conducted micro banking supervisions and had begun to regulate the existence of financial conglomerates in Indonesia. But recently, the existence of financial conglomerates is still leaving many problems, including the lack of regulations regarding financial conglomerates that have overseas parents, difficulty in monitoring due to the complex financial structure of each conglomerate, and the existence of risk integration that can lead to systemic risk. Because of this, the FSA in 2017 issued a draft FSA regulation concerning the establishment of a financial conglomerate holding company that requires financial conglomerates to have a parent company for holding company. The FSA complements the three previous FSA Regulations concerning Integrated Risk Management, Integrated Governance, and Integrated Minimum Capital Requirements.

Research on financial conglomerates has been conducted. There were researches on the benefits and risks of the existence of financial conglomerates like research on the regulation and supervision of financial conglomerates (Freixas, Lóránth, and Morrison, 2007); (Peleckienė, 2011); (Mälkönen, 2009), controversy about the economic value of financial conglomerates (Schmid and Walter, 2009); (Lelyveld and Knot, 2009); (Gatzert and Schmeiser, 2011); (Elyasiani, Staikouras, and Dontis-charitos, 2014); (Guerry and Wallmeier, 2017); and the interconnection between banks, insurance and financial conglomerates (Hautona and Jean-CyprienHéam, 2016). Based on the research above, it could be concluded the economic benefits of financial conglomerates still being research to test consistency about the benefits or risks of financial conglomerates. Therefore, these studies compare the risk and return of financial conglomerations in Indonesia between three different types (vertical, horizontal, and mixed). Is there a difference in risk and return between the three types of financial conglomeration? If it is different, which type of financial conglomerate is the best.

## 2. The Definition and Types of Financial Conglomerates in Indonesia

### *2.1 Definition of Financial Conglomeration*

Financial conglomerates are groups of financial institutions and companies that offer a wide range of financial services. The definition of financial conglomerates is also listed in FSA regulation. It's explained that financial conglomeration is the financial services institution group which carries out significant financial services business activities and at least in two sectors like banking, capital market, insurance, financing institutions, and other financial service institutions.

### *2.2 Types of Financial Conglomerates in Indonesia*

The following are the types of financial conglomerates in Indonesia (Subari, 2015),

a. A vertical group occurs when there is a direct relationship between the parent company and subsidiary companies. Both of them are Financial Services Institutions (FSI). In this group, controlling shareholders own

companies in the banking and insurance sector, financing, or securities.

b. A horizontal group occurs if there is no direct relationship between FSI and financial conglomerate, but the FSI is owned or controlled by the same party. This means that controlling shareholders have shares in companies in the financial sector.
c. A mixed group occurs when one financial conglomerate has a business group structure as vertical and horizontal groups. Thus, controlling shareholders own financial sector company and owns shares in other financial sectors.

## 3. Study of Literature

Research on financial conglomerates has been studied. Nicolo, et al. (2004) examined the relationship between consolidated banks and financial conglomerates and their effect on risk. The study found financial conglomerates in developing countries caused an increase in the risk of funding, especially for unstable bank funding sources. Moreover, bigger financial conglomerates have a higher operational risk than smaller financial conglomerates due to managerial factors. Research on bank-insurance special conglomerates was also conducted (Lelyveld and Knot, 2009). The results showed that financial conglomeration affects the decline in firm value due to the diversification strategy (diversification discount) with significant levels that differ between size, conglomerate business model, and risk profile. The results of this study are supported by Schmid and Walter (2009). The researched used sample in America. The study showed that financial conglomeration caused a diversification discount for all of the combinations of financial services except for investment banks. The impact of this diversification discount is consistent for all combinations of financial activities in financial conglomerates except for financial conglomerates that have a combination of business activities with insurance also and or investment or banks.

In contrast to the results of studies conducted by Claessens (2003), the research about the cost and benefits of integrated (vertical) financial conglomerates. The results showed that vertical financial conglomerates provide better service quality than other types. Vertical financial conglomerates also reduce intermediation costs and reduce risks. Gatzert and Schmeiser (2011) stated in their study that there was competition in internal financial conglomerates. The diversification of business units provides benefits to financial conglomerates. Casu et al. (2016) stated that banks with a combination of investment activities have a higher risk than banks with combination insurance activities.

