PTMA Organizational Performance Determinants in Indonesia in Facing the Industrial Revolutionary 4.0 Era

Heri Widodo[1], Duwi Rahayu[2], Fitiyan Izza Noor Abidin[3]
[1,2,3] Accounting Department, Faculty of Business, Law and Social Studies, University of Muhammadiyah Sidoarjo
heriwidodo@umsida.ac.id

ABSTRACT

Introduction - The changing environment and technological developments in recent years have brought the world to a new era called the Industrial Revolution 4.0.
Purpose - The study aims to know IC and Innovation's influence on performance organization at the Muhammadiyah ' Aisyiyah College (PTMA).
Methodology/Approach - The population in the study is the whole Muhammadiyah 'Aisyiyah Higher Education (PTMA) institutions in Indonesia, with as many as 164 PTMA consisting of top universities, colleges, polytechnics, institutes, and academies. The 70 institutions are determined as samples with random technique. The data was analyzed using SPSS (Statistical Package for Social Science).
Findings - Analysis results show that Intellectual Capital against performance organization at the Muhammadiyah ' Aisyiyah College (PTMA). Innovation to performance organization at Muhammadiyah ' Aisyiyah College (PTMA)
Originality/Value/Implication - The study tested the IC readiness and innovation strategy of PTMA.

Keywords: Intellectual Capital, Innovation Strategy, Organizational Performance

INTRODUCTION

The changing environment and technological developments in recent years have brought the world to a new era called the Industrial Revolution 4.0 (Hamid, 2018). Everything has become limitless because of the massive development of the internet and digital technology. The characteristics of the Industrial Revolution era include connectivity and computing power, analytics and intelligence, human-machine interface, and digital- transformation (Appe, 2018; Suwignjo, 2018). Era this emphasizes the digital economy, artificial intelligence, big data, robotics, and so on (Nasir, 2018c; Nasir, 2018b), which will disrupt various human activities, including the fields of science and technology (science and technology) and higher education (Nasir, 2018a).

Higher education institutions are increasingly required to prepare students and graduates for jobs that have not yet been completed, in addition to creating innovative, adaptive, competitive science and technology as the main force of competitiveness (Nasir, 2019). In this condition, the challenges faced by higher education include: (a) High quality of human resources, (b) High capacity of management, (c) Internationalization, and (d) Global competitiveness (Mirfani et al., 2012). Higher education institutions must respond strategically to the challenges of the 4.0 Industrial Revolution (Nasir, 2018a), taking into account the human resources sector that owns it. Paradigm The Tri Dharma of Higher Education must be aligned with the industrial era 4.0 (Nasir, 2018a), so that higher education can increase the relevance, quantity, and quality of human resources, as well as the ability of science and technology and innovation for competitive advantage (Na'im, 2017), while still paying attention to the humanities aspect (Ahmad, 2018b).

The demand for competitive advantage and increased performance requires universities to carry out innovative strategies, which are also important in improving organizational performance (Al-Husseini & Elbeltagi, 2012). The innovation strategy developed and carried out addressed reduced costs and enhanced quality service to stakeholders (Hariyati & Tjahjadi, 2015). Superiority competitiveness and performance improvement could come true if higher education institutions could implement the draft theory Resource View (RBV). Opinion Teece et al. (1997) state that superiority power is competitive depending on the source power possessed entity.

Intellectual Capital (IC) readiness is a helpful asset. The organization creates a score moment and allows the organization to become innovative. IC could increase the performance of an organization through the knowledge, experience, and skills of employees. Intellectual capital is something a company shows value in ideas and abilities and becomes innovative for a longer time. IC readiness is the source of the power possessed by the organization to realize goals that have been determined, and it will increase the organization performance.

Several studies have examined the relationship between IC and organizational performance, including Bontis et al. (2000), who concluded that IC affects an organization's performance. Research results are supported by Hashim et al. (2015), with three independent variables: social capital, technology capital, and spiritual capital. Other researchers, (Örnek & Ayas, 2015; Gogan et al., 2016; Yeganeh et al.,

2014; Basuki & Kusumawardhani , 2012) gave the same result like study Bontis et al. (2000) . Even Gogan et al. (2016) recommend u for study next it is suggested to expand the research area; apply a model that can be carried out in different organizations. However, some results show that partial component IC does not affect performance organization. Hashim et al. (2015) showed that human capital and structural capital by partial IC do not affect organizational performance. Research results supported by Yeganeh et al. (2014) show Customer Capital does not affect the performance of organizations. Other studies, Basuki & Sianipar (2012) and Basuki & Kusumawardhani (2012), also proved the same results.

