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The role of social media as a voluntary intellectual capital disclosure in universities: Evidence from Indonesia

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Abstract

Purpose: This research explains the influence of social media as a tool for the voluntary disclosure of intellectual capital on university performance.

Design/methodology: All universities in Indonesia were analyzed based on the observation of their social media accounts such as Facebook, Instagram, Twitter, and YouTube channels after which they were correlated with the university performance.

Findings: The results showed that social media can be used as voluntary disclosure of intellectual capital. This was indicated by the positive correlation between the popularity of the universities on social media and their relational capital and institutional performance. However, no impact was found on the number of students but a significant difference was recorded in the use of social media between public and private universities in Indonesia.

Research limitations/implications: The data were obtained only from one country and this means there is a need to analyze several other countries with different social media platforms in the future.

Practical implications: From a strategic management perspective, this is an opportunity for universities to manage social media effectively in order to increase the popularity of their cyberspace and institutional performance. It is recommended that universities have a special role in managing their social media content in order to be able to develop and manage digital communications effectively as a strategy to improve the performance of institutions.

Social implications: Social media plays a vital role in improving an organization's performance and providing adequate information to stakeholders. This is important because the existence of intangible assets is critical to the survival of a business.

Originality/value: This research empirically examines the impact of using social media on public-sector organizations (universities) with a specific focus on its application as a voluntary disclosure tool of intellectual capital.

Keywords: Social media, Intellectual capital disclosure, Voluntary disclosure, University

Jel Codes: O34, I23, E2

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1. Introduction

Web 2.0 technologies, specifically social media platforms, are rapidly changing the way people connect and communicate (Dolega, Rowe & Branagan, 2021; Rowe, 2014). This is due to the ability of these platforms to increase connectivity and provide timely information (Scott & Goode, 2020). This has aroused the interest of both public and private organizations to increase their engagement (Archer-Brown & Kietzmann, 2018). In public organizations, social media is believed to play an important role in promoting public engagement and creating accountability and transparency (Ramírez & Tejada, 2019). It is also associated with achieving performance (Hall, 2011; Hamid, Ijab, Sulaiman, Md. Anwar & Norman, 2017), creating cost efficiencies (Yang, Ye & Wang, 2021), and increasing revenue (Nguyen, Nguyen & Do, 2022) in business organizations. This shows that their creative and diverse usage can build a competitive advantage through the establishment of long-term relationships with stakeholders (Giacomini, Paredi & Sancino, 2022).

The university, as an institution responsible for creating a knowledgeable society, is promoted to maintain good relations with stakeholders (Benneworth & Cunha, 2015). Moreover, some experts argued that social media can be used to mobilize information concerning campus performance achievements, study programs, and to build interactive communication with students (Valerio & Valenzuela, 2013). The adoption of these platforms by higher education institutions is believed to have produced new resources in the form of social capital that can be used to support institutional performance (Prieto & Holgado, 2019; Ramírez, Tejada & Sánchez, 2020). This social capital, which is a component of intellectual capital (IC), is perceived to be a valuable asset for institutions in maintaining loyalty with stakeholders (Dal Mas & Paoloni, 2020; Rashid & Mustafa, 2022). The disclosure of IC has become a momentum for higher education institutions to demonstrate excellence in research, teaching, and dedication to the advancement of knowledgeable society (Córcoles, 2013; Kuralová & Margarisová, 2016). Therefore, this research focuses on social networking sites such as Facebook, Instagram, Twitter, and YouTube due to their ability to create stronger interactions and engagement than websites, thereby providing an advantage for higher education institutions in Indonesia to communicate with their stakeholders.