Based on the explanation above, this study aims to compare the financial performance of three types of financial conglomerates in Indonesia using the TOPSIS method. The study begins by collecting data on return and risk indicators from individual financial conglomerates. Next, classify financial conglomerates into three groups types. Finally, data were processed with the TOPSIS method to get the score and do a comparative analysis.

## 4. Methods

Following the research objectives, this study uses financial conglomerations in the banking industry because most of the financial conglomerates come from the banking industry. The sample in this study was 37 financial conglomerates that have published integrated governance reports. However, due to incomplete data in the Mizuho group, JP Morgan group, and Deutsche Bank Group, these three financial conglomerates were excluded from the research sample. Therefore, there were 34 financial conglomerates used as a sample. The sample was then classified into three groups based on controlling shareholders that consists of 14 vertical financial conglomerates, 13 horizontal financial conglomerates, and 7 mixed financial conglomerates. The period in this study is started from 2009-2018.

### *4.1 Operational Variables*

This study used four return indicators (ROA, ROE, NIM, and MS) and four risk indicators (LDR, NPL, CAR, and OCOI).

*4.1.1 Return Indicator*

a. ROA (Return on Assets)

This ratio is used to measure the ability to obtain profits from the total assets. The greater ROA, the greater level of profit achieved. This ratio is formulated as follows,

$$\text{ROA} = (\text{Net Income})/(\text{Total Assets}) \quad (1)$$

b. ROE (Return on Equity)

This ratio is used to measure the performance in managing the availability of capital to generate profit after tax. The greater ROE, the greater the level of profit achieved by the bank. This ratio is formulated as follows,

$$\text{ROE} = (\text{Net Income})/\text{Equity} \quad (2)$$

c. NIM (Net Interest Margin)

Net Interest Margin is a ratio that measures the difference between the interest income generated and the amount of interest paid towards the average of total productive assets. NIM can be calculated using a formula

$$\text{NIM} = (\text{Interest Income} - \text{Interest Expense})/(\text{Average Earning Assets}) \quad (3)$$

d. MS (Market Share)

Market Share is a percentage of the total assets from individual financial conglomerates compared with the total assets of the national financial conglomerates. Thus, the market share of financial conglomerates individually can be calculated using the following formula,

$$\text{MS} = (\text{Total Assets})/(\text{Total Assets of Market}) \quad (4)$$

*4.1.2 Risk Indicator*

a. LDR (Loan to Deposit Ratio)

This ratio is to assess the liquidity of the bank. The higher LDR, the lower liquidity. This ratio is formulated as follows,

$$\text{LDR} = (\text{Total Loans})/(\text{Total Deposits}) \quad (5)$$

b. NPL (Non-Performing Loan)

This ratio shows the ability of bank management to manage non-performing loans. The higher this ratio, the worse quality of the bank's credit. This ratio is formulated as follows,

$$\text{NPL} = (\text{Total Performing Loan})/(\text{Total Loans}) \quad (6)$$

c. CAR (Capital Adequacy Ratio)

CAR is a measure of a bank's performance in supporting assets that contain risk, which is a comparison between capital and risk-weighted assets. The greater the CAR value, the better the bank's capital ability to finance bank assets that contain risks. This ratio is formulated as follows,

$$\text{CAR} = (\text{Tier 1 Capital} + \text{Tier 2 Capital})/(\text{Risk Weighted Assets}) \quad (7)$$

d. OCOI (Operating Costs to Operating Income)

This ratio is also called the efficiency ratio. It measures the ability of bank management to control operating costs against operating income. The higher the ratio, the less efficient. This ratio is formulated as follows,

$$\text{CAR} = (\text{Operating Cost})/(\text{Operating Income}) \quad (8)$$

Furthermore, before being processed using the TOPSIS method, each indicator is given a weighting according to the level of importance. The following is the weighting for each return and risk indicator (Hidayat, 2016),

Table 1. Weighting of Return and Risk Indicators

| Indicator | Variable | Code | Weight | Sign |
|---|---|---|---|---|
| Return | Return on Assets (ROA) | X11 | 12.5% | + |
| | Return on Equity (ROE) | X12 | 12.5% | + |
| | Net Interest Margin (NIM) | X13 | 12.5% | + |
| | Market Share (MS) | X14 | 12.5% | + |
| Risk | Loan to Deposit Ratio (LDR) | X21 | 12.5% | - |
| | Non Performing Loan (NPL) | X22 | 12.5% | - |
| | Capital Adequacy Ratio (CAR) | X23 | 12.5% | + |
| | Operating Cost to Operating Income (OCOI) | X24 | 12.5% | - |

Based on table 1 above, the total number of return and risk indicators is eight variables, and they assume the importance of the eight variables is the same so that the weighting for each variable is 12.5%.

