

Intellectual capital disclosure in public university and the determinants

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ABSTRACT

The factors influencing Intellectual Capital Disclosure (ICD) are presented on the official websites of public universities in Indonesia. This study sought to examine ICD across 48 universities classified as PTN-BH and PTN-BLU, employing multiple linear regression analysis. The findings revealed that university internationalization, location, and complexity positively and significantly impacted ICD, whereas the presence of female rectors had no discernible effect. Furthermore, a T-test analysis indicated a significant disparity in ICD between public universities situated in Java and those outside Java. Concerning the limitation of the research, the sample used could be developed by adding other types of universities. In this context, the results described the condition of universities and future research could analyze ICD through other mass media since the analysis is not limited to the official website.

Introduction

Public sector organizations are not separated from stakeholder demands in terms of accountability to the public. This is amplified by growing public interest in the transparency of non-financial performance disclosures (Andrades et al., 2021; Fusco, 2019; Greiling et al., 2015). Moreover, the need for transparency and accountability is inseparable from public sector organizations, particularly in education. Universities, in this regard, are expected to implement good governance by adhering to accountability principles through transparent practices (Sagara & Yustini, 2019). Universities are public sector organizations largely funded by the public (Andrades et al., 2021; Gallego-Alvarez et al., 2011). There is intense competition to attract institutions and new students as a source of funding (Bisogno et al., 2014; Ulum et al., 2019). Heightened competition drives universities to adapt their governance and policies, ensuring greater transparency and accountability to stakeholders (Christensen, 2011). Therefore, universities continue to improve competitive advantages (Ulum et al., 2019).

Universities are organizations built on knowledge as intangible assets (Corcoles & Ponce, 2013; Ramirez & Tejada, 2019) due to the relationship with intellectual capital disclosure (ICD) (Leitner & Warden, 2004; Sofyani & Khairunisa, 2021). The shift from an industrial economy to a knowledge-based one has heightened recognition of the critical role of ICD in driving value creation (Liu et al., 2020). ICD plays a vital role in fostering development, ensuring economic success, enhancing organizational value, and securing a competitive edge (Anna & RT, 2018; Canibano & Sanchez, 2008; Liu et al., 2020; Mustapha & Abdullah, 2004; Suhardjanto & Wardhani, 2010).

Awareness of ICD components is related to the implementation and development of the concept. Disclosure is an important issue for stakeholders to reduce information asymmetry and risks (Brusca et al., 2020; Salvi et al., 2020). ICD is analyzed through financial statements but this becomes irrelevant in university practice. The financial statements are considered insufficient to provide transparent and accountable information to stakeholders regarding performance since the college is built on intangible assets (Corcoles & Ponce, 2013; Ramirez & Tejada, 2019).

The Indonesian government is actively advancing efforts to elevate the nation's universities to a world-class standard (Azzahra & Zahra, 2023). Various improvements have been made, such as increasing collaboration with foreign universities in teaching and research activities. These activities can be a method of transferring knowledge (Azzahra & Zahra, 2023). In addition, the Indonesian government continues to gain recognition from the international community through international accreditation (Decree of the Minister of Education and Culture No. 83/P/2020 on the International Accreditation Organization, 2020). International accreditation is an important aspect since the era of globalization enables universities to innovate. By obtaining accreditation status, Indonesian universities are considered to have quality equivalent to the standards of foreign counterparts. This certainly has a positive impact on the recognition in the international context.

In the era of globalization, transparency is among the important factors in organizational development. Openness of information determines the attractiveness, and market value as well as strengthens competition (Krasnokutska et al., 2019). Similarly, universities are increasingly aware of the competition in attracting private resources (Nicolo et al., 2020). This is due to various factors such as limited financial resources from the government to obtain additional funding from private sector (Nicolo et al., 2020). The website is considered to be able to carry out the public relations function as an ICD media (Ramirez & Tejada, 2019). Therefore, stakeholders can determine the performance of universities based on the outcomes achieved such as publication results, student and lecturer achievements, academic and non-academic excellence, as well as quality of graduates assessed from tracer studies.