The recent research on IC disclosure in Indonesia has mostly focused on the private sector with only a few on the public sector, specifically higher education institutions (Herli, Tjahjadi & Hafidhah, 2021; Soewarno & Tjahjadi, 2020). Meanwhile, universities, as knowledge-intensive organizations operating on intangible resources as main inputs and outputs, need to realize the importance of this disclosure to the development of their institutional performance (Ramírez & Tejada, 2019; Sangiorgi & Siboni, 2017; Siboni, Nardo & Sangiorgi, 2013). It was reported that IC information in higher education institutions are currently limited to annual reports (Cricelli, Greco, Grimaldi & Llanes Dueñas, 2018; Cuozzo, Dumay, Palmaccio & Lombardi, 2017). In fact, some experts doubted the effectiveness of annual reports as a means of its disclosure (Abeysekera, 2006; Dumay & Guthrie, 2017) and showed that role of IC in improving campus performance is often overlooked and even hidden (Khalique, Bontis, Shaari, Yaacob & Ngah, 2018). This made voluntary disclosure an alternative option to understand its significant usefulness in enhancing institutional performance. Therefore, there is a need to go beyond traditional reporting tools by exploring the existence of different data sources that can provide stakeholders with more information (Brusca, Cohen, Manes-Rossi & Nicolò, 2019; Nielsen & Farooq, 2015). This research was based on the findings of Lardo, Dumay, Trequattrini and Russo (2017) that social media can be used as a medium to expose IC in a relevant and timely manner. Bryl, Fijałkowska and Hadro (2021) also stated that tweets related to this concept are more attractive to stakeholders than others containing provocations that elicit more reactions. However, this research was conducted at a university with several limitations in disclosing IC and also made use of social media platforms such as Facebook, Instagram, Twitter, and YouTube that have not been previously used.

This research contributes to the development of relevant literature in different ways. First, it expands the scope of IC information disclosure by explaining its effect on the achievement of university academic performance. This further enhances the practical and theoretical understanding of its importance in creating excellence and value in higher education institutions. Second, it provides insight into the benefits of using social media in universities as an instrument to improve institutional performance. From a strategic management perspective, this means there is an opportunity to apply social media as an effective communication tool to inform alumni, students, parents, and other stakeholders about the performance of the university's human, structural, and relational capitals. This finding can be a motivation for university managers to improve the online disclosure of IC to suit the information needed by wider stakeholders.

The research main objective is to investigate the role of social media as a means of disclosing IC on the performance of universities in Indonesia. It specifically analyzes the relationship between the popularity of higher education institutions on platforms such as Facebook, Instagram, Twitter, and YouTube and university performance variables used to express IC values through human, structural, and relational capitals. Moreover, this research was based on stakeholder theory which argues that stakeholders have a right to information with respect to actions taken by universities (Donaldson & Preston, 1995; Freeman, Dmytriyev & Phillips, 2021).

The data on the popularity of social media across higher education institutions in Indonesia was used and this was achieved by collecting the number of followers and posts from the official accounts of each college. This was followed by the application regression analysis to determine the relationship between social media popularity and university performance proxied by IC. It is important to note that the data were collected on the same day to avoid differences in the number of followers and posts made by higher education institutions. It was discovered that the universities can use social media as an alternative to ensure the voluntary disclosure of IC. Moreover, the popularity of these institutions on social media can increase the accessibility to their official websites while the voluntary IC disclosures also have the ability to provide the stakeholders with information regarding the performance of the institution.

The remaining aspects of this research are structured as follows. Section 2 focuses on the literature review of intellectual capital in higher education institutions and the role of social media in intellectual capital disclosure. Section 3 discusses the research method, Section 4 focuses on the findings while the discussion, conclusions, and limitations are explained at the final section.

2. Literature review

2.1. Intellectual capital in Higher Education Institutions

The HEIs are organizations with very strong social interactions, thick organizational culture, and competition. The progress of these institutions is largely determined by innovation and strategy applied to run their operations (Passaro, Quinto & Thomas, 2018) and they also have an important role in creating a modern society because they are responsible for providing education and disseminating information on science and research to create an advanced and competitive society. Córcoles (2013) showed the importance of Spain's public universities in providing information on their intellectual capital to meet information needs. This means a university needs to include the implementation of intellectual capital in its report in order to make the information available to different stakeholders. This is necessary to ensure these stakeholders know the developmental efforts of the university in relation to teaching, research, institutions, students, staff, and cooperation. Moreover, it is also important for outsiders to know the performance achieved by the university as well as the programs implemented to improve the quality of education.

The first component of IC is human capital which consists of elements of innovation, skills, knowledge, and skills of employees and also focuses on the collective ability of all people engaged in the development of universities such as the teaching staff, university leaders, administrative staff, and students in general (Secundo, Lombardi & Dumay, 2018). The interactions between the human capital are expected to improve university performance, ensure adequate management of resources, and enhance structural capital. The second component is structural capital which has several elements in the form of an organizational culture that provides a platform

