The Mediating Role of Intellectual Capital Efficiency to Influence Performance in Private Higher Education Institutions

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ABSTRACT

Based on their status, Higher Education Institutions (HEIs) are divided into private and public. Different characteristics make private HEIs have their uniqueness to be researched. This study aimed to test and obtain empirical evidence regarding the mediating role of intellectual capital efficiency on the relationship of the Performance Measurement System (PMS) to operational and financial performance. This survey research was distributed to 306 private HEIs in several provinces in Indonesia. The partial least square (PLS) technique was employed to test the hypotheses. The results showed that PMS directly affected intellectual capital efficiency, operational performance, and financial performance. The results also found that intellectual capital partially mediated the relationship between PMS, operational performance, and financial performance. This study theoretically confirmed the Resourced Orchestration Theory and expanded the literature on PMS in Private HEIs. Practically, this research provided input to managing private HEIs in Indonesia, which still needed better quality on average.

Keywords: Private Higher Education Institutions, Indonesia, Intellectual Capital Efficiency, Performance Measurement System, Performance

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INTRODUCTION

Higher Education Institutions (HEIs) have different characteristics based on their status. Higher education in Indonesia is broadly divided into public and private. Public universities are still subdivided into legal entity public universities (PTN-BH), public universities of public service agencies (PTN-BLU) and public universities with general state financial management patterns (PTN-Satker). This is based on law number 12 of 2012 and government regulation number 10 of 2016 on its status (Fitri, 2016). Meanwhile, the funding and organization of private HEIs are regulated by law number 28 of 2004. These private HEIs, in their activities, are controlled by the Foundation. The Foundation regulates all general administration and finance policies and even intervenes in the academic field (Sofyani et al., 2019). Thus, the characteristics of public and private organizations are very different.

In Asian countries such as Indonesia, Thailand, Singapore and Malaysia, the growth of Private HEIs is very rapid (Utami & Pratolo, 2023). In Indonesia itself, according to the Central Bureau of Statistics, in 2022 the number of universities was 4,004 and increased by 0.73% from the previous year. Based on their status, there were 184 public universities in Indonesia. Meanwhile, 3,820 campuses were private universities (Sadya, 2023). The data obtained proved that higher education institutions in Indonesia had intense competition, considering the large number of them. Besides having to experience competition with public HEIs in the country, fellow private HEI institutions. HEIs also have to compete globally with prestigious world-class universities (Musselin, 2018).

This intense competition was also supported by the global ranking of universities (Bagley & Portnoi, 2014; Soewarno et al., 2022). This is characterized by the emergence of the QS World University Rankings (QS WUR) and The World University Rankings (THE WUR) to see the reputation of universities around the world (Sofyani et al., 2019). In addition, exceptional rankings developed by private HEIs and rankings for public HEIs were also a reference in seeing the quality of universities (Tjahjadi et al., 2019). Therefore, research on the performance of public sector organizations in HEIs has become a concern in recent years. This is because the performance of HEIs is proxied by accreditation. The quality

of a campus could be better, and it indicated that the performance of the campus could be more optimal (Pratolo et al., 2022).

HEI performance is crucial because one of the indicators is accreditation (Geys & Sørensen, 2018; Para-González et al., 2018; Pratolo et al., 2022). Performance refers to two things, namely financial performance and operational performance (Pratolo et al., 2023). Operational performance refers to the Minister of Research, Technology and Higher Education regarding regulations issued in 2015 regarding standards for managing activities covering the learning process, human resources, and facilities and infrastructure, while financial performance is related to the organization's ability to manage and control its financial resources (Bakrie, 2016; Fatihudin, 2018). Overall performance will refer to the results of both output and input activities management produces. In addition, performance will refer to how the organization can align performance with the vision and mission of the organization (Angiola et al., 2018).

However, it is unfortunate that the performance of private HEIs in Indonesia still needs improvement. This is evidenced by data published on the Higher Education Database by the Directorate General of Higher Education, Ministry of Education and Culture of the Republic of Indonesia that private HEIs on the islands of Bali, Java, Kalimantan, Maluku, Nusa Tenggara Papua, Sulawesi and Sumatra are dominantly unaccredited. Private HEIs on Bali, Kalimantan, Maluku, Nusa Tenggara and Papua do not yet have A accreditation. Then, all private HEI already had B, Good and C accreditation in 2020 (PDDikti, 2020). This is interesting to study further, especially the performance of private HEIs in Indonesia. Given the different characteristics of private and public HEIs, this research focused on private HEIs in Indonesia, which still need to be studied.