The positive and the negative signs for each variable are related to the 4th step in the TOPSIS analysis when determining the best ideal value and the worst ideal value. The best ideal value is the highest value of the variables, while the worst ideal is the lowest value of variables. Based on table 1, all signs on return variables are positive. That is, the ideal best for the return variable is the highest value of the return variables. Otherwise, the ideal worst is the lowest value of the return variables.

In contrast to the best ideal of the risk variables are the lowest value of each variable and the worst ideal of the risk variables is the highest value of the LDR, NPL, and OCOI variables. Different from the CAR variable. CAR is a risk variable related to the bank's performance in supporting assets that contain risk. The higher the CAR, the more banks are able to bear the risk of each productive assets. Thus, the ideal best of the CAR variable is the highest value and the ideal worst of the CAR variable is the lowest value.

### *4.1.3 Technique for Order Preference by Similarity to Ideal Solution (TOPSIS)*

TOPSIS is a multicriteria decision-making method. It was first introduced by Hwang and Masud (1979). TOPSIS has used the principle that the selected alternative must have the closest distance from the positive ideal solution and the furthest distance from the negative ideal solution as the optimal solutions.

The positive ideal solution is defined as the sum of all the best scores that can be achieved for each attribute. Whether the negative ideal solution is defined as the sum of all the worst scores could be achieved for each attribute. Some of the advantages of TOPSIS are it is easy to be processed computerized, used rational logic, allows the best alternatives to be described in simple mathematics as a concept, and used the weight of importance.

The following is steps of the TOPSIS method based on Wangchen Bhutia (2012),

1. Make a decision matrix A by evaluating the value of each alternative against each criterion.

$$A = \begin{bmatrix} a_{11} & a_{12} & L & a_{1n} \\ a_{21} & a_{22} & L & a_{2n} \\ M & M & M & M \\ a_{i1} & a_{i2} & a_{ij} & a_{in} \\ M & M & M & M \\ a_{m1} & a_{m2} & L & a_{mn} \end{bmatrix}$$

2. Normalization of decision matrix A becomes matrix r with the following equation,

$$r_{ij} = \frac{X_{ij}}{\sqrt{\sum_{i=1}^{m} X_{ij}^2}}$$

with
i = 1, 2, … , m
j = 1, 2, … , n
r_ij = normalized decision matrix
X_ij = weights criteria j to alternative value i
i = alternative value i
j = criteria to j

3. Create a weighted normalization decision matrix. The weighted matrix value is symbolized by $Y_{ij}$ and calculated by the equation as follows,

$$Y_{ij} = w_j r_{ij}$$

with i = 1, 2, …, n j = 1, 2, …, n and wj is the weight of j criterion

4. Determine both the positive ideal solution matrix and the negative ideal solution matrix based on the normalized weight rating. A positive ideal solution (A+) and a negative ideal solution (A-) calculated in the following equation,

$$A^+ = y_1^+, y_2^+, \dots, y_n^+$$
$$A^- = y_1^-, y_2^-, \dots, y_n^-$$

with

$y_j^+ = \max_i y_{ij}$

$y_j^- = \min_i y_{ij}$

$y_j^+$ is the largest value of the *y* matrix for each *j* criterion.

$y_j^-$ is the smallest value of the *y* matrix for each *j* criterion.

5. Determine the distance between the value of each alternative with a matrix of positive ideal solutions and negative ideal solutions. The distance between the alternative value to i with the ideal positive solution and the ideal solution negative can be formulated by the equation as follows,

$$D_i^+ = \sqrt{\sum_{j=1}^{n} \left(y_j^+ - y_{ij}\right)^2}$$
$$D_i^- = \sqrt{\sum_{j=1}^{n} \left(y_j^- - y_{ij}\right)^2}$$

$D_i^+$ is the distance between alternative value i with the positive ideal solution

$D_i^-$ is the distance between alternative value i with the negative ideal solution

6. Determine the preference value for each alternative. The highest preference value (Vi) indicates that alternative i is feasible to be chosen as the best solution. Vi value is calculated by the equation as follows,

$$V_i = \frac{D_i^-}{D_i^- + D_i^+}$$

## 5. Result

### *5.1 Return and Risk Indicators*

The following are an explanation of return and risk indicators in the vertical, horizontal, and mixed financial conglomerates.