to observe the development of an organization as well as to establish a decision-making strategy and value system (Ramírez, Dieguez-Soto & Manzaneque, 2020). Another structural capital component that is no less important is how the organization uses routines, products, internal processes, capabilities, and technology for its development (Beltramino, García-Perez-de-Lema & Valdez-Juárez, 2020; Sánchez & Elena, 2006). It can be stated that structural capital is the backbone of organizational progress and also related to the knowledge arising from internal organizational processes in a university setting. This can originate from the organizational climate and internal relations between research, technology, and existing culture (Ulum, Septerina, Prasetyo, Mohamed & Abdullah, 2017). Cricelli et al., (2018) further stated that the performance of structural capital in an HEI shows its intrinsic value in intellectual property, technology development, patents, publications, and management processes. This is also related to procedures to obtain accreditation and certification. The third component of IC is relational capital which focuses on the relationship between an organization and its environment (Abhayawansa & Guthrie, 2014). According to Khalique et al. (2018), relationships with the environment provide more value to organizations to improve their performance and become an invaluable organizational asset. In the context of the university, this is very relevant in the network of academic social interaction because it is associated with greater productivity in terms of economic, political, and institutional development. Relationships established can open up opportunities for universities to develop in a larger scope.

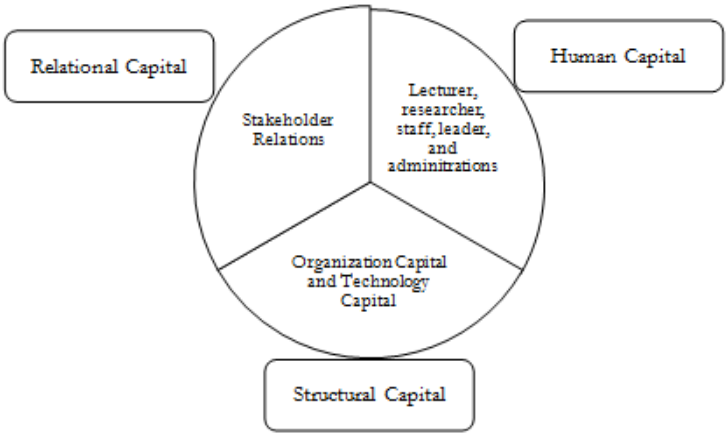

Figure 1. Intellectual Capital Components in Universities (Córcoles, 2013)

Some research on IC at universities emphasized there are significant changes in the world of education. This is the reason universities are perceived as the center of change through research and teaching activities as well as the platform to improve social welfare and support economic progress (Parker, 2011; Secundo, De Beer, Schutte & Passiante, 2017). This means communities expect universities to improve the quality of their lives and this is the reason these institutions are currently depending on both tangible and intangible resources to increase competitiveness and growth. Moreover, the excellence of a university is not only viewed from the aspect of physical development mostly from sustainable academic climate created to ensure competitiveness and social impact for the community.

2.2. Social media and IC disclosure

The important role of disclosure is to provide reliable and timely information to be considered by stakeholders in making decisions concerning their relationships with organizations, even when they do not have the power to influence the flow of information provided (Abeysekera, 2006; Eger, Egerová, Tomczyk & Krystoň, 2021; Kuralová & Margarisová, 2016). IC disclosure is one of the key factors in creating better university governance because the information it contains has a major influence on managers to improve the decision-making process and overcome miscommunication with stakeholders, government, lecturers, students, and parents of students.

IC consists of three important components as previously stated in Figure 1 and the component most expressed in universities has been reported by previous research to be the human capital. Moreover, the tripartite

classifications applied in Low, Samkin and Li (2015) also showed that the most expressed IC component in the university's annual report is internal and human capital while external capital has the highest quality index value based on the research of 90 universities in New Zealand, Australia, and the United Kingdom.

In recent years, studies conducted on IC disclosures through the exclusive use of annual reports have been criticized (Abeysekera, 2006; Miller, Moffett, McAdam & Brennan, 2013; Secundo et al., 2018) and suggestions were made to further investigate other potential channels for disclosure using another approach. This simply means IC disclosure through a company's financial statements is no longer relevant to the development of information technology. Therefore, Sangiorgi and Siboni (2017) conducted a content analysis of 17 reports issued by universities in Italy and found increased attention on the provision of information on integrated IC components. Manes Rossi, Nicolò and Tartaglia Polcini (2018) also applied a new perspective to analyze IC in a university and found the extensive use websites for disclosure, especially regarding human and internal capital, while those related to external capital are limited. The findings further showed that both internationality and online visibility positively influenced the extent of IC disclosure at universities.