In addition to accreditation issues, financial issues related to private HEIs in Indonesia that have not been optimized are the problems of implementing performance-based budgets (Handayani, Pratolo, et al., 2023; Handayani, Sholihin, et al., 2023a, 2023b). Survey results in 10 provinces in Indonesia stated that there are still many private universities that have not implemented performance-based budgets. Another problem is that private universities in Indonesia have challenges with financial sustainability (Handayani, Sholihin, et al., 2023a; Horan & O'Regan, 2021). For example,

during COVID-19, private HEIs experienced operational difficulties due to the high dependence on education costs (Handayani, Pratolo, et al., 2023). As well as in supporting accreditation, private HEI also need to have good budgeting. With the performance management system, private HEIs are expected to overcome these problems (Handayani, Sholihin, et al., 2023b). This is also supported by Government Regulation Number 17 of 2010 concerning Management and Implementation of Education, that private HEI need management control to improve good governance of private HEI (Sofyani et al., 2019).

Private HEIs, as public sector organizations, have an essential role in producing, transmitting, and diffusing valuable knowledge for a country's development by improving the quality of its human resources (Vnoučková et al., 2018). In addition, private HEIs are also required to be able to do business and collaborate with various parties around the world (Moon et al., 2019; Tseng et al., 2020). This will benefit the organization's reputation and affect the competition (Tjahjadi et al., 2019).

In addition, educational institutions will be evaluated based on teaching, research and services provided to the community (Bisogno et al., 2018; Fitzgerald et al., 2020; Tjahjadi et al., 2019). Therefore, non-financial measures should be considered in addition to financial measures in measuring the performance of private HEIs (Tjahjadi et al., 2019). To fulfil this, a performance measurement system (PMS) was adopted to improve both the operational and financial performance of private HEIs. It is mandated by the government through Government Regulation of the Republic of Indonesia No. 66 of 2010 concerning Management and Implementation of Education that HEIs must have controls to support good governance (GR-RI, 2010).

Previous research has concluded that PMS can improve HEIs performance (Nazaruddin et al., 2021; Pratolo et al., 2023; Pratolo et al., 2022; Sofyani et al., 2019; Utami & Pratolo, 2023). However, research from Mntonintshi and Mtembu (2018) stated that PMS cannot improve performance. Mntonintshi and Mtembu (2018) found that PMS failed to lead lecturers to achieve better performance and benefit the HEIs. Due to inconsistent results, there were gaps in the research, so intellectual capital efficiency was added. According to several previous studies, efficient

intellectual capital can also improve organizational performance (Cricelli et al., 2018). Private HEIs must have a competitive advantage not only in tangible assets, but intangible assets are an essential focus (Pratolo et al., 2022). According to Pedro et al. (2019), intellectual capital will bring organizations to gain competitive and sustainable advantages. However, this study made intellectual capital a mediating variable based on Kaplan and Norton (2004) research; PMS can be implemented if it already has human resources, information, and organization readiness.

Relevant to this study is the theory proposed by Sirmon et al. (2011) regarding resource mobilization, namely the Resource Orchestration Theory (ROT). According to him, competitive advantage can be achieved by integrating resource management and asset orchestration to form more comprehensive work. The relationship in this research is that resource management, namely PMS, integrated with intangible assets in intellectual capital, will produce sustainable and holistic performance in private HEIs. In addition, this research contributes both theoretically and practically. Theoretically, it will contribute to developing the ROT in the education sector and expand the literature related to PMS intellectual capital on performance in private HEIs. In addition, this research provides recommendations to the management of private HEIs regarding the importance of preparing intellectual capital, especially in the relationship between PMS and performance, both operational and financial performance.

LITERATURE REVIEW

Resource Orchestration Theory

Sirmon et al. (2011) introduced the ROT, which contributed to developing the Resource Based-Value Theory (RBV). This theory states that integrating resource management and asset orchestration forms a more comprehensive framework. Performance improvement can occur when organizational assets are arranged, combined, and utilized appropriately (Pratolo et al., 2022; Sirmon et al., 2011). This theory highlights the importance of "resource mobilization". Concerning this study, mobilized PMS integrated with intellectual capital efficiency in an effective structure will provide synchronization and direction to the organisation's goals.

Given that HEIs are knowledge-based organizations, they are assumed to have high intellectual capital efficiency (Asiaei & Jusoh, 2017; Helfat et al., 2009; Pratolo et al., 2022).