#### *5.1.1 Return*

The return indicators in this study used ROA, ROE, NIM, and MS described in the following:

a. ROA (Return on Assets)

The following is a summary of the average ROA for the three categories of financial conglomerates,

Table 2. Average Return Indicator: ROA

| Year | Types of Financial Conglomerates | | |
|---|---|---|---|
| | **Vertical** | **Horizontal** | **Mixed** |
| 2010 | 3.70% | 1.52% | 2.44% |
| 2011 | 2.79% | 1.39% | 2.04% |
| 2012 | 2.78% | 1.62% | 1.82% |
| 2013 | 2.62% | 1.54% | 1.98% |
| 2014 | 2.54% | 1.12% | 1.55% |
| 2015 | 1.64% | 0.69% | 1.30% |
| 2016 | 1.70% | 0.29% | 1.60% |
| 2017 | 2.02% | 0.12% | 1.43% |
| 2018 | 1.91% | 0.24% | 1.50% |

Based on table 2 above, vertical financial conglomerates have the highest average ROA value, the range between 1.64% and 3.70%, followed by mixed-type financial conglomerates and horizontal financial conglomerates. The average ROA from the vertical financial conglomerate had the best ROA go on consistently from 2009-2018. This showed that the vertical type of financial conglomeration is the best type of financial conglomeration. Because the vertical group of financial conglomeration is usually operating in the same activities, it is easier to supervise the activities than the others.

b. ROE (Return on Equity)

his ratio is used to measure the performance in managing the available capital to generate profit. The table below is a summary of the average ROE for the three categories of financial conglomerates,

Table 3. Average Return Indicator: ROE

| Year | Types of Financial Conglomerates | | |
|---|---|---|---|
| | **Vertical** | **Horizontal** | **Mixed** |
| 2010 | 20.48% | 10.94% | 16.13% |
| 2011 | 19.93% | 8.53% | 14.19% |
| 2012 | 18.97% | 12.37% | 15.49% |
| 2013 | 18.33% | 8.61% | 16.31% |
| 2014 | 14.77% | 5.98% | 10.40% |
| 2015 | 10.21% | 3.70% | 9.52% |
| 2016 | 9.20% | -0.49% | 10.18% |
| 2017 | 10.30% | -1.96% | 7.34% |
| 2018 | 9.95% | -0.97% | 6.93% |

Based on table 3, it showed the vertical group of financial conglomerates also had the highest average ROE, followed by mixed and horizontal types. Similar to ROA, it could be concluded that vertical group financial conglomerates are easier to supervise the company's operational activities since it usually operating in the same activities.

c. NIM (Net Interest Margin)

The following is a summary of the average NIM for the three categories of financial conglomerates.

Table 4. Average Return Indicator: NIM

| Year | Types of Financial Conglomerates | | |
|---|---|---|---|
| | **Vertical** | **Horizontal** | **Mixed** |
| 2010 | 5.44% | 5.04% | 6.05% |
| 2011 | 5.77% | 4.85% | 5.39% |
| 2012 | 5.14% | 4.99% | 4.93% |
| 2013 | 4.83% | 4.92% | 5.02% |
| 2014 | 4.85% | 4.46% | 4.72% |
| 2015 | 5.03% | 4.49% | 4.94% |
| 2016 | 5.19% | 4.74% | 5.68% |
| 2017 | 4.81% | 4.51% | 5.26% |
| 2018 | 4.62% | 4.68% | 5.01% |

Based on table 4, it can be seen that the vertical and mixed group financial conglomerates have the highest average NIM value in certain research periods. For example, the highest NIM was achieved by the vertical financial conglomeration group in 2011, 2012, 2014, and 2015. Meanwhile, for the years 2010, 2013, 2016, 2017, and 2018

the highest NIM value was achieved by the mixed ones. The horizontal group financial conglomeration had the lowest NIM consistently. This showed that the vertical and mixed types of financial conglomeration have relatively good NIM. This might be attributed to the mixed group of the financial conglomerate has vertical characteristics that could have better performance than the vertical group in managing NIM.