The inseparability of IC disclosures and related theories led to the adoption of stakeholder theory which argues that all stakeholders, both internal and external, have the right to access information on the activities and results obtained by an organization (Laplume, Sonpar & Litz, 2008). Universities, as non-profit organizations, are also required to open their information to the public in order to guarantee accountability and supervision. Moreover, ease of access is necessary to ensure openness and easy retrieval of accurate information by outsiders from universities.

Social media has completely changed the way people and professionals communicate, work together, consume, and make things (Aral, Dellarocas & Godes, 2013). Before the proliferation of the Internet, communication between institutions and stakeholders was only one-way and this makes their interaction to be very limited and unilateral (Mokhtar, 2017). According to previous research, organizations can use communication to shape stakeholder interpretations and perceptions in order to build credible relationships which are required to improve their reputation.

Dumay and Guthrie (2017) stated that one way to disclose the reputation of an organizationor IC is to use social media. This is due to the fact that these platforms have brought several changes and choices for organizations to communicate and express their superiority without being limited by time and at a low cost (Lagrosen & Grundén, 2014). The increasing use of social media indicates the reputation of an organization is not only influenced by its activities or information provided but also by the perception of its actions by internet users (Schoen, Gayo-Avello, Takis Metaxas, Mustafaraj, Strohmaier & Gloor, 2013).

Social media such as social networks can help higher education institutions learn more about customers' expectations (Egerová & Nosková, 2019) and this means they need to be proactive in discovering efficient methods to meet and exceed students' recruitment targets. This is necessary because people's perceptions, habits, opinions, and, most significantly, decision-making are all influenced by social media currently. This means the proliferation of social networking sites does not only enhance student enrollment but also provides an opportunity for higher education to excel. Prospective students typically utilize social media to gather information to assist in the process of deciding on a college to attend. This led to the assumption that social media can indeed be used as a tool for IC disclosure and subsequently to achieve better performance (Bujor & Avsilcai, 2016; Lardo et al., 2017). Therefore, this argument which is based on relevant literature was used to formulate the following first hypothesis:

H1. There is a positive correlation between the popularity of social media and changes in the number of students.

The second hypothesis is to examine the role of social media as a voluntary IC disclosure tool on structural capital which is the institutional performance. It was discovered that the information conveyed through social media concerning each higher education institution usually promotes more quality (Eger et al., 2021). This means the number of posts indirectly affects the institutional quality of higher education. Moreover, Rutter, Roper and Lettice (2016)reported that the use of social media had a favorable effect on performance, particularly when a

higher education institution has a substantial number of Facebook likes and Twitter followers. The ability of universities to use social media interactively has a powerful and positive impact on their image.

H2. There is a positive correlation between popularity on social media and an increase in university clusters.

The third hypothesis focuses on the impact of social media usage on the performance of relational capital. It is believed that the popularity of higher education on social media has the ability to promote people to find out more information concerning universities through their official websites. This is in line with the findings of Dolega et al. (2021) that social media can increase an institution's web traffic but does not have a direct impact on company performance. Therefore, an increase in the number of followers of a university on social media platforms is expected to increase the number of visits and reputation of its official website and subsequently the value of the website.

H3. There is a positive correlation between popularity on social media and a university's website value.

2.3. Empirical research

The vital role of the university in the community in generating knowledge and excellence is perceived to be increasingly important, not only as a reliable and competent human capital printer but also in creating innovations and solving social problems. This is associated with the importance of universities in developing networks and increasing company interactions with other members of the National Innovation System as well as their contribution to the enhancement of a company's ability to solve technological problems and develop innovation.

Universities were used to investigate the role of social media in IC disclosure and its subsequent ability to attract prospective students and inform outsiders about institutional performance. This is based on the belief that students are currently using social media to find information related to campus objectives before making their choice, and this is observed to be increasing the competition among both public and private Indonesian universities.

There are striking differences between public and private universities in Indonesia when it comes to attracting prospective students. This is due to the fact that public universities are always the first choice and the government has set a quota for the capacity of students to be admitted. This is different from private universities where there is high competition to attract students considering the fact that they are mostly funded independently by foundations and money paid by students. They compete to have as many prospective students as possible to avoid a deficit in their balance sheets. However, limited human and financial resources have been discovered to be the main reasons it is difficult for self-help or private universities in the country to compete with state universities that have financial support from the State to focus on developing education. This inequality makes it important for private universities to compete despite their limitations.

The data from the Ministry of Technology and University Research (Kemenristek DIKTI) showed that there are approximately 4,675 universities in Indonesia. It is important to note that there are several other high-level education institutions managed by different ministries such as the ministries of religion, defense, domestic affairs, and others. This makes a research on universities in Indonesia unique because there are several different types and a suggestion has been made to merge the large number of them with almost the same education programs.

