

EXPLORING THE EFFECT OF INTELLECTUAL CAPITAL AND INVESTMENT ON OPERATIONAL PERFORMANCE MEDIATED BY PRODUCTIVITY

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ABSTRACT: This study exploring the effect of intellectual capital and investment on operational performance mediated by productivity in shipping companies listed on the Indonesia Stock Exchange period 2015-2019. The research used the quantitative method. The sample total is 45 consists of nine companies with five years observation period taken by purposive sampling technique. Data analysis used descriptive statistics and path analysis. The result of the research shows intellectual capital and investment had no significant direct effect on productivity and operational performance. Productivity has a significant direct effect on operational performance. Besides, intellectual capital and investment have no indirect effect on operational performance mediated by productivity. This found can discuss in among researchers and practitioners in the future.

Keywords: intellectual capital, investment, productivity, operational performance.

I. INTRODUCTION

Along with the development of the times, transportation in Indonesia is increasingly needed for all people. The existence of a means of transportation in human life is quite significant because it supports the smooth running of life. Transportation is an important part of human and world development, both in population distribution, economic development, and industrialization growth. Development is an effort to fulfill basic human needs, both individually and in groups, in ways that do not cause damage, both to social life and the environment. With the importance of transportation, transportation services develop to meet human needs and the development of a country. Indonesia, as a maritime country requires reliable sea transportation to connect the islands as well as for international trade. Therefore, shipping companies grew to capture business opportunities in the field of sea transportation services.

Shipping companies are required to have high competitiveness in the midst of tight shipping business competition both domestically and internationally. However, the operational performance of shipping companies is still not satisfactory. This is marked by the operational performance of shipping companies listed on the IDX as a barometer of shipping services in Indonesia. The following is data regarding return on assets (ROA) as an indicator of the operational performance of shipping companies listed on the IDX in 2015-2019 shows has decreased. Operational performance is the result of the company's operational activities in producing services that have a strong relationship with the company's strategic goals within a certain period by using available resources. Operations are part of a business organization whose job is to produce goods or services. Goods are physical equipment that includes raw materials, parts, subassemblies such as motherboards that are part of a computer, and end products such as mobile phones. While services are activities that provide a combination of value from time, location, and psychological value (Stevenson, 2012). While operational performance is defined by Moehariono (2012) as the effectiveness of the use of resources within the company such as capital, raw materials, technology, and others. For Prastowo (2015), operational performance is an assessment of the company's operating efficiency.

The decline in operational performance does not occur by itself but is influenced, among other things, by productivity. This is in accordance with the research results of Liu, Dutta & Park (2020) that productivity has implications for company performance. Productivity is the ratio of the results achieved in the production process

to the sacrifice of the amount of labor expended to produce something in a certain period of time. For Kendrick as quoted by Fahmi (2012), productivity is the relationship between output (output = O) in the form of goods and services with input (input = I) in the form of resources, human or not, used in the production process; This relationship is usually expressed in the form of an O/I ratio. While Moelyono (2013) defines productivity as a comparison between the results achieved with the participation of labor, time regulations (usually per person's working hour). The role of the workforce here is the use of resources efficiently and effectively.

Meanwhile, productivity is influenced by intellectual capital. This is consistent with the results of the research by Oppong and Pattanayak (2019) that intellectual capital increases productivity. Intellectual capital is an intangible resource in the form of human, structural, and customer capital where these resources are of high value and the ability to act based on the knowledge that the company uses to increase its added value. According to Soetedjo and Mursida (2014), intellectual capital is intellectual material – knowledge, information, intellectual property rights, experience – that can be used to create wealth. Meanwhile, according to Moehariono (2012), intellectual capital is the knowledge and abilities possessed by a social collectivity, such as an intellectual community organization, or professional practice and intellectual capital represents a resource of high value and the ability to act. based on knowledge. For Ivan and Luky (2013), the term Intellectual Capital (IC) means more than just intelligence that is owned by the company, but is an ideological process to achieve company goals. In its development, intellectual capital is defined as non-physical resources or intangible resources that are utilized by the company to increase its added value. Tobin's Q data as an indicator of the intellectual capital of shipping companies listed on the IDX show that Tobin's Q from 2015 has increased until 2018. However, in 2019 it decreased.