d. MS (Market Share*)*

The following is a summary table of average MS for the three categories of financial conglomerates,

Table 5. Average Return Indicator: MS

| Year | Types of Financial Conglomerates | | |
|---|---|---|---|
| | **Vertical** | **Horizontal** | **Mixed** |
| 2010 | 5.51% | 0.68% | 1.99% |
| 2011 | 5.45% | 0.73% | 2.03% |
| 2012 | 5.32% | 0.72% | 2.07% |
| 2013 | 5.37% | 0.79% | 2.09% |
| 2014 | 5.44% | 0.79% | 1.95% |
| 2015 | 5.43% | 0.78% | 1.98% |
| 2016 | 5.52% | 0.69% | 1.96% |
| 2017 | 5.52% | 0.63% | 2.07% |
| 2018 | 5.58% | 0.61% | 2.00% |

According to table 5, the vertical financial conglomeration had the highest value of MS averages. One of the vertical financial conglomerations had a 20.05% market share in 2018. The highest average MS of vertical financial conglomerates is consistent annually. The vertical financial conglomerates had more control assets of the national financial conglomerates than the horizontal and mixed groups.

*5.1.2 Risk*

The risk indicators in this study used LDR, NPL, CAR, and OCOI described in the following:

a. LDR (Loan to Deposit Ratio)

The table below is a summary of the average LDR for the three categories of financial conglomerates.

Table 6. Average Risk Indicator: LDR

| Year | Types of Financial Conglomerates | | |
|---|---|---|---|
| | **Vertical** | **Horizontal** | **Mixed** |
| 2010 | 85.75% | 88.16% | 78.41% |
| 2011 | 93.54% | 96.11% | 80.77% |
| 2012 | 92.70% | 100.51% | 82.36% |
| 2013 | 96.24% | 104.66% | 89.93% |
| 2014 | 100.50% | 107.17% | 90.77% |
| 2015 | 107.70% | 102.34% | 92.44% |
| 2016 | 100.83% | 96.86% | 92.78% |
| 2017 | 97.35% | 96.32% | 93.56% |
| 2018 | 102.69% | 100.64% | 99.07% |

Based on table 6, the mixed financial conglomeration had the smallest average value of LDR consistently. While the average value of LDR for the vertical and the horizontal groups even reached above 100%. Thus, mixed

financial conglomerates had the best liquidity compared to the vertical and horizontal groups. Actually, liquidity problems could be minimized by inhibited credit growth or by increased interest on deposits.

b. NPL (Non-Performing Loan)

This ratio shows the ability to manage non-performing loans. The following is a summary of the average gross NPL for the three categories of financial conglomerates,

Table 7. Average Risk Indicator: NPL

| Year | Types of Financial Conglomerates | | |
|---|---|---|---|
| | **Vertical** | **Horizontal** | **Mixed** |
| 2010 | 2.83% | 1.91% | 2.22% |
| 2011 | 2.26% | 1.60% | 1.63% |
| 2012 | 1.62% | 1.71% | 1.47% |
| 2013 | 1.49% | 1.46% | 1.74% |
| 2014 | 2.14% | 2.13% | 2.85% |
| 2015 | 2.85% | 2.28% | 3.07% |
| 2016 | 2.99% | 3.29% | 3.33% |
| 2017 | 2.98% | 3.97% | 2.85% |
| 2018 | 2.57% | 3.77% | 2.58% |

According to table 7, all NPL values are adequate and higher than the applicable provisions below 5%. Vertical, horizontal, and mixed group financial conglomerates had the lowest NPLs in a certain year. For example, the vertical financial conglomerate had the lowest average NPL in 2013. Furthermore, the horizontal group of financial conglomerates had the lowest NPL in 2013. Finally, the mixed group financial conglomerate had the lowest NPL in 2012. The lowest average value of Gross NPL was achieved by the horizontal financial conglomerates in 2013. There is a tendency for the lowest average NPL value to be achieved by the horizontal financial conglomerates. Although horizontal financial conglomerates have varied activities, however, these financial conglomerates able to manage credit.

c. CAR (Capital Adequacy Ratio)

CAR is a ratio that shows how much risk-bearing bank assets are financed from their own capital in addition to obtaining funds from sources outside the bank. The following is a summary of the average CAR for the three categories of financial conglomerates.