The rapid competition has led most universities to take concrete steps to promote their institutions such as the use of social media to communicate with stakeholders. Large ones are observed to be maintaining sophisticated social media channels and websites that allow students and stakeholders to stay in touch. Social media networks also create strong relationships among students and this establishes connections that can be transformed into economic benefits for the university. Therefore, the main aim of this research is to determine the relationship between social media networks and university performance and their effectiveness in serving as a tool to disclose ICs.

3. Methodology

3.1. Sample

This research was conducted in 2018 with a focus on public and private higher education institutions in Indonesia. It is fascinating because it contributes significantly to the development of a knowledge-based society (Secundo et al., 2017). The Ministry of Research and Technology oversees the performance measurement system, annual performance plan, and the use of accrual-based accounting in Indonesia's higher education system, and even though this solely applies to public universities, private ones are promoted to follow suit. The government conducts an audit every few years to assess the governance of the education system, institutions, and finances of these institutions but information concerning ICs is always excluded. Therefore, the research sample consists of all Indonesian universities with complete social media networks such as Facebook, Instagram, Twitter, and YouTube as indicated in Table 1. This led to the selection of 553 universities as samples while colleges with incomplete social media networks were purposively exempted because the focus is on investigating the role of each social media platform in the voluntary disclosure of IC. All the research data are secondary and available to the public and obtained from the following sources:

1. The website of the Ministry of Research and Technology was used to obtain information on the number of students and the types of higher education clusters (https://forlap.kemdikbud.go.id)

2. The official social media pages of the colleges were accessed on the same date to avoid differences in the number of viewers and followers.

3. HTTP//:www.statshow.com was also used to collect information on the website value (WebsiteWorth) of all institutions. StatShow is a website analysis tool that gives crucial information and estimated statistics concerning websites by evaluating the value, advertisement profits by market segment and category, and traffic such as users and page views through the application of mathematical and statistical approaches.

Sum of University	3321
Diploma	1207
Reporting less than 60%	364
Incomplete ownership of social media accounts (HEIs only have one or part of the official social media accounts including Facebook, Instagram, Twitter, and YouTube)	1197
Final Samples	553

Table 1. Sample

3.2. Method

This research uses a quantitative approach to identify the relationship between the role of social media and university performance variables. This empirical analysis was based on several theories that showed the ability of IC to ensure better performance (Khalique et al., 2018; Spica, Garleja & Berzina, 2017). According to Cricelli et al. (2018), the human capital performance of a university is represented by the percentage drop or rise in the number of students during the observation year. The impact of social media on the relational capital performance which is proximate to the value of the website (WebsiteWorth) was also assessed. It is important to note that the website's value indicates the increased traffic to the higher education website due to the expected annual advertising revenue. A greater number of visitors was reported to influence an increase in the potential advertising revenue and website value (Beck, Petersen & Venkatesan, 2021). Meanwhile, the structural capital performance was measured by the achievement of the cluster of higher education institutions. In Indonesia, these clusters are usually determined by the government based on the accreditation status, lecturer performance, and student performance. This means the quality of these institutions is indicated by their cluster such that those in cluster 1 have very good institutional performance but those in cluster 5 have very poor institutional

performance. A dummy variable was used in this research to evaluate these clusters and this includes the provision of value 1 for an increase and 0 for a stagnant or reduction in the cluster.

The linear correlation between higher education performance and five social media network platforms was determined based on metrics which include the fans on Facebook, followers on Twitter, number of tweets, followers on Instagram, number of Instagram posts, subscribers on the YouTube channel, and number of viewers as indicated in Table 2. Moreover, all active universities in Indonesia using social media as a means of disclosing IC were used.

Social media	Indicator	Variable name
Facebook	Number of like/Fans	Face_Like
	Followers	Face_Foll
Twitter	Followers	Instag_Foll
	Number of tweets	Instag_Post
Instagram	Followers	Tweet_foll
	Number of posts	Sum_Twet
YouTube Channel	Subscribers	Tube_Subsc
	Viewers	Tube_view

Table 2. Social media popularity matrix

This means secondary data were generally used in this research and they were screened to determine their normality before they were applied to show the correlation between the variable using SPSS.

4. Results

4.1. Descriptive statistics

Table 3 contains descriptive statistics for the variables determined using sample data and included in the proposed model.