Researchers have carried out research that shows a connection of IC and innovation strategy like Kianto et al. (2017); Cheng et al. (2010); Santos-Rodrigues et al. (2013); Yitmen, (2011); Mura et al. (2012); Karchegani et al., (2013); Zambon & Monciardini, (2015); Telbani, (2013); Altındağ et al., (2019); Sharabati et al., (2010), who proved that that Intellectual Capital take effect to the innovation strategy.

The connection between the variable by Partial Among Intellectual Capital with innovation strategy give varying results. Subramaniam & Youndt (2005) prove that Structural Capital positively affects innovation ability. However, variable Intellectual Capital is correlated negatively with ability innovation. Other researchers show that IC has a positive influence on innovation ability and leads

Research that focuses on the innovation-performance relationship provides empirical evidence that a high innovation strategy affects increasing company performance (Damanpour & Evan, 1984 ; Damanpour et al., 2007). Research results are supported by results of Pett & Wolff (2009) ; Subramanian & Nilakanta (1996) ; Danneels (2002) ; Azar & Ciabuschi (2017); Correa et al. (2007); Damanpour et al. (2007); and Prajogo (2016). However, a different research result was demonstrated by Darroch (2005). The research proved that innovation is not related to performance. Kowang et al. (2015) also give the same result, that factor innovation is not correlated to performance. Several studies showed inconsistency in the results of research.

The perspective on organizational performance in higher education focuses on performance measurement, not financial aspects. Reliance on financial aspects has attracted much criticism because it is considered misleading (Kaplan & Norton, 1992). However, It should be understood that this does not mean financial performance is unimportant. Aspects of the role of finance in an organization are like blood in the human body (Tjahjadi & Soewarno, 2015). Perspective performance higher education institutions cover performance research, educational performance, and performance services (Asif & Searcy, 2013). Draft this supported by Lukman, et al. (2010), that performance higher education institutions use indicator research, education, and the environment.

The main innovation strategy that became the focus of the study is Gen-RI 4.0 innovation, in addition to an organization's processes, products, and services (Zerenler et al., 2008). Gen-RI 4.0 innovation is a combination of innovation and General Education must mastered by students with Competence Revousi Industry 4.0 (Ahmad, 2018b). Gen-RI 4.0 innovation in research covers two things: new literacy and life-long learning. New literacy combines data, technological, and human literacy (Aoun, 2017; Li & Liu, 2018; Sudlow, 2019; Ahmad, 2018b). Lifelong learning is when the learner carries on to get knowledge/skills or competence new fit with the change in technology/work (Ahmad, 2018b).

The study tested the IC readiness and innovation strategy of PTMA. The consideration set by the PTMA is because, first, these universities have normative-conceptual laws, identities, or characteristics. The characteristic of Muhammadiyah is the Islamic movement, da'wah and tajdid movement (Fakhrudin, 1985). Muhammadiyah's relationship with the world of education is special. Muhammadiyah is not just a movement providing educational services but a prominent and deep-rooted movement, especially in education. Second, there is a kind of contradiction that exists in PTMA. The number of PTMA educational institutions is indeed large. However, on the other hand, the accreditation institutions that serve as a reference for evaluating higher education management performance still lack results. Referring to these conditions, researchers tried to conduct an empirical study regarding PTMA's performance in facing challenges in the Industrial Revolution 4.0 era.

This study accommodates the study by Shisia et al. (2014), who recommends future research _ must focus on tools; other analyses and studies must involve another institution—second, extending the previous research conducted by Gogan et al. (2016), who suggested for study to expand the research area and apply a model that can be done on different organizations. Third, this research was conducted on Muhammadiyah Charities in the field of education, which was previously done often by the company. Theoretically, this research contributes to Resource Based Theory (RBT).