Literature Review

Stakeholders Theory

A stakeholder refers to any group or individual capable of impacting or being impacted by an organization's accomplishments (Phillips et al., 2019). Stakeholder theory suggests that organizations are expected to consider different contracts (Hörisch et al., 2014). Stakeholders provide funding with the expectation of meeting the required demands (Schaltegge et al., 2019). Organizations demonstrate accountability by sharing information about their activities and the outcomes achieved through resource utilization (Ramirez & Tejada, 2019). Sharing information helps minimize asymmetry between management and stakeholders (Brusca et al., 2020). The stakeholders of a university encompass the Ministry of Education as the regulatory body, as well as rectors, deans, faculty members, administrative staff, and students.

Intellectual Capital

Intellectual Capital (IC) refers to a set of activities that allows organizations to convert physical, financial, and human resources into a system that drives value creation (European Commission, 2006). Several previous research showed the grouping of ICD components in profit-oriented and non-profit-oriented entities. However, studies in the non-profit sector categorize ICD into three primary components: human capital (HC), structural capital (SC), and relational capital (RC) (Leitner, 2002; Pedro et al., 2019; Veltri et al., 2014). The HC aspect pertains to the skills and knowledge held by lecturers, students, and staff, acquired through both formal and informal education (Córcoles, 2013). SC refers to a collection of internal processes involving communication, sharing, and management of scientific and technical knowledge (Corcoles et al., 2011). Meanwhile, RC describes the relationships established with stakeholders including the perception, image, and attractiveness of universities (Ramirez et al., 2019).

Hypothesis Development

The swift progress of the globalization era influences the ongoing viability of education. Universities are required to strengthen innovation and the quality of education in line with international developments. In, this context, internationalization can be implemented using different methods. The Indonesian government is actively working to enhance internationalization by securing international accreditation for each program. Accreditation agencies assess a wide range of challenging and complex factors. At present, these agencies emphasize Outcome-Based Accreditation (OBE) as the primary framework for assessment and evaluation (SPM Universitas Padjadjaran, 2020). Universities with better disclosure and documentation of outcomes easily pass the international accreditation assessment process. According to Manes-Rossi et al. (2018); Ramírez et al. (2016), internationalization requires universities to provide information related to activities in terms of student affairs and research. Therefore, the more internationally accredited programs in a university, the higher the outcome of ICD information through the website. Hence, this study puts forward the following hypothesis:

H₁: Internationalization positively influences the ICD practices on university websites.

The main problem is the inequality in the quality of education within and outside Java. Based on statistical data from Kemendikbud (2020), 9 out of 10 universities with "A" accredited programs are located on Java Island and 1 is at Hasanuddin University. This shows the quality gap between universities in Java and outside Java. According to the data of Kemendikbud (2020), state universities in Java are dominantly accredited A, while those on Kalimantan, Maluku, Nusa Tenggara, Sulawesi, and Sumatra islands are dominantly accredited B. The quality of universities, represented by the accreditation status affects ICD (Aulia et al., 2019; Gobel et al., 2020). Universities on Java Island, with higher quality, tend to provide more extensive information on intellectual capital and demonstrate greater awareness of the significance of ICD information as a means of ensuring transparency and accountability. Therefore, this condition becomes relevant when universities in Java show ICD information wider than those outside the Island. This is in line with Rahayu & Sudaryono (2023) and Rahayuningtyas & Triana (2017), where universities in Java Island have higher ICD. Therefore, this research proposes a hypothesis, namely:

H₂: Location has a positive effect on ICD practices on university official websites.

Stakeholder theory states that organizations provide information to increase the value of the stakeholders (Guthrie et al., 2004). In addition, universities tend to provide all relevant information to improve reputation in attracting new collaborations and prospective students. Complexity can be measured by the number of faculties and study programs. As a university grows in complexity, the range of its stakeholders naturally expands. This is in line with Vitolla et al. (2023) stated that the more complex a university becomes, the greater the pressure from stakeholders to disclose information. The research from Aulia et al. (2019); Manes-Rossi et al. (2018) this further supported the finding that complexity has a significant positive impact on ICD. This is closely tied to the extensive resources universities possess, including educational facilities and systems, collaboration networks, and curricula that align with the expertise of their faculty. Therefore, this research proposes a hypothesis, namely:

H₃: Complexity has a positive effect on ICD practices on university official websites.