Performance Measurement System

PMS refers to the process of evaluating someone's performance in relation to a preset goal and the objectives are to assess, manage, and enhance performance (Sofyani et al., 2019). According to Merchant and Van der Stede (2007), PMS is a system for assigning duties and decision-making authority, along with preset performance goals and incentives for meeting them. According to Ittner et al. (2003), a performance measurement system should have a wide range of performance measurements. Ittner et al. (2003) took into account a range of performance metrics, including (conventional) financial performance and non-financial performance that was thought to represent strategic performance not captured by accounting or short-term financial metrics. According to several previous studies, PMS can improve performance because lecturers have clear targets, lecturers will be motivated and PMS can be a communication tool for staff and managers to achieve their strategic goals (Nazaruddin et al., 2021; Pratolo et al., 2023; Pratolo et al., 2022; Sofyani et al., 2019; Utami & Pratolo, 2023).

In the HEIs context in Indonesia, performance measurement was carried out in stages from the government level which is called *Beban Kerja Dosen* (BKD). BKD is an activity that is required of lecturers in carrying out their duties and obligations as professional educators and scientists within a certain period of time which is regulated in detail as explained in Law No. 14 of 2005 concerning Teachers and Lecturers Article 72. Furthermore, BKD is referred to by HEI as a performance indicator that is manifested as PMS to target non-financial performance such as education, research and community service. This is because HEIs as a public sector is an organization that exists to serve the public interest, not to pursue personal gain (Sofyani et al., 2019; Ulum & Sofyani, 2016). This shows that although individual performance in the public sector is more focused on achieving welfare benefit targets, research and the quality of educational services, as well as community involvement in empowerment and problem-solving activities, are more important considerations in the context of higher education.

Intellectual Capital Efficiency

A new wave, the study of intellectual capital was initiated by a number of scholars in the late 1990s where intellectual capital was conceptualized as the synthesis of all knowledge and competencies that are considered as the foundation for sustainable competitive advantage (Stewart, 2010). This is in line with previous studies that have debated the definition and key concepts of intellectual capital in various fields that include economics, strategic management, human resources, marketing, information systems, operations management, finance and accounting (Asiaei et al., 2021).

Intellectual capital includes information, intellectual property, intellectual materials, knowledge, core techniques, customer relationships, technical know-how, enterprise technology, and professional capabilities that can bring wealth to the organization, and thus make it more competitive in the market. Intellectual capital in this study was defined as a combination of intangible resources and activities that enabled an organization to transform a set of material, financial, and human resources in a system capable of creating stakeholder value (Tjahjadi et al., 2019). Meanwhile, higher education intellectual capital referred to the effective and efficient utilization of intellectual capital to achieve institutional goals and objectives (Pedro et al., 2019).

Intellectual capital consists of human capital, structural capital, and relational capital (Barney, 1991; Tjahjadi et al., 2019). Human capital refers to the quality of human knowledge that must react to market needs (Gogan et al., 2016; Marginson, 2019). Structural capital refers to the infrastructure of the organization to produce output (Ramadan et al., 2017). Rational capital refers to the organization's ability to establish sustainable relationships with stakeholders (Secundo et al., 2018).

Performance in Higher Education Institution

The growth of academia has intensified with the privatization of public universities, and this poses a competitive challenge for HEIs and impacts their sustainability (Yaakub & Mohamed, 2019). This creates a need to objectively measure the performance of HEIs so that the government can monitor their progress and identify their strengths and weaknesses, which

will lead to the discovery of their sustainable competitive advantage (Soon & Zainol, 2011). However, measuring the performance of HEIs involves two important issues. First, there must be a clear objective of whether to measure HEIs financially or non-financially. Second, the dimensions of each measure must be determined as they vary depending on the purpose for which each HEI was established.

Financial performance is intended as the organization's ability to manage and control its financial resources (Fatihudin, 2018). In the context of higher education, performance is not only measured through financial performance, but in accordance with the purpose of higher education in Indonesia as a place to transfer knowledge, operational performance is also one of the significant goals (Pratolo et al., 2023). This is also in accordance with the Tri Dharma of Higher Education, namely education, research and community service. Universities are required to have good performance, especially in these three fields (Sofyani et al., 2019). Thus, operational performance in HEIs refers to the efficiency and effectiveness of the institution in carrying out its daily activities and functions to achieve its mission and objectives. This involves managing and optimizing various operational processes and resources within the institution.