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Resource-Based View Theory

Barney et al., (2001) stated that the r*esources Based View* looks at entity as gathering source power and capabilities entity. Difference source power and ability entity with entity competitor will give profit competitive for entity. Assumption *Resources Based View* is how an entity could compete with another entity for superiority in managing

source the power it has by ability entity. The *Resources Base View* theory states that in order to give optimal results, the source power must fulfill the following criteria: (1) *valuable*, which means source power will Become valuable if it could give a strategic score on the entity, (2) rare it means source power must have a uniqueness in a difficult sense for found among competitors and become potency entity, (3) *imperfect imitability* it means source power could becomes source superiority sustainable competitive , only if entity that is not hold source power this no can get they or no could copy source power the , (4) *non-substitution* it means source power no could substituted by source power alternative other . Labih carry on results study Grant (1991) say that according to *Resources Based Theory, Above-Average Returns (AAR)* for something entity is largely determined by the characteristics within entity. Theory this focus to development or acquisition valuable resources and capabilities, which are difficult or no possible imitated by competitors .

Intellectual Capital

Brooks (1997) define intellectual *capital* operational as ingredient formalized, acquired, and managed intellectual property for produce valuable assets high. *Intellectual* capital contains different capitals rooted in employees, routines organization, rights riches intellectual and relationship with customers, suppliers, distributors, and partners work (Choo & Bontis, 2002) . Bontis (1998) disclose that *intellectual capital is* difficult understood, but very discovered and exploited, p this will provide to the organization a source power new for compete and win . Creation value and wealth from management *intellectual capital* stated by Stewart (1997) that *intellectual capital* is intellectual material – knowledge, information, rights intellectual, experiential – which can used for create wealth A collaborative power brain and packaging useful knowledge. _ *Intellectual capital* could defined as amount from what do three _ _ element main organization *(human capital, structural capital, and customer capital)* related with knowledge and technology that can give score more for company in the form of superiority compete organization (Sveiby, 1998 ; Bontis, 2001).

a. Human Capital (HC)

Human Capital specifically presents the knowledge mastered by individuals that is embedded in the company's collective ability to provide the best solutions from employees (Bontis, 1999; Bontis, 2001). Moon & Kym (2006) included employees capability, employees satisfaction, and employees sustainability as the examples of human capital in. Chen (2004) add that employees creativity as important part in human capital.

b. Customers Capital (RC)

Customer Capital (CC) or Relational Capital (RC), discuss about connection organization with party outside like loyalty customers, *goodwill* , supplier relations and relationships with Public (Moon & Kym, 2006) . Temporary that CIMA (2005) define *relational capital* as whole source related power with connection external company with customers, suppliers, or partners in research and development . According to Bontis (1998), theme tree from *relational capital* or *customer capital* is knowledge about *channel* marketing and relations with customer . *Customer capital* also presents potential thing _ from acquired organization _ from *intangible assets* that have been passed. Examples include _ in dimensions *customer capital* is brand, customer, loyalty customer , name company , *order backlogs*, channel distribution , collaboration business , agreement licenses , profitable contracts , agreements _ franchise , capability base marketing , and market intensity (Chen, 2004) , and relationships with Public (Moon & Kym, 2006) . Another example is given by Marr et al. (2008) that which includes in *relational capital* or *customer capital* is formal relationship, relationship information , social networks , partnerships , alliances , brand image , trust , reputation company , loyalty customer engagement _ customer , agreement license , agreement distribution , and *joint ventures.*

c. Structural Capital (SC)

Structural capital is all non - human knowledge in the company like device hard, device software, database, structure organizations, patents, trademarks , and everything something about capability supportive organization _ productivity employee (Bontis, 2001) . Temporary that CIMA (2005) defines *structural capital* as the knowledge that is within company. That thing consist from routine organization, procedures, systems, culture, and databases. *Structural capital* can also be said or interpreted with *Organizational Capital (OC). Organizational capital* including capability developed organization _ for Fulfill market needs such as case of patents. *Structural capital is* also related with effort build mechanism and structure organizations that can help employee in effort for optimizing performance intellectual and performance business by whole. A organization with a strong structural model will have supportive and enabling culture _ individual for try many things, also for, fail, learn and for try again (Bontis, 1998) .

Innovation Strategy

Change environment and development technology motivate organization for adapt function external and internal, so that capable adapt and improve performance, including as action precautions taken _ for influence environment (Damanpour, 1991) . one _ method organization could secure herself from surprises change environment this and improve productivity by balanced is through innovation (Shisia et al., 2014). Innovate is desire company for get enhancement performance business and improvement power competitive (Fagerberg et al., 2004). Innovation is method organization maintain superiority competitiveness and success will promote growth _ customer, profit as well as loyalty customer / consumer. Innovation is part from strategy implementation and is condition direct for certain strategies

(Drucker, 2015) . because of that, innovation working as a medium for create business new with mechanism great control _ normal , addition value , and subtraction risk . Application innovation in general meant for contribute to performance or effectiveness organization adopter (Subramanian & Nilakanta, 1996). Temporary Damanpour & Schneider (2009) explain that adoption innovation is means going to change organization. Innovation strategy consist on dimensions, namely 1) orientation leadership, 2) process innovation, 3) innovation product, and 4) implementation innovation (Porter, 1990; Damanpour, 1991).