	N	Minimum	Maximum	Mean	Std. Deviation
Panel A. State University					
Cluster	49	0.00	1.00	0.1429	0.35
Student	49	-33.24	78.56	3.1188	19.60
WebsiteWorth	49	7665.00	12863695.00	1763272.04	2656326.46
FaceFoll	49	460.00	396801.00	44983.83	75490.99
FaceLike	49	423.00	395814.00	40106.97	70421.72
InstagPost	49	15.00	2266.00	528.42	481.09
InstagFoll	49	144.00	204923.00	25355.28	41328.36
Sum_Twet	49	7.00	32776.00	5275.48	8141.34
Tweet_foll	49	1.00	1144107.00	106412.08	278656.45
Tube_view	49	14.00	8329506.00	263172.63	1189048.37
Tube_Subsc	49	3.00	23102.00	1684.69	3848.42
Panel B. Private University					
Cluster	504	0.00	1.00	0.25	0.43
Student	504	-95.58	869.03	8.14	57.04
Website_Worth	504	6.00	4169395.00	62800.41	245595.73
Face_Foll	504	2.00	247618.00	5477.70	19540.53
Face_Like	504	1.00	247618.00	5023.77	18975.39
Instag_Post	504	1.00	5266.00	321.03	584.29
Instag_Foll	504	1.00	189000.00	2976.38	9788.09
SumTwet	504	1.00	35800.00	1431.81	3977.73
Tweet_foll	504	1.00	857769.00	6973.23	53384.63
Tubeview	504	2.00	2864359.00	20156.67	142712.78
TubeSubsc	504	1.00	118301.00	481.25	5440.14

Table 3. Descriptive analysis

Table 3 shows a descriptive analysis of the dependent and independent variables and a substantial discrepancy was found in the number of public and private institutions. This was indicated by the fact that more than 97 percent of universities in Indonesia are private while the remaining 3 percent are public, thereby, indicating distinctions between their social media accounts. It was also observed that the material and information exhibited on the social media of public universities are more well-structured and this means they are able to effectively manage these platforms. This is the reason they have more followers and watchers on each social media platform compared to private universities.

The average fluctuation in the number of private university students is 8.14% higher than 3.18% recorded for the state university. This is associated with the fact that the state universities are not too aggressive in recruiting new students because their admissions are based on a quota for each school while private universities have no restrictions on the number of new students to be admitted. Furthermore, the minimal score of -33.24 reflects a 33.24% decline in the number of students enrolled in state universities while private universities have -95.58 in the observation year compared to the previous year. This drop is possibly attributed to a drop in new student admissions. A similar trend was observed in the website worth with the average value for state universities found to be 1763272.04 and this is higher than the 62800.41 recorded for private universities. This is associated with the fact that state universities are averagely preferred in Indonesia and this is the reason the number of visits to their official websites is high compared to private schools.

There are also significant differences in the number of followers and viewers on each of the social media managed by the universities. This was indicated by the findings that the average value for public schools was far greater than private ones due to the favorite status inherent in the public schools. The existence of a striking difference in some of these variables provides answers to the fourth hypothesis which states that there are significant differences in voluntary IC disclosure for public and private universities as indicated by the number of followers and viewers of each social media they manage.

4.2. Correlation analysis

The correlation matrix for all variables is presented in Table 4 and it was discovered that the popularity of a university on social media has a positive influence on relational capital (website worth). This is in line with the findings of Lardo et al. (2017) that popularity on social media platforms is positively correlated with relational capital performance. However, this present research did not find a correlation between the popularity of universities on social media and changes in the number of students and institutional performance.

	Face_ Foll	Face_ Like	Instag_ Post	Instag_ Foll	Sum_ Twet	Tweet_ foll	Tube_ view	Tube_ Subsc	Website_ Worth	Cluster	Student
Face_Foll	1										
Face_Like	0.939**	1									
Instag_Post	0.265**	0.244**	1								
Instag_Foll	0.571**	0.567**	0.386**	1							
Sum_Twet	0.363**	0.382**	0.311**	0.386**	1						
Tweet_foll	0.628**	0.665**	0.095*	0.580**	0.412**	1					
Tube_view	0.265**	0.275**	0.033	0.249**	0.133**	0.427**	1				
Tube_Subsc	0.135**	0.083	0.038	0.164**	0.186**	0.088*	0.095*	1			
Website_Worth	0.608**	0.649**	0.124**	0.694**	0.349**	0.560**	0.180**	0.080	1		
Cluster	0.000	0.002	0.012	-0.037	-0.019	0.002	-0.014	0.058	-0.049	1	
Student	-0.018	-0.012	-0.039	-0.023	-0.040	-0.019	-0.018	-0.012	-0.043	0.045	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 4. Correlations Matrix