HYPOTHESIS DEVELOPMENT

Performance Measurement System and Performance

Kaur and Singla (2019) explained that the measurement of HEIs performance refers to academic activities, scientific research, student activities, teaching workload, and community service. In higher education, PMS has been implemented as key performance indicators (KPIs) to ensure the strategic performance of individuals, organizational sub-units and organizations (Santati et al., 2022). Previous research states that PMS can improve performance (Ilias et al., 2016; Pratolo et al., 2023; Pratolo et al., 2022). The management of HEIs must ensure that PMS can align with its strategic objectives. Higher education is different from other business sectors; the actual condition can be seen from the long-term financial business success, namely meeting student needs, continuous improvement, and resource utilization (Balabonienė & Večerskienė, 2014), especially in

private HEIs, which manage finances independently and do not get subsidies from the government. This is in line with the opinion of Pratolo et al. (2023) that effective PMS can improve financial performance in higher education. Thus, the hypotheses formulated were:

H_1: Performance measurement system has a positive effect on operational performance

H_2: Performance measurement system has a positive effect on financial performance

Performance Measurement System and Intellectual Capital Efficiency

HEIs are places for producing, transmitting, and disseminating valuable knowledge for the country's development and progress (Vnoučková et al., 2018). Therefore, intellectual capital is important as universities aim to develop and disseminate knowledge (Cricelli et al., 2018). It should be emphasized that intellectual capital is the basis of organizational value to gain competitive advantage. Furthermore, intellectual capital is an investment that offers exciting prospects regarding the organization's potential (Tjahjadi et al., 2019). Research from Asiaei and Bontis (2019) states that effective PMS will encourage and facilitate Intellectual Capital Efficiency. Thus, the hypothesis formulated was:

H_3: Performance measurement system has a positive effect on Intellectual Capital Efficiency

Intellectual Capital Efficiency and Performance

One of the competitive advantages is being able to utilize intellectual capital well (Tjahjadi et al., 2019). In the context of companies, intellectual capital efficiency can improve business performance (Lu, 2012; Pratama et al., 2019; Secundo et al., 2020). For example, in a research conducted by Pratama et al. (2019) on companies in ASEAN countries, that intellectual capital can improve financial performance, Bontis et al. (2000) on companies in Malaysia, and Hussinki et al. (2017) on companies in Finland. Meanwhile, empirical studies on HEIs still need to be carried out. Thus, the hypothesis formulated was:

H_4: Intellectual capital efficiency has a positive effect on operational performance

H_5: Intellectual capital efficiency has a positive effect on financial performance

The Mediating Role of Intellectual Capital Efficiency

According to the ROT, competitive advantage can be achieved by integrating resource management and asset orchestration to form a more comprehensive work (Sirmon et al., 2011). In addition, according to Tjahjadi et al. (2019), a good strategy will require the execution of an effective strategy. So, PMS must be able to translate and describe the strategies needed by management, one of which is the initiative to develop intellectual capital efficiency to achieve the desired performance. Hassan et al. (2016), Yuliansyah and Jermias (2018), and Severgnini et al. (2018) found that job satisfaction, psychological empowerment, organizational ambidexterity, strategic alignment, and organizational learning were closely related to the dimensions of intellectual capital efficiency and can mediate PMS with improved performance in the company. Thus, the hypothesis formulated was:

H_6: Performance measurement system has a positive effect on operational performance through intellectual capital efficiency

H_7: Performance measurement system has a positive effect on financial performance through intellectual capital efficiency

Based on the hypothesis development, the research model was formulated as in Figure 1.

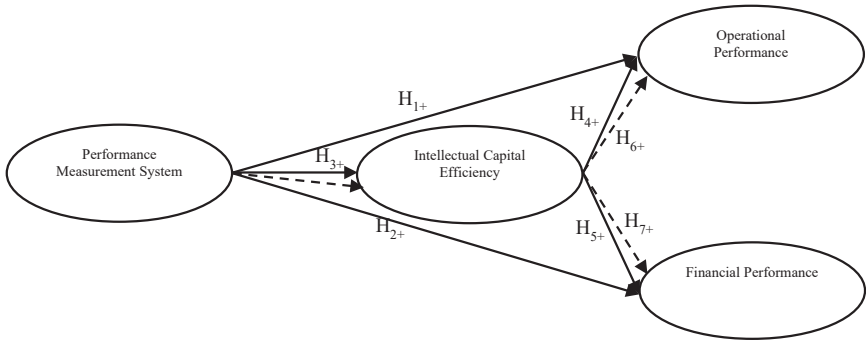

Figure 1: Research Model

METHODOLOGY

Sample Selection

This research was a survey research using a questionnaire. The questionnaire was distributed to 306 private universities located in several provinces in Indonesia. According to Bakrie (2016), Fitri (2016) and Suryarama (2009) private HEIs have different characteristics from public HEIs, especially in funding issues. Private HEIs independently fund their needs from the money paid by students, while public HEIs manage funds from the government. In addition to funding issues, the organizational system, especially in terms of competition and new student admissions, is also different. Private HEIs in Indonesia must wait for public HEIs to close admissions to get new students. Furthermore, the sampling technique used purposive sampling. The sample criteria taken in this study were accredited private universities. Meanwhile, respondents selected as sampling units must have sufficient knowledge to answer the research questionnaire, including members of HEI management in charge of HR and finance who had worked for at least 5 years.

