The Effect of Human Capital on Profitability with Productivity as Intervening Variable
(Study on Restaurant, Hotel and Tourism Subsector Companies in 2017–2019)

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Abstract. Human Capital plays a crucial role in companies by providing valuable knowledge and skills, motivating employees, promoting competence, and fostering teamwork. Research has demonstrated that a strong Human Capital can enhance a company’s profitability and productivity. For this study, the variable being independent is Human Capital which is measured by Value Added Human Capital (VAHU). The variable being measured is profitability, which is represented by Return on Assets (ROA), while the variable that mediates this relationship is productivity, which is measured by Assets Turnover (ATO). The study aimed to determine the impact of VAHU on ROA and ATO, as well as the influence of ATO on ROA and the effect of VAHU through ATO as a moderator variable on ROA. Using a quantitative approach, the study analysed data from 21 companies in the trade, service, and investment sectors listed on the Indonesia Stock Exchange between 2017 and 2019. The results indicated that Human Capital had a direct and significant effect on both ROA and ATO. ATO had a significant impact on ROA, while VAHU also had a significant effect on ROA with ATO as a moderator variable. It is recommended that companies prioritize the effective management of their Human Capital to improve their productivity and profitability in the short and long term.

Keywords: Human Capital · Profitability · Productivity

1 Introduction

Business development is progressing rapidly, particularly due to advances in information technology, which has intensified competition among companies. The impact of strong competition is evident in the way companies utilize capital to ensure their survival. Capital is a crucial factor in establishing, improving, and maintaining a company, and its utilization greatly affects the company’s profitability and performance over time [1]. The effects of business competition can result in changes in business operations, leading to new knowledge about production processes, the role of consumers, and the critical importance of human resources within the company. These changes can have significant implications for a company’s financial statements [2].
Human resources have a crucial role as a form of capital and are essential factors of production. Drucker argues that sustained economic growth is no longer solely dependent on traditional forms of capital such as money and land, but rather on the increasing importance of human capital as a key factor of production [3]. With the emergence of knowledge-based businesses, companies can effectively compete by utilizing the creative innovations of their human capital. To measure a company’s intellectual efficiency, Public developed a model called the added value of intellectual capital which comprises physical/financial, structural, and human capital that generate added value for the company [4]. In this study, researchers aim to investigate the impact of Human Capital, proxied by VAHU, on company profitability, represented by ROA, using productivity as an intervening variable, proxied by ATO. VAHU was selected as the variable of interest because it measures the added value generated from labour costs. It is important to recognize that individuals within an organization are integral to the creation of knowledge. Thus, it is vital for economic growth to acknowledge the significance of human capital as a critical production factor, which can be utilized as a tool for global competitiveness [5].

This study builds upon previous research investigating the impact of human capital on company profitability and productivity. A range of studies conducted by Dwipayani [6], Kazhimy and Sulasmiyati [7], Oppong et al. [8], Soewarno and Tjahjadi [9], and Kasoga [10] have produced varied research findings.

2 Literature Reviews and Hypothesis Development

In 1998, Pulic developed the VAIC™ model to assess a company’s value creation efficiency for tangible and intangible assets [4]. This model considers a company’s ability to create value added (VA) by measuring the efficiency of human capital (VAHU), structural capital (STVA), and other value added related to physical capital (VACA). VAHU measures the amount of value added that can be created by investing in employees, and high-quality human resources are necessary for companies to compete with their rivals. VAHU shows the difference between income and expenses (VA) generated by funds/costs spent on employees and the ability of human capital to create value in the company [11].

Profitability is critical to a company’s structure and development, as it indicates the company’s ability to create a benefit, and effective management leads to higher profitability [12]. ROA is used in this study to assess a company’s profitability by measuring its ability to generate profits with its total assets. This ratio is calculated by dividing net income by total assets [13]. When a company treats its employees as capital, it has the potential to increase its profits. Profitability is used by companies to evaluate whether they have been managed efficiently and effectively. Previous research found that human capital has a positive effect on ROA [7, 9]. Thus, the first hypothesis of this study is VAHU has a significant impact on ROA.

