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DETERMINANT OF OPERATIONAL PERFORMANCE: CASE OF PRIVATE HIGHER EDUCATION IN BANTEN

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Abstract

This study aims to determine the effect of intellectual capital and IT capability on operational performance of private higher education in Banten. This study used convenience sampling in which the sample was taken based on who was conveniently available to provide it. The respondents were structural officials from private higher education who taught at universities from the selected sample. The type of data used as primary data. The result for the two independent variables which are intellectual capital as well as IT capability shows that have a positive significant effect on operational performance. The collected data by sending questionnaires to 30 private higher education in Banten with considered could be processed. The data were tested using the SEM-PLS analysis tool through SmartPLS 3.0. The results of this study are expected to be used for other private higher education in relation to the importance of intellectual capital and IT capability for an institution and its effect on their operational performance.

Keywords: Intellectual Capital, IT Capability, Operational Performance, Private University.

INTRODUCTION

Performance measurement is crucial for effective organizations. Performance is commonly understood as the extent to which an operation fulfills its goals and meets customer needs. The evidence shows that without performance measurement, it is challenging to drive improvement. Operational performance reflects the company's internal operational efficiency in terms of cost and waste reduction, product quality enhancement, new product development, delivery performance enhancement, and productivity improvement (Ibrahim, 2016).

Listiyowati et al., (2016) states that education with the economy is closely intertwined, like a wedge where educational institutions can produce human resources. The higher the level of knowledge imparted, the higher the quality of human resources that can generate future income. Economic education can also explain the level of economic efficiency within higher education institutions. This refers to how effectively these institutions can generate and manage their finances to achieve a good level of financial performance in funding all their operational activities.

The sustainability of an organization is reflected in its performance and intangible assets, such as the human resources capable of effectively managing company assets that align with intellectual capital. Intellectual Capital, as highlighted by various authors (Baroroh, 2014; (Ulum et al., 2008; Wulandari et al., 2021), plays a crucial role in gaining a competitive advantage and contributing to the prosperity and growth of companies in today's knowledge-based economy. This concept is widely recognized across multiple disciplines including management, information technology, sociology, and accounting.

Furthermore, it serves as a key factor for organizations to succeed in competition and generate value through their intangible resources like employee skills, social relationships, and technology. Therefore, measuring and improving operational performance is essential for organizations to enhance their competitiveness, optimize resource allocation, and achieve sustainable growth. In conclusion, measuring operational performance is essential for organizations to enhance their competitiveness, optimize resource allocation, and achieve sustainable growth.

The competition between universities in the Banten region was evident in 2009, with around 30 percent or approximately 30 universities in the area experiencing bankruptcy (Tempo.co, 2009). Competition among universities for the same market has led to some universities facing bankruptcy. Despite 30 universities going bankrupt, a few of them have achieved significant growth and others have improved their institutional status. Additionally, one to two new universities emerge in the region every year despite these setbacks (Tempo.co, 2009).

Banten boasts a wealth of natural resources and is home to numerous industries. However, the quality of human resources in the region does not match up with this potential. This mismatch has resulted in Banten having the second-highest unemployment rate in Indonesia. One contributing factor to this issue is the insufficient number of high school and vocational high school graduates who pursue further education at a higher level (BPS Provinsi Banten, 2018).

LITERATURE REVIEW

Intellectual Capital

Intellectual capital is potential in the future, which is a combination of human capital (intelligence, expertise, knowledge) and the potential of people in the organization. Thus, intellectual capital is an invisible asset that is a combination of human, process, and customer factors that provide a competitive advantage (Purba, 2009).

Intellectual Capital is an intangible asset related to human knowledge, experience, and technology used. Bontis et al., (2000) stated that researchers formulated three main indicators of intellectual capital, namely: human capital (HC), structural capital (SC), and customer capsital (CC).

IT Capability

According to Nakata et al., (2008) IT capabilities as the ability of a computer system, a collection of computers and related technologies within an organization to store, process, and convey information. Pérez-López and Alegre, (2012), Turulja and Bajgorić (2016) stated that information technology capabilities consist of three dimensions, namely: information technology knowledge, information technology operations, and information technology infrastructure. The explanations for the explanations of the three dimensions are as follows:

1. Information technology knowledge (IT Knowledge) is a degree of awareness of information technology benefits and possibilities within the company as well as employees' information technology knowledge and skills (Turulja & Bajgoric, 2016).
2. Information technology operations (IT Operations) relate to the level of use of information technology in the firm's business activities or the transformation of activities to increase usage of information technology (Turulja and Bajgorić, 2016).
3. Information technology infrastructure (IT Infrastructure) includes hardware, software and support staff, our tools and resources that contribute to the acquisition, processing, storage, dissemination, and use of information (Pérez-López and Alegre, 2012).