Instrument Measurements

This study aimed to identify the mediating role of intellectual capital efficiency in improving performance in private universities in Indonesia. For this purpose, a questionnaire-based survey method was used to collect university data. The questionnaire was tested with one expert on survey research in higher education and the public sector. The questionnaire was also pilot-tested on four academics with professor and doctor qualifications. The questionnaire was measured using a Likert scale of 1-5, where 1 indicated "strongly disagree" to 5, "strongly agree," and several indicators to get more accurate answers, using a scale of 1-5, where 1 indicated "<20%" to 5 indicated "80%-100%" to ask about the percentage of lecturers with doctoral degrees and questions about budget reliability in HEIs. The 5-point Likert scale was chosen because according to Revilla et al. (2014) and Hair et al. (2021) if researchers want to use an agree-disagree rating scale, they should use a 5-point Likert scale because researchers can obtain data that is easier to interpret and easier to perform statistical analysis.

Each question in the questionnaire was adopted and adapted from previous research. Measurement of PMS variables was adopted from Sofyani and Nazaruddin (2019). A performance measurement system is a system that provides comprehensive information about performance goals and objectives as a tool for implementing organizational strategy. In addition, financial performance is intended as the organization's ability to manage and control its financial resources (Fatihudin, 2018). Measurement of this variable was carried out using the concept of value for money adopted from Pratolo et al. (2016). Furthermore, operational performance is the quality management of organizational activities (Kurniawan & Rinofah, 2016). The measurement of this variable refers to the Minister of Research, Technology and Higher Education in 2015 regarding activity management standards which included the learning process, human resources, and facilities and infrastructure (Bakrie, 2016).

Data Collection and Analysis

The data collected was then analysed using the Structural Equation Model (SEM) statistical analysis method. Partial Least Square (PLS) is a latent variable modelling technique used by several dependent constructs (Fornell & Larcker, 1981) and has been used in many business and accounting studies (Ittner et al., 2003). According to Akbar et al. (2012), the PLS approach is suitable for this study because of minimal data assumptions, a relatively small sample size, and a weak theoretical basis. Before testing the hypothesis using PLS, the researcher conducted Common Method Variance (CMV) testing to determine that the data used did not have potential bias or error, such as self-reported bias, complexity, ambiguity, and questionnaire scale format (MacKenzie & Podsakoff, 2012). The results obtained were 33.61% less than 50%, meaning that the data did not have the potential for bias or error. According to Hair et al. (2021), researchers must follow a multistage process to evaluate the outer and inner models using PLS. The outer model is a measurement model (construct validity and reliability test), which is used to evaluate the relationship between indicator variables and their corresponding constructs. Meanwhile, the inner model or structural model showed the relationship between the exogenous construct variables and the evaluated endogenous variables.

RESULTS AND DISCUSSION

Statistic Descriptive

Table 1 presents the results of descriptive statistical tests based on accreditation per province, and it shows that HEIs in Indonesia had unsatisfactory accreditation. It can be seen that the majority were located on the island outside Java. This indicated the quality of HEIs in Indonesia needs improvement and enhancement. The most dominating A and B accreditations were located in the province of East Java.

Table 1: Statistics Descriptive

Provinces	Accreditation Excellent/A	Accreditation Very Good/B	Accreditation Good/C
Total	14	119	173
North Sumatra	1	20	0
South Sumatra	0	10	20
Lampung	0	10	20
Nusa Tenggara Barat	0	4	26
Banten	1	7	22
Jakarta, Depok, Bekasi	3	9	18
West Java	0	8	22
The Special Region of Yogyakarta	3	12	15
Central Java	2	13	17
East Java	4	26	4

Outer Model

Furthermore, before hypothesis testing, each indicator was tested in the outer model, which consisted of validity and reliability tests (Hair Jr et al., 2017). The validity test consists of convergent validity and discriminant validity tests. Table 2 presents the results of the convergent validity test by looking at the loadings and average variance extract (AVE) values. The recommended score is higher than 0.5 for outer loading and AVE (Hair Jr et al., 2014). In the operational performance construct, there was an OP4 indicator with questions about the Percentage of lecturers in your university with doctoral degrees in their fields not being met, so it was eliminated so that the convergent validity test results would be obtained.