According to some literature, the productivity of a company is linked to its profitability as measured by ROA, which is higher when the company utilizes its assets efficiently and withdraws cash funds more quickly [14]. Productivity is a measure of how well a company uses its resources to generate revenue, and it is also essential for
optimal economic growth. The ATO ratio is used to assess how effectively a company uses its assets to generate sales revenue. An increase in the total asset turnover implies that the company is using its assets more productively [15]. The use of this ratio must consider the quality and quantity of employees in the company, as human capital has been found to have a positive effect on ATO [8, 10]. The second and third hypotheses of this study relate to the significant effect of VAHU on ATO and ATO on ROA, respectively. According to Hadi [12], the quality of management’s performance in running a company can be measured by the amount of profit it generates. In other words, if a company is able to generate higher profits, it indicates that its management is doing a better job. The fourth hypothesis considers productivity as an intervening variable that impacts profitability and competitive advantage. The study focuses on the trade and service sector, specifically the restaurant, hotel, and tourism sub-sector, which relies more on intellectual capital in its operational activities [1, 7].

3 Research Method

A quantitative research method was employed for this study [16]. The researchers utilized secondary data, specifically financial and annual reports of selected companies for the period of 2017–2019. These reports were obtained from the official website of the Indonesia Stock Exchange with the domain www.idx.co.id. The variables in this study included the endogenous variable of Profitability, as indicated by ROA, the exogenous variable of Human Capital, as indicated by VAHU, and the intervening variable of Productivity, as indicated by ATO, of the sample companies.

3.1 Endogenous Variable

In statistical and/or economic models, an endogenous variable is a variable that is influenced by other factors and is commonly referred to as the dependent variable. In this study, the endogenous variable is represented by the symbol (Y) and is ROA, which is a measure used to evaluate a company’s profitability.

\[
ROA = \frac{\text{Net Income}}{\text{Total Assets}} \quad (1)
\]

3.2 Exogenous Variable

According to Sugiyono [16], an exogenous variable is a variable that is not influenced by other factors within the structure or variables that affect the endogenous variable. In this study, the exogenous variable is represented by Human Capital, which is measured using VAHU and denoted as (X). VAHU can be calculated in two steps, starting with the determination of the added value or Value Added (VA) by finding the difference between the total revenues (OUT) and inputs (IN), which include all expenses and costs except for employee expenses.

\[
VA = \text{OUT} - \text{IN} \quad (2)
\]
The next step is to calculate the VAHU itself. Employees who have expertise, competence, knowledge, and skills are measured by VAHU as a gauge of the efficiency of human capital added value.

\[
VAHU = \frac{VA}{HC}
\]  

(3)

The equation for VA (value added) is obtained by subtracting a company’s operating expenses excluding personal costs from its gross profit. The variable HC (Human Capital) refers to the salaries and wages paid to a company’s employees.

### 3.3 Intervening Variable

According to Sugiyono [16], an intervening variable is a variable that sits between the independent and dependent variables, such that changes in the independent variable indirectly affect the dependent variable. In this study, the intervening variable is Productivity, which is a measure of how efficiently the company utilizes its resources in the form of assets. It is represented by the symbol \(Z\) and is measured using ATO, as stated by Brigham and Houston [13].

\[
ATO = \frac{Total\ Sales}{Total\ Assets}\]  

(4)

### 3.4 Population and Sample

The term “Population” is define as “A group of people, events, or things of interest for which the researcher wishes to form an opinion (based on sample statistics)” [17]. Meanwhile, Sugiyono [16], defines the population as follows: “The generalization area consists of: objects/subjects that have certain qualities and characteristics determined by researchers to be studied and then conclusions are drawn”. In this study, the population comprises trading, service, and investment companies with restaurant, hotel, and tourism sub-sectors listed on the Indonesia Stock Exchange (IDX) from 2017–2019, which resulted in 35 target companies. Purposive sampling, a technique used by researchers when they have specific considerations in selecting samples, was employed to represent the desired population characteristics. For this study on the impact of human capital on company profitability and productivity, 21 companies met the predetermined criteria for the sample.

### 3.5 Data Collection Technique

The technique cast-off for data collection in this study is documentation. The annual reports of these companies from the 2017–2019 period were accessed through the IDX website [18].
3.6 Data Analysis Technique

**Descriptive Statistical Analysis.** Descriptive statistics are “statistics used to analyse data by describing the data collected without making conclusions that could apply in the general” [16]. The analysis in this study describes the state of the data using the minimum, maximum and average value indicators.