The influence of the presence of a woman has been proven in the decision-making of an organization. Female managers are more likely to focus on ethical and social concerns rather than economic factors (Jain & Jamali, 2015). In this regard, having women in top management positions positively influences ethical and social responsibility (Garde Sanchez et al., 2017). The presence can influence policy because gender diversity brings different perspectives and experiences to the decision-making process (Ben-Amar et al., 2017). The research from García-Sánchez et al. (2019) it was shown that increased female representation on boards of directors helps mitigate risks to management strategies, resulting in more transparent and reliable sustainability disclosures. Similarly, universities are public organizations where transparency and accountability are important for sustainability. The rector has the authority to regulate and determine the direction of university policies in disclosing important information. ICD is also a method of reducing information asymmetry between university management and stakeholders. Therefore, this research proposes a hypothesis, namely:

H₄: The presence of a female rector positively influences ICD practices on the university's official website.

Research Method

This quantitative research used a sample of 48 universities consisting of 20 Legal Entity Universities (PTN-BH) and 28 Public Service Entity Universities (PTN-BLU). The data adopted was in the form of secondary data, which were related to ICD of universities. These data were obtained directly through the official websites of related universities. Meanwhile, independent variables such as the number of international accreditations, location of universities institutions, number of programs, and gender diversity of rectors can be obtained through the official websites of each university, PDDikti website of the Ministry of Education and Culture, PKK BLU website, and BPK website until 2023.

Table 1 presents all the dependent and independent variables utilized, along with explanations of their accounting and sources.

Table 1. Measurement of Variables

Acronym	Variables	Measurement	Source
Variable Dependent			
ICD	Intellectual Capital Disclosure	<p>The measurement criteria involve assigning a score of 1 if the ICD indicator is displayed and 0 if it is not disclosed (Nicolo et al., 2021).</p> $ICD = \frac{\text{Number of ICD items disclosed}}{\text{Total of all IC items}} \times 100$	Official Website of each University
Variable independent			
INTER	Internationalization	It is measured by determining the percentage of study programs that have received international accreditation.	Official Website of each University and PDDikti website
LOC	Location	It is measured using a dummy variable, where a score of 1 is assigned if the university is located on Java and 0 if it is situated outside Java.	
COMP	Complexity	It is measured by the total number of study programs offered by the university.	
FEMREC	Female Rector	It is measured using a dummy variable, assigning a score of 1 if the rector is female and 0 if the rector is male.	

Sources: (Aulia et al., 2019; Nicolo et al., 2021; Rahayu & Sudaryono, 2023)

Notes: Table created by authors.

Data testing was conducted in multiple stages, including descriptive analysis, classic assumption testing, F-test, and T-test. The data analysis method employed was multiple linear regression using SPSS software version 25. This

analysis aimed to assess the impact of internationalization, location, complexity, and the presence of female rectors on the ICD displayed on university official websites. Therefore, the regression equation used to test these hypotheses includes the following.

$$ICD = \alpha + \beta_1 INTER + \beta_2 LOC + \beta_3 COMP + \beta_4 FEMREC + e$$

Description:

ICD = Intellectual Capital Disclosure

α = Constant

$\beta_1, \beta_2, \beta_3, \beta_4$ = Coefficient Regression

INTER = Internationalization

LOC = Location

COMP = Complexity

FEMREC = Female Rector

e = Standard Error

Result and Discussion

Based on the purposive sampling method, universities with PTN-BH and PTN-BLU status meet the sample criteria. Therefore, the sampling results show that the final sample used in the research was 48 samples.

Table 2. Sample Selection Result

No.	Sample	Total
1.	PTN-BH was established by Government Regulation in 2023.	20
2.	PTN-BLU was established through the Decree of the Minister of Finance, effective until 2023.	28
3.	The official websites of PTN-BH and PTN-BLU cannot be accessed.	(0)
Total Sample		48

Sources: blu-djpb.kemenkeu.go.id, peraturan.bpk.go.id

Table 3. Descriptive Statistics

	N	Min	Max	Mean	SD
Y_ICD	48	62.07	100.00	88.43	8.93
X1_INTER	48	0	79.31	15.30	16.21
X2_LOC	48	0	1	0.48	0.50
X3_COMP	48	18	296	122	58.25
X4_FEMREC	48	0	1	0.10	0.31

Source: Data processed & table created by authors.