Table 8. Average Risk Indicator: CAR

| Year | Types of Financial Conglomerates | | |
|---|---|---|---|
| | **Vertical** | **Horizontal** | **Mixed** |
| 2010 | 22.47% | 21.52% | 18.44% |
| 2011 | 19.40% | 19.29% | 16.15% |
| 2012 | 20.52% | 19.55% | 15.90% |
| 2013 | 19.08% | 21.37% | 15.69% |
| 2014 | 18.53% | 22.16% | 16.88% |
| 2015 | 19.38% | 23.88% | 17.93% |
| 2016 | 20.57% | 26.23% | 19.57% |
| 2017 | 19.96% | 27.65% | 19.31% |
| 2018 | 19.46% | 25.15% | 20.06% |

Based on table 8, all of the CAR values are adequate and higher than the applicable provisions, which were above 13%. Vertical and horizontal financial conglomerates have the highest average CAR value in a certain year, followed by mixed financial conglomerates that consistently have the lowest average CAR. The vertical group of financial conglomerates had the highest CAR in 2010, 2011, and 2012. Furthermore, the horizontal group of financial conglomerates had the highest CAR in 2013-2018. Thus, the horizontal group of financial conglomerates had a greater ability to face the possible risk of loss than the vertical and mixed financial conglomerates.

d. OCOI (Operating Costs to Operating Income)

OCOI measures the ability of bank management to control operating costs against operating income. The following is a summary of the average OCOI for the three categories of financial conglomeration,

Table 9. Average Return Indicator: OCOI

| Year | Types of Financial Conglomerates | | |
|---|---|---|---|
| | **Vertical** | **Horizontal** | **Mixed** |
| 2010 | 77.34% | 87.63% | 78.21% |
| 2011 | 75.59% | 89.44% | 81.57% |
| 2012 | 73.60% | 84.36% | 80.57% |
| 2013 | 76.08% | 86.14% | 81.39% |
| 2014 | 77.38% | 88.92% | 86.36% |
| 2015 | 83.88% | 94.37% | 87.99% |
| 2016 | 84.77% | 98,.01% | 86.15% |
| 2017 | 80.79% | 101.35% | 84.92% |
| 2018 | 84.10% | 98.94% | 84.89% |

In table 9, the vertical financial conglomeration had the lowest average value of OCOI followed by the mixed and horizontal financial conglomeration. The results of this study support research (Claessens, 2003) regarding the cost and benefits of integrated (vertical) financial conglomerations. It showed that vertical financial conglomeration was able to reduce intermediation costs.

*5.2 Average TOPSIS Score*

Furthermore, to determine which group of financial conglomerates had the best performance among vertical, horizontal, and mixed groups, the average TOPSIS score for each financial conglomerate group will be calculated every year as follows:

Table 10. Average TOPSIS Score

| Year | Types of Financial Conglomerates | | |
|---|---|---|---|
| | **Vertical** | **Horizontal** | **Mixed** |
| 2010 | 33.93% | 26.52% | 28.80% |
| 2011 | 53.44% | 43.45% | 47.38% |
| 2012 | 48.10% | 39.28% | 41.79% |
| 2013 | 48.55% | 40.86% | 43.18% |
| 2014 | 46.38% | 37.64% | 39.03% |
| 2015 | 48.42% | 41.41% | 44.75% |
| 2016 | 56.63% | 47.65% | 54.56% |
| 2017 | 62.92% | 52.33% | 59.43% |
| 2018 | 59.53% | 47.48% | 55.37% |

Based on table 10, the highest average TOPSIS score was the vertical financial conglomeration consistent from 2010-2018. Furthermore, the mixed group financial conglomerates consistently have lower average TOPSIS scores than the vertical group financial conglomerates but higher than the horizontal group financial conglomerates. This means that the horizontal group of financial conglomerates has the lowest average TOPSIS score than the vertical and mixed groups.

Thus, the vertical group of financial conglomerates has the most superior performance than the horizontal and mixed groups. The top 10 best performers nearly were achieved by the vertical group financial conglomerates. This is probably since the vertical financial conglomerates are usually operates in the same activities. This means that the parent company could exercise better supervision and control. Therefore it is easy for vertical financial conglomeration to coordinate regarding the implementation of policies for better performance.