**Inferential Statistical Analysis.** Path analysis was used in this study. According to Ghozali [19], path analysis is “the use of regression analysis or an extension of multiple regression analysis to estimate causality relationships between variables to estimate causality between variables that have been previously determined based on theory”. This learning is illustrated by a Fig. 1 depicting the path analysis model.

Classical Assumption Test. In this study, the classical assumption test focuses solely on the normality test, which determines whether the residual variables in the regression model conform to a normal distribution [19]. The normality test employs the One Sample Kolmogorov-Smirnov (K-S test) to assess the research data. A normal distribution is considered present if the p-value is greater than 0.05. In the present study, the asymp results show a two-tailed significance value of 0.309, which is greater than the threshold of 0.05. This indicates that the data conforms to a normal distribution.

**t-Test.** A t-test was conducted with a 95% confidence level and a 5% margin of error to ascertain the impact of the independent variables on the dependent variable individually.

**Sobel Test.** According to Ghozali, the Sobel test is utilized to assess the potency of the indirect influence of exogenous variables on endogenous variables through intervening variables [19]. Sobel [20] introduced this test, which determines the standard error of the indirect effect coefficient (Sab) and calculates the mediating effect of the t-statistical value.

4 Result and Discussion

4.1 Descriptive Statistics

Table 1 illustrates that the average value of the VAHU variable increased from 2.49 in 2017 to 2.66 in 2018, but decreased to 1.67 in 2019. The median values of the samples used from 2017 to 2019 are 1,403, 1,408, 0,981, respectively. The maximum VAHU value for 3 consecutive years was achieved by PT Jakarta International Hotels & Development
Table 1. Descriptive statistics.

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th></th>
<th>2018</th>
<th></th>
<th>2019</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>VAHU</td>
<td>2.499</td>
<td>ROA</td>
<td>0.029</td>
<td>ATO</td>
<td>0.590</td>
<td>VAHU</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>1.403</td>
<td></td>
<td>0.029</td>
<td></td>
<td>0.279</td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>20.915</td>
<td></td>
<td>0.086</td>
<td></td>
<td>2.448</td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>−2.558</td>
<td></td>
<td>−0.017</td>
<td></td>
<td>2.952</td>
<td></td>
</tr>
<tr>
<td>Standard deviation</td>
<td>4.445</td>
<td>0.029</td>
<td>0.699</td>
<td>4.121</td>
<td>0.121</td>
<td>0.768</td>
</tr>
</tbody>
</table>

Table 2. The Result of R Square Substructural 1_VAHU to ROA.

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.289a</td>
<td>.084</td>
<td>.069</td>
<td>70.7663630</td>
</tr>
</tbody>
</table>

Predictors: (Constant), VAHU

Tbk (JIHD) with an annual value of 20,915, 19,149 and 11,959 respectively. While the lowest score in 2017 and 2018 was achieved by PT Anugerah Kagum Karya Utama Tbk. (AKKU) of −2.557 and −0.621. In 2019 PT Hotel Mandarine Regency Tbk (HOME) achieved −0.481 with a standard deviation of 4.445, 4.121, 2.514 each year.

The ROA variable with the highest value tends to increase every year, starting from 2017 to 2019 by 0.086 or 8.6%, 0.092 or 9.2%, and 0.260 or 26.0%, respectively. The lowest score for this variable was achieved successively by PT Anugerah Kagum Karya Utama Tbk. (AKKU) of −0.017 or −1.7%, −0.093 or −0.9%, and −0.175 or −17.5%. The average value of the ROA variable still fluctuates or fluctuates, namely 2.9%, 2.4% and 2.6% each year with standard deviations of 0.029, 4.121 and 0.079.

The ATO variable has the lowest value in 2017 and 2018 achieved by PT Ayana Land International Tbk (NASA) of 1.1%, 1.4%. Whereas in 2019 PT Hotel Mandarine Regency Tbk (HOME) won 1.0%. All the highest scores for 3 consecutive years were achieved by PT. Bayu Buana Tbk (BAYU) of 244.8%, 260.9% and 295.2%. The average value of this variable each year is 59.0%, 65.3% and 64.1% with a standard deviation of 0.699, 0.768 and 0.816.