Operational Performance

The definition of operational performance, according to Daft (2010), is the management area focused on the creation of goods and services, employing specific methods to address production challenges. Meanwhile, according to Handoko (2010), operational performance refers to the implementation of managerial activities involved in the selection, design, renewal, operation, and oversight of production systems.

RESEARCH MODEL AND HYPOTHESIS

This study comprises two independent variables, namely intellectual capital and IT capability, as well as one dependent variable operational performance. Using information from previous studies, a research model has been developed to illustrate how the relationships between these variables.

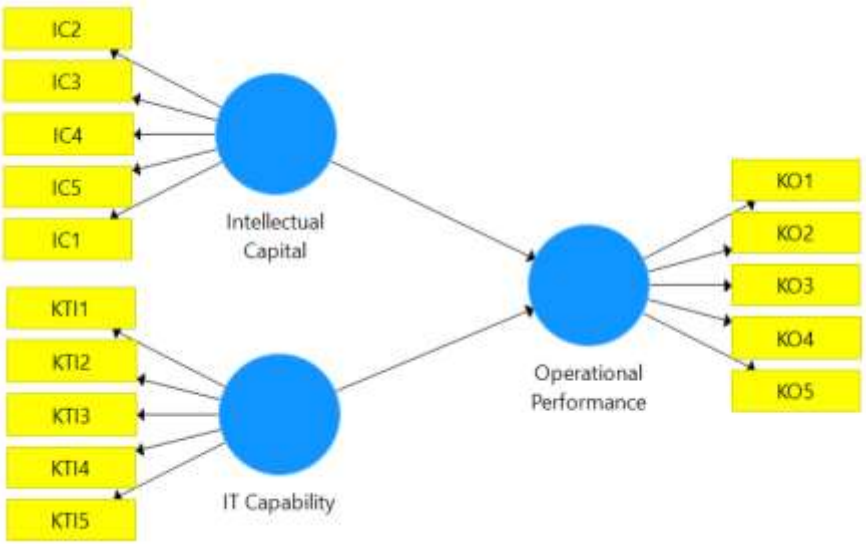

Figure 1. Research Model

The Influence of Intellectual Capital on Operational Performance

Ulum (2012) argues that the term intellectual capital is treated as a synonym for intangible assets. However, the definition proposed by the OECD presents quite a difference by placing intellectual capital as a separate part of the basis for determining the overall intangible assets of a company. Purba (2009), intellectual capital is a potential in the future which is a combination of human capital (intelligence, expertise, knowledge) and the potential of the people in the organization. Thus, intellectual capital is an invisible asset which is a combination of human, process, and customer factors that provide a competitive advantage. Research by Shehzad et al., (2014) the three components of intellectual capital, have a positive influence on university performance. However, human capital is the most prominent of the three, exerting a stronger influence compared to the others. Structural capital also has a significant influence on performance, though less than human capital. Relational capital is the least impactful component in terms of its effect on the performance of higher education institutions.

H_1: Intellectual Capital has a positive effect on Operational Performance**.**

The Influence of Information Technology Capability on Operational Performance

According to Wang et al., (2006) technological capabilities refer to a comprehensive set of knowledge that encompasses both practical and theoretical expertise, methods, procedures, experience, as well as physical assets and equipment. It represents the superior and diverse technical resources of an organization and is closely linked to product technology, design technology, process technology, and information technology. Dale Stoel and Muhanna (2009) states that in the face of the ever-changing business world and full of competitive pressures in various innovative and imitative activities, the company always develops and maintains any capabilities including IT so that the company becomes superior to competitors. Tripathy et al., (2016) proved that information technology has a positive effect on operational effectiveness, while Wang et al., (2006) proved that technological capabilities directly and indirectly affect overall business performance. Based on the description above can be formulated as a hypothesis as follows:

H2: Information Technology Capability has a positive effect on operational performance.