Besides being influenced by intellectual capital, productivity is also influenced by investment. This is in accordance with the results of research by Antonietti and Marzucchi (2014) that investment has an effect on productivity levels. Investment is a sacrifice of money for one or more assets made over some period of time in the future with the aim of obtaining a number of benefits in the future. According to Tandelilin (2017), investment is a commitment to a number of funds or other resources carried out at this time with the aim of obtaining a number of benefits in the future. Meanwhile, according to Bodi et al. (2017), investment is the sacrifice of money or other resources in the hope of obtaining benefits in the future. Sukirno (2016) defines investment as investment or company spending to buy capital goods and production equipment to increase the ability to produce goods and services available in the economy. Then Jones (2016) defines investment as a sacrifice of funds for one or more assets made over some period of time in the future. The following is the investment data of shipping companies listed on the Indonesia Stock Exchange in 2015-2019 shows that the investment of shipping companies listed on the IDX fluctuates. Investment in shipping companies is also classified as capital intensive. This is used, among others, for the procurement of ships as the main source of income.

By having high intellectual capital, companies can use human, structural, and customer capital resources to explore the potential that exists in employees and companies so that existing workforce resources can generate high productivity. The studies by scholars also claimed that intellectual capital influenced productivity (e.i., Guo & Jiang, 2013; Antonietti & Marzucchi, 2014; Stundziene & Saboniene, 2019; Esaku, 2020). Therefore, can formulate the hypothesis:

H₁: There is a direct effect of intellectual capital on productivity.

By investing in the company's fixed assets such as equipment, ships, computers, offices, and other fixed assets, employees can work more effectively and efficiently, so increasing productivity. The investigation conducted by Bontempi and Mairesse (2015) and Oppong and Pattanayak (2019) indicated that investment affects productivity. Therefore, can formulate the hypothesis:

H₂: There is a direct effect of investment on productivity.

With high intellectual capital, companies can use these non-physical resources both with the competencies and skills possessed by employees, or the ability of the organization to support employees using existing potential and relationship capital, both customers, suppliers, government, and other stakeholders. The efficiency of the results of the service business activities provided will be high. This condition will improve operational performance. Previous research result also proves that intellectual capital related to performance (e.i., Kianto et al., 2013; Kusumowati & Meiranto, 2014; Lee & Lin, 2019; Olarewaju & Msomi, 2021). Thus, can formulate the hypothesis:

H₃: There is a direct effect of intellectual capital on operational performance

With the company investing in the company's fixed assets such as equipment, ships, computers, offices, and other fixed assets, the results of the company's business activities in the form of shipping services in the form of sales will increase. This condition will improve operational performance. The study by Lee et al. (2015) and Ozbugday et al. (2020) also revealed that investment influence operational performance. Therefore can formulate the hypothesis:

H₄: There is a direct effect of investment on operational performance.

In high productivity, where each employee generates high sales, the efficiency of the use of company assets in generating company profits will increase, so improve operational performance. Previous studies by scholars (e.i., Afshan et al., 2014; Liu et al., 2020; Sahibzada et al., 2020) show that productivity affects operational performance. Thus, can formulate the hypothesis:

H₅: There is a direct effect of productivity on operational performance.

Based on the description above, it shows that intellectual capital can have a direct effect on productivity and productivity has an effect on operational performance. This opens up opportunities for the indirect influence of intellectual capital on operational performance by mediating productivity. High intellectual capital will increase productivity which in turn will increase operational performance. Thus, can formulate the hypothesis:

H₆: There is an indirect effect of intellectual capital on operational performance mediated by productivity.

The description above is also showed that investment can have a direct effect on productivity and productivity has an effect on operational performance. This opens up opportunities for indirect effects of investment on operational performance by mediating productivity. The high investment will increase productivity which in turn will increase operational performance. Therefore, can formulate the hypothesis:

H₇: There is an indirect effect of investment on operational performance through productivity

II. RESEARCH METHODS

This study uses quantitative. The population is shipping companies listed on the Indonesia Stock Exchange in 2015-2019. The total sample is 45 observations consisting of 9 companies for five years taken by purposive sampling. Collecting data using documentation study. The data obtained were analyzed using a path analysis by Smart PLS 3.