Table 2: Convergent Validity

Codes	Indicators	Outer loading
Operational Performance (OP) – AVE: 0.574		
OP1	The "RPS/ Rencana Pembelajaran Semester/RPS" (Semester Instruction Plan) outlines how teaching and learning contribute to accomplishing classroom goals.	0.754
OP2	The teaching attendance of instructors at our institution is recorded as 100%.	0.785
OP3	The attendance rate for student teaching at our institution is 100%.	0.783
OP5	The extent of the quality of facilities and infrastructure accessible at one's university.	0.705
Financial Performance (FP) – AVE: 0.550		
FP1	The procurement process at my institution involves the selection of prices for the acquisition of products and services.	0.764
FP2	The institution employs in-kind resources in order to optimize the attainment of specified goals.	0.802
FP3	The institution employs various services as resources to optimize the attainment of specified goals.	0.781
FP4	At my tertiary institution, please compare the realization of revenue from non-students to its target in the last three years.	0.629
FP5	Comparison of your college's actual personnel expenditure against target, for the last three years.	0.719
Performance Measurement System (PMS) – AVE: 0.630		
PMS1	Based on the available performance data, the institution undertakes subsequent measures to enhance its organizational performance.	0.755
PMS2	The performance measuring system at my institution undergoes periodic evaluations to assess its quality.	0.818
PMS3	The work unit performance measurement method at my institution is efficiently and regularly executed.	0.771
PMS4	The personnel performance report is regularly presented to the unit head at my institution.	0.821
PMS5	Based on the available personnel information, our institution is implementing further measures to enhance the performance of lecturers and educational staff.	0.802
Intellectual Capital Efficiency (IC) – AVE: 0.551		
IC1	The institution management has the capability to monitor the organization's performance accomplishments effectively.	0.767
IC2	The institution possesses a dependable information system that aids in providing various college services.	0.783
IC3	In comparison to other universities within the service area, my institution demonstrates a comparatively higher level of originality in generating ideas.	0.789
IC4	The feedback provided by parents or guardians of students is consistently considered in enhancing services at my institution.	0.705
IC5	My institution proactively fosters partnerships with college organizations in many regions.	0.658

Furthermore, the Fornell-Lacker criterion and the Heterotrait-Monotrait ratio (HTMT) are widely accepted techniques for discriminant validity testing (Hair Jr et al., 2017). However, according to Henseler et al. (2015), HTMT can achieve higher levels of specificity and sensitivity compared to Fornell-Lacker with the criterion that all constructs are less than 0.85 and all are met (Shmueli et al., 2019). Based on Table 3, the results show that discriminant validity is met by looking at the HTMT results, namely all constructs have values less than 0.85.

Table 3: Discriminant Validity

	Heterotrait-monotrait ratio (HTMT)
Intellectual Capital Efficiency <-> Financial Performance	0.611
Operational Performance <-> Financial Performance	0.784
Operational Performance <-> Intellectual Capital Efficiency	0.672
Performance Measurement System <-> Financial Performance	0.779
Performance Measurement System <-> Intellectual Capital Efficiency	0.737
Performance Measurement System <-> Operational Performance	0.775

Finally, the outer model test that is seen is the reliability test. The measurements used are Cronbach alpha and composite reliability (Hair Jr et al., 2014). The score limit or cut off for Cronbach alpha and composite reliability is a minimum of 0.6 (Hair Jr et al., 2017). As shown in Table 4 all reliability test scores were met.

Table 4: Reliability

Variables	Cronbach Alpha	Composite Reliability
Operational Performance	0.752	0.751
Financial Performance	0.795	0.807
Performance Measurement System	0.853	0.855
Intellectual Capital Efficiency	0.796	0.808

Inner Model

Prior to hypothesis testing, collinearity issues must be addressed. One of the main potential problems in structural models, according to Hair Jr et al. (2017), is collinearity, which occurs when the variance inflation factor (VIF) value exceeds 3. Consequently, the VIF value should be 3 or less than 3. The results of all VIF values were less than 3, and the model was free

from collinearity problems. Table 5 presents the results of the coefficient of determination (R^2) to measure the variance, which is explained in each endogenous construct and, hence, a measure of the explanatory power of the model (Shmueli & Koppius, 2011; Shmueli et al., 2019). From the results, it was found that the magnitude of the three variables was moderate.