METHOD

The method in this study used primary data with a non-probability sampling technique, which was carried out with a convenience sampling technique in which the sample was taken based on who was conveniently available to provide it. The respondents were structural officials from private higher education who taught at universities from the selected sample. Data collection is done by questionnaire with a Likert scale to the sample in this study was 30 private higher education in Banten. Processing data using SEM method with SmartPLS 3.0 software. In terms of measurement, the dimension of Intellectual Capital was adapted from Sofyani & Khairunisa (2021). Meanwhile, to measure IT Capability the dimension was adapted from Turulja & Bajgoric (2016) and Perez-Lopez & Alegre

(2012), and Operational Performance was adapted from Singgih & Rahmayanti (2008). The questionnaire was set up to be mostly closed, except for the questions or statements about the respondents' identity, which were presented in a semi-open format. Each closed question had five answer choices: 5 for strongly agree, 4 for agree, 3 for neutral, 2 for disagree, and 1 for strongly disagree.

FINDINGS AND DISCUSSION

Descriptive Statistical Analysis

Table 1. Respondent's Background

Background	Category	Amount	Percentage
Last education	S2	27	90.00%
	S3	3	10.00%
Position	Vice-Chancellor	2	6.67%
	Dean	1	3.33%
	Vice Dean	1	3.33%
	Head of Division	6	20.00%
	Permanent lecturer	4	13.33%
	Head of Study Program	1	3.33%
	Vice-Chairman	4	13.33%
	Deputy Director	1	3.33%
	IT Department Officer	8	26.67%
	Other Officer	2	6.67%
Experience in Current Position	<1 year	5	16.67%
	1-5 years	16	53.33%
	6-10 years	5	16.67%
	>10 years	4	13.33%

Source: Primary data processed (author, 2021)

Based on the details in Table 1 above, most of the respondents are dominated by the last education master's degree (S2) with a percentage of 90.00% and the doctor's degree (S3) are 10%. For the percentage of positions as permanent lecturers is 13.33%, the head of the division is 20.00%, and the IT department officer is 26.67%. For the question of experience in the current position, the structural officials who have worked for 1 – 4 years are a total of 31 people or 51.07%. Meanwhile, the lowest percentage is obtained by the structural officials who have worked under 1 year with a total of 5 people or 16.67%. Then most of the respondents experienced in their current position for 1-5 years with a total of 16 people or a percentage is 53.33%.

The convergent validity test indicators can be seen from two tables, the outer loading and the Average Variance Extracted (AVE). According to Ghozali (2018) the value of outer loading can still be tolerated up to 0.50, it can be dropped from the analysis if the value is below 0.50, while the Average Variance Extracted (AVE) is greater than 0.5 for each latent variable. The test results show that the indicators IC4, KTI2, KTI3, and KO4 have a loading factor are less than 0.5, meaning that these

indicators are removed from the calculation. The final Outer Loading is shown below, with item loading greater than 0.5 can be continued for calculation. The following is the result of calculating the PLS Algorithm.

Table 2. Convergent Validity Test

Variable	Indicator	Loading's	AVE	Information
Intellectual Capital	IC1	0.830	0.578	Valid
	IC2	0.695		Valid
	IC3	0.832		Valid
	IC5	0.668		Valid
IT Capability	KTI1	0.649	0.561	Valid
	KTI4	0.811		Valid
	KTI5	0.777		Valid
Operational Performance	KO1	0.694	0.510	Valid
	KO2	0.654		Valid
	KO3	0.747		Valid
	KO5	0.758		Valid

Source: Output of SmartPLS 3.0 (author, 2021)

The results of the concurrent validity test shown in Table 1 indicate that all the indicators have met the convergent validity criteria, as they have a loading factor value greater than 0.50. Additionally, the discriminant validity values for these variables are considered acceptable. Therefore, the research data was deemed suitable to proceed to the next step of the analysis.

Table 3. Discriminant Validity Test

Variable	IT Capability	Intellectual Capital	Operational Performance
IT Capability	**0.749**		
Intellectual Capital	0.430	**0.760**	
Operational Performance	0.698	0.567	**0.714**

Source: Output of SmartPLS 3.0 (author, 2021)

From Table 3 above, the results of the discriminant validity test show that all the constructs have an AVE (Average Variance Extracted) square root value greater than 0.7. This indicates that the estimated model meets the discriminant validity criteria.

Inner Model Testing

Evaluation of the structural model is by looking at the coefficients between variables and the value of the coefficient of determination (R2). The coefficient of determination (R2) essentially measures what extent the model can explain variations in the dependent variable. With the bootstrapping technique, R Square values and significance test values are obtained in the table below:

Table 4. R Square Table

	R Square	R Square Adjusted

Operational Performance	0.575	0.543

Source: Output of SmartPLS 3.0 (author, 2021)

From Table 4 above, the R Square value is 0.575 or 57.5% means that the Operational Performance can be explained by the Intellectual Capital and Information Technology Capability variable by 57.5, while the rest is explained by other variables not discussed in this research.