Organizational performance

Performance measurement is defined as a quantification process with efficiency and effectiveness measures. This process is considered an early warning and diagnostic management control system to help managers track the performance of organizational activities. Measuring role performance as if it were supplier information can be considered the first step to establishing an effective management control mechanism. The efficiency and effectiveness of the measurement process give rise to various views. According to Carmona & Sieh (2004), efficiency is generally described as the ratio of output to input related to attributes such as the amount of output and so on. Effectiveness describes the relationship between outcome effects and output. Neely (1998) describes the effectiveness of action organization and how far the customer has fulfilled the claim. Measurement effectiveness and efficiency varied following the context and purpose of the organization. If efficiency is only considered as a measurement of output versus product quality in a manufacturing company, then what is possible is only measuring the ratio of defective products to the number that meets requirements. Efficiency should result from multidimensional efforts to achieve organizational goals at the lowest cost.

Perspectives on organizational performance often emphasize the profit-oriented company context, thus emphasizing the financial perspective. Reliance on financial and accounting models in performance measurement has attracted a lot of criticism because it is considered misleading to improve and unable to adapt to the current environment. (Kaplan & Norton, 1992).

Many research about performance in college high, among others, carried out by Cave et al. (1988) and Ball & Wilkinson (1994) , who used Key Performance Index to link research and teaching. Badri & Abdulla (2004) explain that higher education institutions could use AHP for determine performance college high. Lukman, et al. (2010) disclose university ranking can determined based on performance with use indicator research, education, and the environment . Perspective performance higher education institutions more which includes about performance research, educational performance and performance service proposed by Asif & Searcy (2013) .

HYPOTHESIS DEVELOPMENT

Innovation Strategy has a positive effect on Organizational Performance.

Strategy is a system or method of unifying the direction, mission and activities of work units. In the opposite perspective, strategy is defined as a combination of designs into one unit that is interconnected with the strengths of the work unit, the challenges and opportunities faced. (Witjaksono and Amir, 2022). An innovation strategy could help the organization in order to identify challenges and opportunities for development and progress organization. Innovation strategy is a part of management, which contains several internal and external activities to use growth ability innovation business from a work unit.

Innovation strategy can boost performance because it includes four dimensions, namely leadership orientation, process innovation, product innovation, and innovation implementation. These four things are important aspects that can add value to a company's competitiveness. Every organization is certainly required to innovate in order to be able to provide good performance and be able to adapt to changes in the competitive external environment (Fahmila, 2018).

Study by (Fahmila , 2018) stated that that there is significant influence of innovation strategy to performance. This value indicates that innovation strategy make a significant effect on operational performance. Besides, (Perwiranegara, 2015) stated that company performance is strongly influenced by the innovations (processes and products) that are carried out.

IC readiness positively affect Organizational Performance

Intellectual Capital readiness is one of the asset strategic important in economy based on knowledge. Company reports source power knowledge that has been they combine Becomes ability that makes company capable To do something (Winata, 2008). Thus, companies need to take strategic steps to face competition in the market. On the basis of the sustainability and capacity of an organization based on intellectual property (IC), ultimately all assets controlled by the organization will be able to create added value (Yuliato, 2020).

Organizational performance is thought to be influenced by intellectual capital readiness through superior organizational knowledge and management resources so that organizations can have a competitive advantage that can influence organizational performance (Dariati et al, 2020). Intellectual capital is a valuable source of power and ability to act on knowledge. IC readiness is the basis for actors' efforts to improve performance efforts because managing intellectual capital is the main thing for developing an organization in the future (Akuba and Hasmirati, 2021).

The results of research conducted (Dariati et al, 2020) state that the IC variable has a significant influence on company performance. This is in line with research conducted by (Dadashinasab et al, 2015) and (Akuba and Hasmirati, 2021, which states that performance can be influenced by intellectual capital.