4.2 Inferential Statistical Analysis

Regression Analysis. The initial step in path analysis involves performing regression analysis. The analysis performed is R Square, t test, and significance test. Therefore, the following will present the results of R Square of each substructural (Fig. 2).

Table 2 shows the R Square value obtained from the analysis is 0.084, indicating that the VAHU variable can influence the ROA variable by 8.4%, while the remaining factors are influenced by other variables not studied in this research. The Adjusted R
Square value, which accounts for the total sample size, is presented in the table above and is 0.069. This suggests that the VAHU variable can explain or influence the ROA variable by 6.9% (Fig. 3).

In Table 3, the R Square value obtained is 0.188, indicating that the VAHU variable can influence the ATO variable by 18.8%, while the remaining factors are influenced by other variables not studied in this research. The corresponding Adjusted R Square value is 0.175, which suggests that the VAHU variable can explain or influence the ATO variable by 17.5%.

In Table 4, the R Square value is 0.202, which implies that the ATO variable can influence the ROA variable by 20.2%, while the remaining factors are influenced by other variables not studied in this research. The Adjusted R Square value obtained is 0.189, indicating that the ATO variable can explain or influence the ROA variable by 18.9%.

**Direct Influence Analysis.** The formula was used to calculate the direct effect, which shows the impact of one variable on another.

**Table 3.** The result of R Square substructural 2 VAHU to ATO.

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.433&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.188</td>
<td>.175</td>
<td>5.6488911</td>
</tr>
</tbody>
</table>

<sup>a</sup> Predictors: (Constant), VAHU

**Table 4.** The result of R Square substructural 2 ATO to ROA.

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.449&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.202</td>
<td>.189</td>
<td>5.5993074</td>
</tr>
</tbody>
</table>

<sup>a</sup> Predictors: (Constant), ATO
• Effect of the variable Human Capital on ROA ($X \rightarrow Y$) $= 0.433$
• The effect of the Human Capital variable on ATO ($X \rightarrow Z$) $= 0.289$
• Effect of ATO variable on ROA ($Z \rightarrow Y$) $= 0.449$

**Indirect Influence Analysis.** To calculate the indirect effect, the formula for the influence of the Human Capital variable on ATO ($X \rightarrow Z$) x ($Z \rightarrow Y$) was used, resulting in 0.129761 or ($X \rightarrow Z$) x ($Z \rightarrow Y$): 0.289 x 0.449 = 0.129761.

**Total Impact.**
• The effect of the Human Capital variable on ROA through the ATO variable ($X \rightarrow Z$) + ($Z \rightarrow Y$): 0.289 + 0.449 = 0.738
• The effect of the Human Capital variable on Profitability ($X \rightarrow Y$) $= 0.433$

**Hypothesis Testing.** Additionally, the t-test was conducted on substructural 1 and 2 to determine their significance.

Table 5 indicates that when the t-value is greater than the t-table value, there is a significant impact of the independent variables on the dependent variable. In this study, Value-Added Human Capital (VAHU) has a significant impact on Asset Turnover (ATO) with a significance value of 0.022, which is less than the alpha level of 0.05. Table 6 reveals that ATO has a significant impact on Return on Assets (ROA) with a significance value of 0.000, which is less than the alpha level of 0.05, indicating a significant impact of ATO on ROA.

**Table 5.** The results of t test Substructural 1.

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficients$^a$</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>41.910</td>
<td>10.604</td>
<td>.289</td>
<td>3.952</td>
</tr>
<tr>
<td></td>
<td>VAHU</td>
<td>4.718</td>
<td>2.001</td>
<td></td>
<td>2.358</td>
</tr>
</tbody>
</table>

a. Dependent Variable: ATO

**Table 6.** The results of t test Substructural 2.

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficients$^a$</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>1.021</td>
<td>.887</td>
<td>.449</td>
<td>1.151</td>
</tr>
<tr>
<td></td>
<td>ATO</td>
<td>.038</td>
<td>.010</td>
<td></td>
<td>3.930</td>
</tr>
</tbody>
</table>

a. Dependent Variable: ROA
Sobel Test. The Sobel test is aiming to test whether moderator variables have the same impact as exogenous variables on endogenous variables [20].