Hypothesis Testing

Table 5. T-Statistics and P-Value

	Original Sample	**T Statistics**	**P-Value**	**Information**
Intellectual Capital →Operational Performance	0.327	2.297	0.022	Significant Positive
IT Capability →Operational Performance	0.558	4.065	0.000	Significant Positive

Source: Output of SmartPLS 3.0 (author, 2021)

Based on the test results in Table 5, show that Intellectual Capital has a T-statistic value of 2.297 > 1.96 and P-Value of 0.022 < 0.05, so it can be concluded that Intellectual Capital has a Positive and significant effect on Operational Performance or **H1 is accepted.** As well as, IT Capability Capital has a T-statistic value of 4. 065 > 1.96 and P-Value of 0.000 < 0.05, so it can be concluded that IT Capability has a significant effect on Operational Performance or **H2 is accepted**.

DISCUSSION

Intellectual Capital on Operational Performance

The first hypothesis shows the results of a direct effect, based on data it shows that there is a Positive and significant effect of intellectual capital on operational performance. From the results of these tests, it can be concluded that at private higher education in Banten, there is an effect of intellectual capital on operational performance which follows the proposed hypothesis.

Based on Resources-Based Theory discusses the resources owned by the company and how the company can manage and utilize its resources. Belkaoui (2012) stated that a potential strategy to improve company performance is to unite tangible assets and intangible assets. Resources-based theory discusses how companies can process and utilize all their resources. Private higher education in Banten has not been able to utilize and develop the company's sources of capital, one of which is intellectual capital in their performance.

The results in this study are relevant to the results obtained by previous research by Shehzad *et al.*, (2014) found the three components of IC have a positive influence on university performance but human capital is more prominent among all of them. Research by Ali and Ali (1996) found an overall significant effect of intellectual capital on organizational performance with three dimensions of intellectual capital.

IT Capability on Operational Performance

The second hypothesis shows the results of the direct effect, based on data it shows that there is an effect of IT capability on operational performance. From the results of these tests, it can be concluded that at private higher education in Banten, there is an effect of intellectual capital on operational performance which follows the proposed hypothesis.

The results in this study are relevant to the results obtained by previous research by Maysharah (2018) proves that information technology has a significant positive effect on performance. According to the research by Sidiq and Astutik (2017) Information technology capability has a positive effect on business performance. In line with Tripathy *et al.*, (2016) proved that information technology has a positive effect on operational effectiveness Wang *et al.*, (2006) proved that technological capabilities not only have a direct but also an indirect impact on overall business performance.

CONCLUSION

Based on the findings of this research, it can be shows that there is a positive and significant effect of Intellectual Capital and IT Capability on Operational Performance in Private Higher Education in Banten. The results indicate that when private higher education institutions in Banten improve their intellectual resources and IT skills, it leads to enhanced operational effectiveness. Therefore, investing in the development of intellectual resources and IT skills can greatly impact the operational performance of private higher education institutions in Banten. In conclusion, addressing the insufficient number of graduates pursuing higher education and investing in the development of intellectual resources and IT skills can greatly improve the operational performance of private higher education institutions in Banten.

Then the limitations in this research, first the number of samples which is only 30, of course, is still not enough to describe the real situation. Second, this study only uses two independent variables that affect operational performance, namely, Intellectual Capital and IT Capabilities. There are still several other independent variables that can explain and possibly have an influence on operational performance variables of Private Higher Education in Banten. And the last, in the data collection process, the information provided by respondents through questionnaires may not always accurately reflect their true opinions. This can occur due to differences in thoughts, assumptions, and varying levels of understanding among the respondents, as well as other factors such as the respondents' honesty in expressing their opinions in the questionnaire.

So, suggestions for further research it is recommended to take more samples, this aims for better data accuracy in the research. It is hoped that there will be additional variables that might also affect

operational performance apart from the variables used so that the results can be defined more perfectly. Carrying out continuous research enables the observation and assessment of any changes in the respondents' behavior over time. A qualitative approach is necessary to strengthen the conclusions, as research instruments can be vulnerable to respondents' perceptions that may not accurately reflect the actual situation. This qualitative approach can be implemented through observation or direct monitoring of the research subjects, complemented by interviews or verbal questioning at the research locations.

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