The descriptive statistics results for the dependent and independent variables reveal the minimum, maximum, mean, and standard deviation values. The ICD values range from a minimum of 62.07% to a maximum of 100%. The University of Riau (UNRI) recorded the lowest ICD value, while the University of Indonesia (UI), Bandung Institute of Technology (ITB), and Bogor Agricultural University (IPB) had the highest values. The average ICD value is 88.43%, indicating a relatively high level.

The internationalization variable has a range with a minimum value of 0% and a maximum value of 79.31%. Therefore, there are still universities without internationally accredited programs. The average of the internationalization variable is 15.30%. The figure shows a relatively low value related to the international accreditation of programs. This is certainly a new result and is expected to be an impetus in increasing productivity to create internationally accredited programs.

Table 4. Hypothesis Testing Result

Variable	Standardized Coefficients Beta	Sig.	Sign
X1_INTER	0.228	0.084	*
X2_LOC	0.246	0.062	*
X3_COMP	0.419	0.003	***
X4_FEMRECTOR	-0.196	0.128	
Adj. R Square: 0.330			
F-Stat: 0.000			

Notes: *** significant at 1%, ** significant at 5%, * significant at 10%

The university location variable has an average value of 0.48, indicating that 48% (23 universities) of PTN-BH and PTN-BLU are situated on Java, while the remaining 52% (25 universities) are located outside Java. This suggests that the research sample is predominantly made up of public universities based on their location.

Gorontalo State University (UNG) and Gadjah Mada University (UGM) have the lowest and highest complexities with 18 and 296 study programs, respectively. On average, PTN-BH and PTN-BLU have 122 study programs. The female rector variable shows an average value of 0.10. Therefore, 10% (5 universities) of PTN-BH and PTN-BLU have female rectors and the remaining 90% (43 universities) are male rectors. In this context, the characteristics of the research sample are dominated by public universities with male rectors.

Discussion

The Effect of University Internationalization on Intellectual Capital Disclosure (ICD)

The internationalization of universities impacts ICD on their official websites, with a significance level of 0.084 at the 10% threshold. These findings suggest that the internationalization factor, indicated by the number of internationally accredited study programs, influences the extent of ICD. The results are in line with the research of Ramirez et al., (2019) in Spanish, (Aulia et al., 2019) in Indonesia, and Manes-Rossi et al., (2018) In Italy, the practice has a significant positive impact on ICD. The requirements of international accreditation bodies, which emphasize OBE as a key evaluation criterion, encourage universities to be more proactive in disclosing both academic and non-academic activities. Therefore, international accreditation owned by universities is directly proportional to ICD information in the form of outcomes, such as curriculum description, qualifications and expertise of lecturers, achievements, and publications to the quality of graduates.

The Effect of University Location on Intellectual Capital Disclosure (ICD)

Additional test results reveal a significant positive correlation between the university's location and ICD on its official website. The significance level represents several 0.062 and is significant at the 10% level. This result is supported by Rahayu & Sudaryono (2023) and Rahayuningtyas & Triana (2017) where universities in Java Island show ICD information relatively compared to outside Java Island. Centralization of development can increase competition in various aspects (Rahayu & Sudaryono, 2023). Therefore, the influence of location can affect the tightness of competition. Universities in Java Island show better quality as evidenced by the accreditation (Kemendikbud, 2020). In addition, 15 out of 20 PTN-BH are located in Java and only 5 PTN-BH universities are located outside Island. This inequality in the quality of education has an impact on increasing competition. Intensified competition encourages universities to enhance ICD by sharing information on performance aspects such as achievements, curriculum, learning systems, innovations, publications, and other competitive advantages. This aligns with stakeholder theory, which suggests that organizations aim to provide information that boosts their value (Guthrie et al., 2004).