## 6. Discussion

This study compared the performance of vertical, horizontal, and mixed financial conglomerates. Is it true that the vertical financial conglomeration is the best financial conglomerate that it is applied by financial conglomerates in many countries? This study uses return and risk indicators to describe the performance of financial conglomerates. The return indicator was measured by ROA, ROE, NIM, and MS, then the risk indicator was measured by LDR, Gross NPL, CAR, and OCOI.

Based on the return indicator, vertical financial conglomerates have superior ROA, ROE, and MS compared to horizontal and mixed financial conglomerates. Superior ROA, ROE, and MS indicate the achievement of high profitability and a dominant market share which had an impact on superior financial performance. Although NIM from vertical financial conglomerates has reached the highest NIM in certain four years only, low NIM actually shows the level of efficiency because NIM is the spread between interest income and interest expense. In fact, the government wants the NIM to be achieved by the banking industry not to be high because a high NIM means that credit interest is also high which has an unfavorable impact on business actors.

Furthermore, from the risk indicator, vertical financial conglomerates tend to be high in LDR, which indicates that vertical financial conglomerates in the banking industry are mostly lending. The LDR can be reduced by inhibiting credit growth or by increasing the interest on deposits to raise savings funds. Unlike the LDR, the Gross NPL of a vertical financial conglomerate was not the lowest but still within a very safe limit. From the CAR value, the vertical group financial conglomerates only had the highest CAR only 3 years, but the overall CAR was still higher than the applicable regulations. Thus, the vertical group financial conglomerates have a better ability to face the possible risk of loss. Finally, concerning the OCOI value, the vertical group financial conglomerates have the lowest OCOI consistently during the study period. Thus the vertical group financial conglomerates were the most cost-efficient compared to the horizontal and mixed group financial conglomerates.

Based on both indicators, the vertical financial conglomerates are superior to the horizontal and mixed financial conglomerates. The superior performance of the financial conglomerates in the vertical group is also supported by almost 10 of the best performance achieved by the vertical financial conglomerates group. Furthermore, based on the TOPSIS average score, the vertical financial conglomerate had the highest average score during the study period.

Overall, this study supports Claessens (2003) stated that vertical financial conglomerates provide better service quality, reduce intermediation costs, and reduce the risks faced. This study also support Gatzert and Schmeiser (2011) stated that there is competition in internal financial conglomerates, diversification of similar business units provides benefits to financial conglomerates.

From the point of view of supervision and control, vertical group financial conglomerates usually engaged in the same activities will find it easier to supervise the activities of the company. Moreover, there is a clear direct relationship between the parent company and subsidiary companies. Both of them are Financial Services

Institutions. In other words, Controlling Shareholders own companies in the banking or insurance sector, financing, and securities.

## 7. Conclusion

The purpose of this study compares the performance of vertical, horizontal, and mixed financial conglomerates from the banking industry. Based on indicators of return and risk, the vertical financial conglomerates were superior to others. The superior performance from the vertical financial conglomerates was supported that nearly the 10th best performance achieved by the vertical group of financial conglomerates and the average TOPSIS score consistently had the highest than others. This study also supports Claessens (2003) that stated that vertical financial conglomerations provide better service quality, reduce intermediation costs, and reduce the risks. This research also supports Gatzert and Schmeiser (2011) were a state that there is competition in the internal financial conglomeration, diversification of similar business units provides benefits to financial conglomerates.

The suggestion from this research is to support the government's efforts in the draft FSA regulation about financial conglomerates required to set up Holding Companies. This is a form of clearer supervision by required financial conglomeration to report Integrated Governance Implementation Annual Report between the parent financial conglomerate and its subsidiaries. FSA is expected to provide more attention and supervision to horizontal and mixed financial conglomerates because there is no direct relationship between Financial Services Institutions in the same Financial Conglomerates. Because the activities carried out are various cause it is more difficult to carry out supervision.

Future research can compare the financial conglomerates' performance in different combinations of business activities because there are differences in the diversification discount (Schmid and Walter, 2009).

## References

Avraham, D., Selvaggi, P. and Vickery, J. (2012) 'A Structural View of U.S. Bank Holding Companies', *Economic Policy Review*, (July), pp. 65–81.