Table 5: Hypothesis Test and Coefficient of Determination (R^2)

		Original Samples	p-value	Conclusion
Direct Effects				
Performance Measurement System ➔ Operational Performance	H1	0.484	0.000	Supported
Performance Measurement System ➔ Financial Performance	H2	0.550	0.000	Supported
Performance Measurement System ➔ Intellectual Capital Efficiency	H3	0.615	0.000	Supported
Intellectual Capital Efficiency ➔ Operational Performance	H4	0.231	0.000	Supported
Intellectual Capital Efficiency ➔ Financial Performance	H5	0.162	0.002	Supported
Indirect Effect				
Performance Measurement System ➔ Intellectual Capital Efficiency ➔ Operational Performance	H6	0.142	0.000	Partial Mediation
Performance Measurement System ➔ Intellectual Capital Efficiency ➔ Financial Performance	H7	0.100	0.004	Partial Mediation
Adjusted R-Square				
Operational Performance			0.376	
Financial Performance			0.435	
Intellectual Capital Efficiency			0.422	

Table 5 also presents the hypothesis test results. The results of all direct influence hypotheses were supported. PMS positively affected operational performance, financial performance, and intellectual capital efficiency in private HEIs. Likewise, there was a direct effect of intellectual capital on operational performance and financial performance. Meanwhile, the results of the indirect effect, intellectual capital efficiency, on the relationship between PMS with operational performance and financial performance was a partial mediation. This means that PMS still had a direct effect on operational and financial performance, while PMS had an indirect effect on operational and financial performance via intellectual capital efficiency.

Assessing Structural Model

The structural model as the measurement model was also satisfactory (Hair et al., 2019). In addition to the coefficient of determination, the blindfolding-based cross-validated redundancy measure Q^2 and the PLSpredict procedure should be used to evaluate their model's out-of-sample predictive potential (Shmueli et al., 2016). The model is more accurate when Q^2 values are closer to 1 (Chin, 1998). The RMSE and MAE PLS-SEM values, which are lower than the linear regression model, also imply superior predictive power. If mainly the same, the PLS-SEM indicator has a lower RMSE and MAE than the linear regression model (LM), indicating modest predictive potential (Shmueli et al., 2019). The prediction test findings showed an excellent observation value for endogenous variables with a Q^2 value of $0<Q^2<1$. PLSpredict findings are considered moderate if the PLS-SEM analysis yielded a higher RMSE or MAE than the naïve LM benchmark (Table 6) (Hair et al., 2019).

Table 6: Assessing Structural Models (PLSpredict and Q^2)

Indicators	Q^2predict	PLS-SEM_ RMSE	PLS-SEM_ MAE	LM_RMSE	LM_MAE
OP1	0.259	0.505	**0.428**	0.510	0.424
OP2	0.229	0.570	0.453	0.573	0.457
OP3	0.169	0.680	0.523	0.689	0.524
OP5	0.212	0.642	0.510	0.648	0.512
FP1	0.271	0.621	0.476	0.623	0.480
FP2	0.258	0.573	0.437	0.578	0.438
FP3	0.284	0.621	0.482	0.632	0.488
FP4	0.134	**1.011**	0.775	1.008	0.775
FP5	0.184	**0.774**	0.584	0.771	0.585
IC1	0.256	0.550	**0.454**	0.556	0.452
IC2	0.252	0.612	0.474	0.620	0.477
IC3	0.231	0.549	0.421	0.558	0.429
IC4	0.140	**0.614**	**0.495**	0.614	0.494
IC5	0.125	**0.562**	**0.477**	0.561	0.474

DISCUSSION

The test results showed that PMS had a direct influence on operational performance and financial performance. An effective PMS will improve

performance by helping management direct individuals to achieve the desired organizational performance (Pratolo et al., 2023). The existence of performance measurements such as BKD and PMS which are referred to at HEIs will provide information for HEIs lecturers and management regarding clear work targets and budgets, PMS is a tool for providing information that can be used for strategic decision making and follow-up plans. In addition, PMS can be a communication tool between HEI staff and managers and make it easier for management to provide feedback or rewards for lecturers who meet performance targets. Supported by an accounting information system, PMS can be a tool for self-monitoring. Lecturers will find it easier to monitor their own performance targets. These results are in line with previous findings which state that PMS can improve performance, such as the findings of Tjahjadi et al. (2019), Pratolo et al. (2023), Utami and Pratolo (2023), Pratolo et al. (2022). However, PMS is still debated among scholars and can potentially become a research gap. Several studies have shown that applying the managerialism model through performance measurement policies may not be suitable for managing lecturers (Nazaruddin et al., 2020; Nazaruddin et al., 2024). PMS has lecturers to bureaucratic procedures, diverting their focus from their primary responsibilities and threatening performance. Many HEIs have established PMS with limited procedures, where the concept is only for personnel administration and not "managing" human resources (Garengo et al., 2022). Mntonintshi and Mtembu (2018) found that PMS could have directed lecturers to perform better and benefit HEIs. PMS is considered a management tool, focusing less on human resource development.