The Effect of University Complexity on Intellectual Capital Disclosure (ICD)

The findings indicate a significant positive correlation between university complexity and ICD. The complexity variable has a significance value of 0.003 at the 1% level. This result is supported by Aulia et al. (2019); Gallego-Alvarez et al. (2011); Manes-Rossi et al. (2018) this suggests that complexity has a significant positive impact on the level of ICD. Larger universities, characterized by a greater number of programs, are more likely to disclose a larger amount of information (Ramirez et al., 2019). The number of faculties and study programs at universities influences the breadth of information displayed, particularly on the university's website (Gallego-Alvarez et al., 2011). A program related to others has many different aspects and components. This differentiation causes the information to be different such as variation in curriculum, aspects of learning facilities, teaching performance, and publications to the quality and expertise of each lecturer. The information will increase and become more complex with the number of programs owned by a university. As a university grows in complexity, the stakeholder base becomes more diverse, leading to increased pressure to disclose the achievements and activities. This transparency is essential for ensuring accountability in the use of stakeholder resources.

The Effect of Female Rector on Intellectual Capital Disclosure (ICD)

The presence of female rectors in a university on ICD shows insignificant results. Andrades et al., (2021) in Spanish universities, it was found that having a female rector did not impact the extent of corporate governance disclosure. Based on the research sample data, the results revealed that only five PTN-BH and PTN-BLU universities had female rectors, namely Bandung Institute of Technology (ITB), Padjajaran University (Unpad), Gadjah Mada University (UGM), Riau University (Unri), and Lampung State University (Unila). Therefore, only 10.4% of universities in

Indonesia have female rectors. In this context, women do not dominate the position of rector in state universities, both PTN-BH and PTN-BLU. Several studies have shown that the presence of women in top management roles, such as on the board of directors, positively impacts the quality of ICD (Nicolò et al., 2022). In this regard, the Indonesian government should place greater emphasis on gender equality, particularly in relation to female leadership.

Additional Test

An Independent Sample T-test was performed to determine the significant difference in ICD between public universities in Java and those outside Java. According to the descriptive statistics (Table 5), the average ICD values for public universities in Java and outside Java are 92.2 and 84.9, respectively. The Levene's Test output indicates that the variance between the two groups is homogeneous ($p > 0.05$). The results of the Independent Sample T-test, with a Sig. (2-tailed) value of 0.004 (which is less than 0.05), reveal a significant difference in the mean ICD values between public universities in Java and those outside Java.

Table 5. Descriptive Statistics

Location	N	Mean
Java	23	92,2
Outside Java	25	84,9

Source: Data processed & table created by authors.

Table 6. Independent Sample T-test

	Levene's Test for Equality of Variances		T-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Equal variances assumed	0,153	0,697	3,043	46	0,004
Equal variances not assumed			3,043	45,466	0,004

Source: Data processed & table created by authors.

Conclusion

In conclusion, Indonesian university practically implemented personal policies regarding autonomy or delegation of power in managing the affairs. The establishment of PTNBH was one of the government efforts to reform education in Indonesia by improving the quality, competence and global competitiveness of university. The average ICD at public universities in Indonesia showed a positive trend. This study also offered new insights into the factors influencing the level of ICD in public universities. The empirical test results indicated a significant positive impact of internationalization, location, and university complexity on ICD. However, the presence of a female rector did not appear to have any effect on ICD on the official websites of public universities. The practice of internationalization as evidenced by the international accreditation of study programs reported a relatively low number. Some PTN-BLU did not have internationally accredited study programs. Universities in Java showed better ICD practices compared to those outside the Island. This condition occurred because there was an uneven quality of higher education in and outside Java. Conversely, the majority of public universities were led by male rectors and only 10.4% of the sample had female rectors. In Indonesia, male leadership in an institution dominates, especially in public institutions such as state universities.

The findings contributed to the existing literature on ICD in the public sector and facilitated government collaboration with universities to enhance the quality of higher education. However, the anticipated improvement in quality was mainly confined to educational infrastructure and human resources, including both academic and non-academic staff. The quality of good human resources impacted the outcomes in each higher education institution. This research also has some limitations. However, this study focused on ICD on two types of university in Indonesia which is PTNBH and PTNBLU even though there are still other types of university in Indonesia that can be the object of research. Future research could increase the number of samples by adding to the types of universities. The assessment of ICD items could also be added since the concept was not limited to the official college website.

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