4.3. Regression analysis

Regression analysis was used to determine the influence of each social media platforms such as Facebook, Instagram, Twitter, and YouTube managed by the university on the dependent variable. However, the data collected were screened to ensure they are normal and passed the best linear unbiased estimate (BLUE) assumption before the two regression analyses were conducted. First, multiple regression analysis was applied to the student dependent variables and website worth as indicated in Table 5. The results showed that the popularity of a university on Facebook, Instagram, Twitter, and YouTube social media networks does not affect changes in the number of students. This means the first hypothesis is not proven.

Another observation was the significant influence of a university's popularity on website worth. This was indicated by the effect of a large number of likes on Facebook accounts, the number of Instagram and Twitter followers, and the number of Instagram and Twitter posts on the worth of a university's website. This is different for the YouTube channel managed by the university. Moreover, Instagram followers were found to have the most dominant impact compared to other social media networks.

Variable Dependent	**Student**		**Website Worth**	
N		552		552
Adjusted R2		0.09		0.487
F statistic		0.199		66.443
Prob.		0.991b		0.000b
Intercept	9.305		151.749	
Independent Variable	***Beta***	***p-Value***	***Beta***	***p-Value***
Face_Foll	-7.54E-02	0.737	-0.001	0.203
Face_Like	0.00E+00	0.666	0.007	0.000
Instag_Post	-3.00E-03	0.527	-0.065	0.007
Instag_Foll	7.25E-03	0.971	0.01	0.000
Sum_Twet	0.00E+00	0.538	0.012	0.000
Tweet_foll	-5.19E-03	0.887	0	0.033
Tube_view	-1.96E-03	0.773	0.04021	0.252
Tube_Subsc	-1.77E-02	0.969	-0.001	0.636

Table 5. Multiple Regression Output

Second, the logistic regression was later applied to determine the effect of university social media on the rise or absence of a university cluster as indicated in Table 6. It is also important to note that a Hosmer-Leme show test was applied to determine the goodness of fit (GoF) of the model produced before this analysis was conducted.

Variables in the Equation									
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**95% C.I.for EXP(B)**	
								Lower	**Upper**
Step 1[a]	Face_Foll	-0.002	0.00	0.177	1	0.674	0.998	0.99	1.007
	Face_Like	0.002	0.01	0.287	1	0.592	1.002	0.993	1.012
	Instag_Post	0.015	0.01	1.581	1	0.209	1.015	0.992	1.039
	Instag_Foll	-0.005	0.00	2.051	1	0.152	0.995	0.988	1.002
	Sum_Twet	-0.006	0.00	1.843	1	0.175	0.994	0.986	1.003
	Tweet_foll	0.001	0.00	1.176	1	0.278	1.001	0.999	1.004
	Tube_view	0.000	0.00	0.458	1	0.499	1.000	0.998	1.001
	Tube_Subsc	0.008	0.01	2.760	1	0.097	1.008	0.998	1.018
	Constant	-1103.000	0.17	42.251	1	0.000	0.332		

a. Variable(s) entered on step 1: Face_Foll, Face_Like, Instag_Post, Instag_Foll, Sum_Twet, Tweet_foll, Tube_view, Tube_Subsc.

Table 6. Output Logistic Regression

Table 6 shows the influence of the popularity of social media as voluntary disclosure of the IC on an increase in the cluster of a university. It was discovered that voluntary disclosures conducted through Facebook, Instagram,

and Twitter did not significantly increase university clusters (structural capital). However, a different result was reported for the YouTube channel where the disclosure of IC information was found to have a significant influence on the increasing university cluster.

5. Discussion, conclusion and limitations

Social media has become one of the new effective alternative communication media for organizations. Its application has been discovered to have the ability to assist the business strategies of companies regarding marketing, human resources, and communication with stakeholders (Liang & Scammon, 2011). It also makes businesses more open to direct interaction with stakeholders, thereby creating a positive relationship and ensuring adequate development of the company and its reputation which is an intangible asset. This reputation is perceived as the result of the trust and loyalty created in the customers and this means a bad reputation usually has a negative effect on the growth of the company and requires time and hard work to restore. However, a good reputation can create customer loyalty and corporate value. This is the reason companies and organizations need to use social media in communicating with their stakeholders to enhance their reputation which is an intangible asset.