Furthermore, PMS, which has a strategic goal to align the functional relationship between individual and organizational goals, impacts development and improves individual understanding of organizational goals because employee learn how to evaluate goal achievement (Iqbal et al., 2019; Nazaruddin et al., 2024; Soltani, 2003). So these results support the statement of Tjahjadi et al. (2019) and Solanki and Solanki (2017) that private HEIs need systematic, fair, intelligent, practical, precise and motivating employee performance measurements. PMS will make the main tasks and functions of study programs and faculties more straightforward, such as study programs being responsible for teaching. In contrast, faculties are responsible for research, and HEIs are responsible for providing feedback or remuneration if work targets are exceeded. A PMS will ensure that HEI's

performance is distinct. Apart from that, PMS will also increase intellectual capital, such as relational, and help make communication easier for units, staff, and manager levels. Lastly, PMS can also trigger employees to perform better and improve the quality of human capital by providing precise and challenging performance targets.

The same results are also supported for the effect of intellectual capital efficiency on operational performance and financial performance. This shows that empowered intellectual capital will improve performance (Tjahjadi et al., 2019). This result is in line with the findings of Tjahjadi et al. (2019), Cricelli et al. (2018), Shehzad et al. (2014), Lu (2012), Tseng et al. (2013). This shows that monitoring from management related to performance, improving information systems and undergoing cooperation with various parties will improve performance. This is supported by research conducted by Sofyani and Nazaruddin (2019) and Pratolo et al. (2022) that structural capital and relational capital have the strongest relationship to the performance of HEIs, both operational performance and financial performance. The findings of Pratolo et al. (2022) emphasized that private HEIs must emphasize innovation, technology, information systems, and stakeholder aspirations as well as collaborate with other institutions, government and society.

The last hypothesis related to the role of intellectual capital efficiency mediates the relationship between PMS with operational performance and financial performance was supported. PMS can improve operational performance and financial performance through partial mediating intellectual capital efficiency. This is in line with the findings of Tjahjadi et al. (2019). The difference from previous research is that this study emphasized private HEIs in Indonesia. These results also confirmed the ROT that integrating resources and asset orchestration, namely intellectual capital efficiency, will increase a more comprehensive performance. So to improve operational and financial performance, in addition to management must evaluate performance, provide freedom of opinion, provide direction, must be supported by continuous innovation, adequate technology, good information systems, and establish good cooperation with various stakeholders. Previous studies have examined intellectual capital as a mediator in other sectors, such as research from Hassan et al. (2016) conducted research using data from 100 sales branch managers and dealer managers of automotive companies

in Malaysia, Severgnini et al. (2018) on 227 Brazilian software companies, and Yuliansyah and Jermias (2018) on 158 companies in the Indonesian financial sector. Based on suggestions from Dumay (2016) these results provide empirical evidence for expanding research on the intellectual capital efficiency as a mediator in the PMS relationship in improving organizational performance, especially in HEIs.

The results of this research will also have implications for society. If private HEIs apply the intellectual capital development model, the community will improve the quality of education, teaching, research and community service. The community will get good educational facilities, better education, and a better quality of life in the era of the knowledge economy by improving HEI performance.

CONCLUSION

This study explored how intellectual capital efficiency mediated PMS, operational, and financial performance at private HEIs. With 306 private HEIs samples, this research was conducted in North Sumatra, South Sumatra, Lampung, West Nusa Tenggara, Banten, Jakarta, Depok, Bekasi, West Java, The Special Region of Yogyakarta, Central Java, and East Java. Intellectual capital efficiency partially influenced PMS, operational performance, and financial performance at private HEIs. This showed that intellectual capital efficiency will boost PMS tactics. Intellectual capital efficiency optimized PMS performance. These findings will help theoretically and practically.

This research will contribute to the ROT in enhancing intellectual capital efficiency, mediating the PMS relationship to improve HEI performance, especially in developing countries like Indonesia. This study provides advice to private higher education management on how PMS used for innovative and strategic purposes can improve operational and financial performance by increasing intellectual capital efficiency. This study also suggests that higher education management prepare intellectual capital efficiency to reach PMS performance targets, particularly in awareness, measurement, disclosure, management, and reporting. So, private HEIs can perform better and compete for certification.

However, this study has serious drawbacks. First, the sample was small. Second, as this research was only done in Indonesia, it should be used with caution in other nations with various HEI characters. Third, this study did not examine intellectual capital dimensions. Future research on intellectual efficiency per dimension (human, structural, and relational capital) may be more extensive. Finally, secondary data was scarce, therefore this study did not cross-validate. Future research may be exploratory or experimental.

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