Bressan, S. (2017) 'The funding of subsidiaries equity, double leverage and the risk of bank holding companies', *Journal of Business Finance and Accounting*, pp. 1–23. doi: 10.1111/jbfa.12288.

Casu, B. *et al.* (2016) 'Diversification, size and Risk : the Case of Bank Acquisitions of Nonbank Financial Firms', *European Financial Management*, 22(2), pp. 235–275. doi: 10.1111/eufm.12061.

Claessens, S. (2002) 'Benefits and Costs on Integrated Financial Services Provision in Developing Countries', in *the Joint Netherlands-U.S. Roundtable on Financial Services Conglomerates*, pp. 1–73. doi: 10.1353/pfs.2003.0002.

De Nicolo, G. and Kwast, M. L. (2002) 'Systemic risk and financial consolidation: Are they related?', *Journal of Banking and Finance*, 26(5), pp. 861–880. doi: 10.1016/S0378-4266(02)00211-X.

Elyasiani, E., Staikouras, S. K. and Dontis-charitos, P. (2014) 'Cross-industry product diversification and contagion in risk and return: the case of bank-insurance and insurance-bank takeover', *The Journal of Risk and Insurance*, pp. 1–38. doi: 10.1111/jori.12066.

Freixas, X., Lóránth, G. and Morrison, A. D. (2007) 'Regulating financial conglomerates', *Journal of Financial Intermediation*, 16, pp. 479–514. doi: 10.1016/j.jfi.2007.03.004.

Gatzert, N. and Schmeiser, H. (2011) 'On the risk situation of financial conglomerates: does diversification matter ?', *Financial Market Portfolio Management*, 25, pp. 3–26. doi: 10.1007/s11408-010-0149-3.

Guerry, N. and Wallmeier, M. (2017) 'Valuation of diversified banks : New evidence', *Journal of Banking and Finance*. Elsevier B.V., 80, pp. 203–214. doi: 10.1016/j.jbankfin.2017.04.004.

Hautona, G. and Jean-CyprienHéam (2016) 'How to measure interconnectedness between banks , insurers and financial conglomerates', *Statistic Risk Model*, 33, pp. 95–116. doi: 10.1515/strm-2014-1177.

Hidayat, T. (2016) 'The Impact of Financial Conglomeration on Risk and Return Performance in Indonesia Banking Industry', *International Journal Latest Trend in Finance and Economic Sciences*, 6(2), pp. 1135–1145.

Hwang, C. L. and Masud, A. S. M. (1979) 'Multiple Objective Decision Making - Methods and Applications', *Lecture Notes in Economics and Mathematical Systems*, 1(164), pp. 1–358. doi: 10.1007/978-3-642-45511-7.

Lelyveld, I. Van and Knot, K. (2009) 'Do financial conglomerates create or destroy value ? Evidence for the EU', *Journal of Banking and Finance*. Elsevier B.V., 33(12), pp. 2312–2321. doi: 10.1016/j.jbankfin.2009.06.007.

Mälkönen, V. (2009) 'Financial conglomeration and monitoring incentives', *Journal of Financial Stability*, 5, pp. 105–123. doi: 10.1016/j.jfs.2008.05.001.

Nicolo', G. De *et al.* (2004) 'Conglomeration : Trends and Implications for Financial Risk', *Financial Markets, Institutions & Instruments*, 13(4), pp. 174–217.

Peleckienė, V. (2011) 'New Challenges of Supervising Financial Conglomerates', 5(2), pp. 298–311.

Schmid, M. M. and Walter, I. (2009) 'Do financial conglomerates create or destroy economic value ?', *Journal of Financial Intermediation*. Elsevier Inc., 18, pp. 193–216. doi: 10.1016/j.jfi.2008.07.002.

Subari, E. K. T. (2015) *Pengawasan Terintegrasi Terhadap Konglomerasi Keuangan*, *Otoritas Jasa Keuangan*. Available at: https://docplayer.info/43947542-Pengawasan-terintegrasi-terhadap-konglomerasi-keuangan.html (Accessed: 25 July 2019).

Wangchen Bhutia, P. (2012) *Appication of ahp and topsis method for supplier selection problem*, *IOSR Journal of Engineering*. doi: 10.9790/3021-021034350.