III. RESULTS AND DISCUSSION

The results of statistical calculations with path analysis processed with the SmartPLS 3 application to test the research hypotheses obtained path coefficients and t value present in the figures and table as follows:

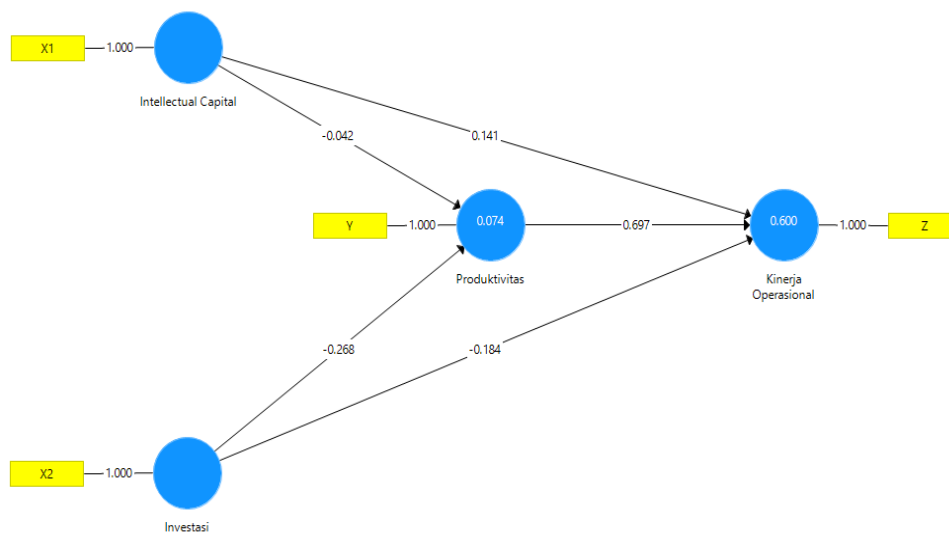


Figure 1. Path Coefficient

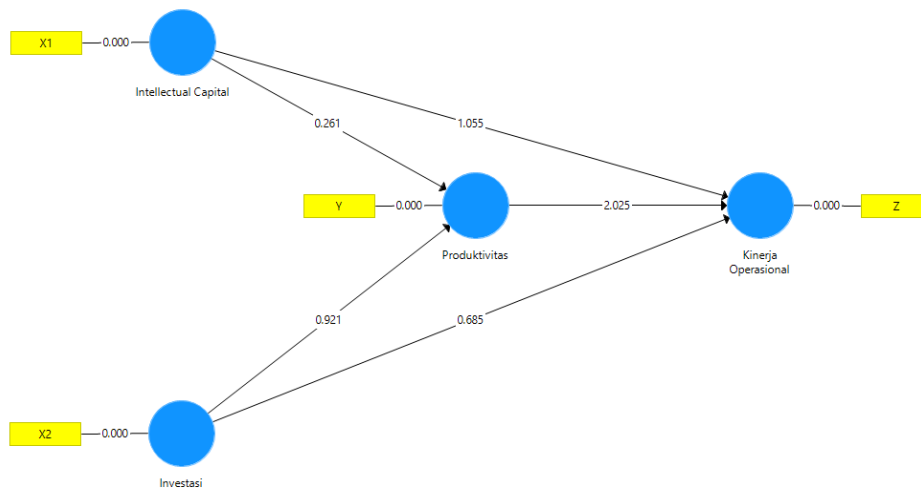


Figure 2. T Values

Table 1: Summary of Path Coefficient and t value

Path	Path Coefficient	Tvalue	t _{table} α= 0,05	α=0,01
X1 – Y	-0.042	0.261 ^{ns}	1.67	2.41
X2– Y	-0.268	0.921 ^{ns}	1.67	2.41
X1 – Z	0.141	1.055 ^{ns}	1.67	2.41
X2 – Z	-0.184	0.685 ^{ns}	1.67	2.41
Y – Z	0.697	2.025*	1.67	2.41
X1 – Z – Y	-0.029	0.397 ^{ns}	1.67	2.41
X2 – Z – Y	-0.187	1.190 ^{ns}	1.67	2.41

* Significant path coefficient (tvalue>ttable at = 0.05)

^{ns} Path coefficient is not significant (tvalue<ttable at = 0.05)

The results of this study empirically prove that intellectual capital has no direct effect on productivity, with an indication of the path coefficient = -0.042 and the t value = 0.261 < t table at a = 0.05 (1.67). Intellectual capital is an intangible resource in the form of human, structural, and customer capital where these resources are of high value and the ability to act based on the knowledge that the company uses to increase its added value. Intellectual capital owned by the company, both human, structural, and customer capital is not able to explore the potential that exists in employees and companies to produce high productivity. With this condition, it cannot increase productivity, namely the ratio of the results achieved in the production process to the sacrifice of the amount of labor spent to produce something in a certain period of time. The results of this study are not in line with Bontempi and Mairesse (2015) that intellectual capital affects productivity. Thus, the findings of this study do not support the results of previous studies that intellectual capital affects productivity by setting shipping companies listed on the IDX.