Based on Fig. 4, it can be seen that A (regression coefficient from X to Z) is 0.458 and B (regression coefficient from Z to Y) is 0.030. SEA is 0.156 and SEB is 0.010. From these data, it is then calculated to produce a one-tailed probability of 0.017 and a two-tailed probability of 0.035 < 0.05 and a Sobel test statistic of 2.098 > 1.975, which means that the Sobel test results from Human Capital on Profitability with Productivity as the moderator variable are significant.

4.3 Discussion of Research Result

The findings of this research demonstrate that VAHU has a significant influence on ROA, as indicated by the R square value of 0.084 in Table 2, which suggests that 8.4% of the variation in ROA can be explained by the VAHU variable. Human capital, i.e., the knowledge and skills possessed by employees, is considered an asset for companies, as it can help create a competitive advantage, enhance performance, and promote a positive organizational culture [21]. To manage human capital effectively, companies can provide training programs and offer competitive salaries, among other measures. The resulting competitive advantage can translate into improved customer satisfaction and higher net profits, thereby affecting ROA. ROA, which measures a company’s profitability based on its assets, is an indicator of effective management [12, 22], and this finding is consistent with those of previous studies [7, 9].

The findings of the study demonstrate that VAHU has a noteworthy impact on ATO. As demonstrated by the data in the Adjusted R Square, which registers at 0.175, the VAHU variable is responsible for 17.5% of the variation in the ATO variable, while other unobserved variables contribute to the remaining variation. These findings support the results of earlier research carried out by Oppong et al. [8], Soewarno and Tjahjadi [9] which also established that the VAHU variable has a significant influence on ATO.
This study also demonstrates that ATO has a notable impact on ROA. The results of the Adjusted R Square display a value of 0.189, which indicates that the ATO variable can influence the ROA variable by 18.9%. However, there are other variables that are outside the scope of this study that may affect the outcome. Previous research conducted by Oppong et al. [8] supports the findings of this study, highlighting the significant impact of ATO on ROA [9]. The literature provided by Hanafi and Halim [14], explains that profitability ratios measure a company’s ability to generate profits using its total assets after adjusting for funding costs [20]. Additionally, Sitanggang [23] confirms that ATO computes a company’s ability to generate sales by utilizing its assets. When the asset ratio is higher, it means that the utilization of assets is more effective and the speed of withdrawing cash funds is quicker [20]. Thus, the ATO of a company has a significant effect on its ROA.

Finally, the study found that the effect of VAHU on ROA was mediated by ATO. This was determined through the Sobel test, which examined the significance of the intermediary variable on the endogenous variables. The results showed that the Sobel test statistic was 2.098, which is greater than the critical value of 1.975, indicating that the mediation effect of productivity as the moderator variable is significant. When employees possess knowledge and are executed efficiently, it can not only enhance a company’s efficiency level but also have a considerable impact on the company’s profitability. The company’s goal of obtaining a competitive advantage and outperforming its competitors can be achieved. This competitive advantage will support the company in meeting customer needs and ultimately increase the company’s net profit, which in turn has an impact on ROA.

5 Conclusion and Suggestion

The findings of this study indicate that the value-added human capital (VAHU) has a significant impact on the company’s return on assets (ROA). The study also suggests that the knowledge and skills possessed by employees are valuable assets that can create a competitive advantage for the company and improve its performance. The company can manage its human capital by providing training programs and increasing salaries to retain talented employees. The results of the study demonstrate that VAHU has a significant effect on asset turnover (ATO), which, in turn, has a significant impact on ROA. The study also highlights the importance of efficient use of company assets and the role of ATO in generating profits. The Sobel test confirms that VAHU, through ATO, has a significant effect on ROA, and the company’s ability to achieve a competitive advantage can lead to increased net profits and improved ROA.

The research findings suggest that it is recommended for both individuals and companies to consistently implement Human Capital practices, as it serves as an indicator of a company’s productivity and profitability in the short and long run. Companies should prioritize knowledge-based employees to enhance their competitiveness in the market. It is also desirable for future research to explore additional variables that can enrich the understanding of the impact of Human Capital on profitability, with productivity as an intervening variable. Future researchers could also expand the sample size and duration of the study to improve the quality of the results.
References