The component of intangible assets such as intellectual capital has become the concern of several researchers with some observed to have proven their role in a company. It was discovered that well-managed ICs can increase company profitability (Mehrotra, Malhotra & Pant, 2018), create competitiveness (Khattak & Shah, 2020), improve efficiency (Alhassan & Asare, 2016), and increase stock prices (Dewi, Ratnadi, Rasmini & Yasa, 2021) of a business entity. This means its role is very crucial in the current era of competition but there is no specific form for IC disclosure with several companies observed to be using different formats. For example, voluntary disclosure of ICs in the soccer industry was observed to have a positive impact on firm value (Lardo et al., 2017). It is important to note that the impact of IC is not limited to business entities because the non-profit sector such as universities also feels it directly. Several research showed that IC disclosure in universities can improve the development of science (Castellanos, Rodríguez & Ranguelov, 2004), effectiveness (Pour, Saeedi & Nasab, 2016), transparency (Sánchez & Elena, 2006), and ability to mobilize students (Ulum, Harviana, Zubaidah & Jati, 2019). Moreover, a well-managed IC can have a positive impact through the enhancement of the quality of the institutions in a university.

Data related to the popularity of all Indonesian universities on social media were used to reinforce the existence of empirical evidence on the effectiveness of social media as a means of voluntary disclosure of intellectual capital. The process involved using social media platforms such as Facebook, Instagram, Twitter, and YouTube and their effect on the human, relational, and structural capital performance of these universities. The number of followers, posts, likes, and subscribers on each platform used by each of these universities was examined. Moreover, the data collected were later analyzed using correlation to determine the relationships between the variables.

The results of the descriptive analysis showed there are significant differences between private and public universities in relation to the number of followers and likes on their social media networks. The state-owned were discovered to have a higher number of followers on Facebook, Twitter, Instagram, and YouTube because they are averagely preferred and have high quality. Their status as favorites further increases the tendency of prospective students to follow their social media accounts in the expectation of obtaining comprehensive information on their activities. The linear regression results also showed that the popularity of a university on social media has a significant influence on relational capital. Furthermore, the voluntary disclosure of IC elements on Facebook, Instagram, and Twitter platforms was observed to have increased the relational capital of these universities and the use of YouTube improved the institutional quality which is a structural capital. The subscribers of the university's official YouTube channel were discovered to be responding to the contents displayed and this was further used to improve the quality of the institutions. This means the number of subscribers influences the rise in university clusters. However, the social media platforms did not have any significant influence on the number of university students because the decision of the prospective students to follow these accounts does not necessarily mean they are selecting the school as their study destination. This is

due to the fact that other conditions are usually considered in selecting a university in addition to the popularity on social media.

The findings also showed that voluntary IC disclosure by universities on social media networks has a positive impact on the development of relational capital. This is observed from the Facebook, Instagram, and Twitter social networks used by universities where activists voluntarily provide feedback to develop the relational network. This is in line with the results of Siboni et al. (2013) that the focus of the university in Italy was to develop the relational capital component. Therefore, it was concluded that one of the ways for universities to develop the relational capital component is by managing their social media networks effectively and making disclosures on these platforms consistently. It was also discovered that voluntary disclosure on YouTube significantly improved the quality of structural capital. This is indicated by the positive response provided by the subscribers on the YouTube channel to further improve the institutional quality of universities. However, this research did not find the impact of the popularity of universities on social media on the changing number of university students in Indonesia. This is because the changes in the number of students at public and private universities are mostly associated with the differences in policy factors being applied. This contradicts the findings of Brusca et al. (2019) that social media had a positive impact on the number of university students in Europe.

The practical contribution of this research is that universities need to manage their social media accounts effectively in order to improve their relation and communication with stakeholders. In terms of strategic management, the number of social media users and the limited information media allow universities to display excellence, build reputation, and communicate intellectual capital with outsiders. Therefore, good social media management is considered useful to the development of academic institutions, particularly in terms of increasing relationship capital.

This research found several limitations. First, the focus was only on universities even though there are several types of higher education institutions in Indonesia. Second, emphasis was placed only on the number of followers on each social media in each university. Therefore, it is recommended that the same research be conducted on all types of higher education institutions including diploma, institute, and university levels. Content analysis is also suggested on each social media to show the IC components disclosed. This is expected to be followed by a new test to determine their relationship with the performance of the institution.

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