The results of this study also empirically prove that investment does not directly affect productivity, with an indication of the path coefficient = -0.268 and t value = 0.921 < t table at a = 0.05 (1.67). Investment is a sacrifice of money for one or more assets made over some period of time in the future with the aim of obtaining a number of benefits in the future. Investments made by companies in fixed assets are not able to increase productivity. Investment does not encourage the efficiency and effectiveness of the existing workforce in generating company income. Under these conditions, it cannot increase productivity, namely the ratio of the results achieved in the production process to the sacrifice of the amount of labor spent to produce something within a certain period of time. The results of this study are not in line with Antonietti and Marzucchi (2014) which concluded that investment has an effect on productivity. Thus, the findings of this study do not support the results of previous studies that investment has an effect on productivity by setting shipping companies listed on the IDX.

The results of this study also empirically prove that Intellectual capital does not directly affect operational performance, with an indication of the path coefficient = 0.141 and t value = 1.055 < t table at = 0.05 (1.67). Intellectual capital is an intangible resource in the form of human, structural, and customer capital

where these resources are of high value and the ability to act based on the knowledge that the company uses to increase its added value. Intellectual capital is not used properly to generate net profits with assets owned by the company in the company's daily operations. Under these conditions, it will not improve operational performance, namely the work of the company's operational activities in producing services that have a strong relationship with the company's strategic objectives within a certain period by using available resources. The results of this study are not in line with Kusumowati and Meiranto (2014) who concluded that intellectual capital affects the company's performance. Thus, the findings of this study do not support the results of previous studies that intellectual capital has an effect on operational performance with the setting of shipping companies listed on the IDX.

The results of this study empirically also prove that investment has no effect on operational performance with an indication of the path coefficient = -0.184 and t value = 0.685 < t table at = 0.05 (1.67). Investment is a sacrifice of money for one or more assets made over some period of time in the future with the aim of obtaining a number of benefits in the future. Investments made by companies sometimes do not generate direct profits in the year. Investment requires a process so that the results may only be obtained for the following years. Under these conditions, it will not improve operational performance, namely the work of the company's operational activities in producing services that have a strong relationship with the company's strategic objectives within a certain period by using available resources. The results of this study are not in line with Ozbugday et al. (2020) which concluded that investment has an effect on company performance. Thus the findings of this study do not support the results of previous studies that investment has an effect on operational performance with the setting of shipping companies listed on the IDX.

The results of this study empirically also prove that productivity has a positive and significant direct effect on operational performance with an indication of the path coefficient = 0.697 and t value = 2.025 > t table at = 0.05 (1.67). This means that productivity can improve operational performance. Productivity is the ratio of the results achieved in the production process to the sacrifice of the amount of labor expended to produce something in a certain period of time. With high productivity, where each employee generates high sales, the efficiency of the use of company assets in generating company profits will increase. Such conditions improve operational performance, namely the work of the company's operational activities in producing services that have a strong relationship with the company's strategic objectives within a certain period by using available resources. The results of this study are in line with Afshan et al. (2014) which concluded that productivity has an effect on company performance. Thus the findings of this study support the results of previous studies that productivity affects operational performance with the setting of shipping companies listed on the IDX.

The results of this study empirically also prove that intellectual capital has no indirect effect on operational performance by mediating productivity with an indication of the path coefficient = -0.029 and t value = 0.397 < t table at = 0.05 (1.67). This means that high intellectual capital does not necessarily reduce productivity and then has implications for decreasing operational performance. Based on the results of the study indicate that intellectual capital has no direct effect on productivity and productivity affects operational performance. This does not open up opportunities for the indirect influence of intellectual capital on operational performance by mediating productivity.

The results of this study empirically also prove that investment does not have an indirect effect on operational performance by mediating productivity with an indication of path coefficient = -0.187 and t value = 1.190 < t table at = 0.05 (1.67). This means that high investment does not necessarily reduce productivity and then implies a decrease in operational performance. The results show that investment does not directly affect productivity and productivity has an effect on operational performance. This does not open up opportunities for indirect effects of investment on operational performance by mediating productivity.

IV. CONCLUSION

The research result concluded that no significant direct effect of intellectual capital and investment on productivity and operational performance. Productivity has a significant direct effect on operational performance. Besides, intellectual capital and investment have no indirect effect on operational performance mediated by productivity. This found can discuss in among researchers and practitioners in the future.

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