TYPES OF RESEARCH AND DETERMINATION OF THE RESEARCH POPULATION (OBJECT)

This study applied quantitative approach. The population of this study this is PTMA institusions. Unit of analysis in study this is PTMA leaders in Indonesia. PTMA leadership considerations as the unit of analysis are:

1. considered as a person in charge answer to performance the organization,
2. understand and know intensity the competition faced by PTMA,
3. understand and know about ability and readiness on source power human being.

The measurement indicators consist of performance research, performance education, performance service (university, profession and community), and performance finance, which adopts research developed by Asif & Searcy (2013); Wang (2010) ; and Aswani (2013) . *Intellectual Capital* Readiness Variable with measurement indicators *Human Capital, Structural Capital, and Customer Capital*, referring to the research of Córcoles et al. (2013) ; and Assety & Suhardianto (2016) . Innovation Strategy Variables with i indicator measurement that adopts in research developed by Aswani (2013) ; Al-Husseini (2014) ; Jakovljevic (2018) ; Directorate of Innovation Systems (2018) ; and (Ahmad, 2018a) .

In this study, the researcher used SPSS (Statistical *Package for Social Science)* assistance as a tool to analyze the data. Analysis was started with statistics descriptive, and Assumption Test Classic. Assumption test classic this consist from Multicollinearity Test, Normality Test, Heteroscedasticity Test , and Autocorrelation Test . Furthermore, the data collected conducted analysis regression multiples and hypothesis testing in the form of coefficient determination (R^2) , Coefficient correlation (R), and t test.

DATA ANALYSIS AND RESULTS

Validity Test

Table 1. Validity Test

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
X1.1	344.36	621.769	. 4 31	.800
X1.2	342.33	588,861	.583	.787
X1.3	342.24	599,781	.326	.791
X1.4	344.30	627,054	. 6 14	.802
X1.5	342.01	599,551	.435	.790
X1.6	342.01	597,058	.538	.789
X1.7	342.10	594,062	.587	.788
X1.8	342.07	598,879	.431	.790
X1.9	342.16	595,120	.526	.789
X1.10	342.37	590.353	.406	.788
X1.11	342.79	587,243	.473	.787
X1.12	342.54	587,498	.538	.786
X1.13	342.56	585,236	.587	.785
X1.14	342.46	593.05	.561	.788
X1.15	342.44	590,888	.545	.787
X1.16	342.36	594,146	.542	.788
X1.17	342.46	595,208	.453	.789
X1.18	342.31	593,755	.501	.788
X1.19	342.11	595,639	.557	.789
X1	269.19	386,211	.645	.789
Y1.1	342.14	592,588	.567	.788
Y1.2	342.03	597,419	.492	.790
Y1.3	342.19	597,371	.471	.790
Y1.4	342.26	598.165	.481	.790
Y1.5	342.31	596,306	.495	.789
Y1.6	342.19	598,298	.397	.790
Y1.7	342.20	600,713	.389	.791
Y1.8	342.13	598,722	.463	.790
Y1	311.24	515,984	.543	.775
X2.1	342.83	601.883	. 6 69	.792
X2.2	342.16	597,902	.471	.790
X2.3	342.21	596,635	.563	.789
X2.4	342.06	601.301	. 5 92	.791
X2.5	342.86	601,863	. 5 44	.793
X2.6	343.17	593,333	.3 6 0	.789
X2.7	343.67	584,919	.446	.786
X2.8	343.50	589,558	.316	.789
X2.9	342.61	604.153	. 6 40	.793
X2.10	343.27	590,490	.336	.789
X2.11	343.21	589,736	.343	.788
X2.12	343.07	592,444	.352	.789
X2.13	343.41	583,174	.432	.786
X2.14	342.16	604.685	. 7 38	.793
X2.15	343.13	609.302	. 7 06	.796
X2.16	341.74	606,860	. 8 73	.793
X2	286.07	427,198	.463	.814

Source: Output results of SPSS version 25 (processed)

On result testing validity on state that all statement items variable (X) and variable (Y) questionnaires have score coefficient correlation above 0.30 (> 0.30) , so that of variable (X) and variable (Y) overall could declared **valid** .

Reliability Test

From the data in table 1, it can be seen there is score coefficient reliability cronbach alpha on variable IC (X1), variable Innovation (X2) and Organizational Performance (Y) this that the questionnaire instrument used said have reliability because have high reliable value > 0, 7.

Analysis of Multiple Linear Regression

Table 2. Analysis Test Results Multiple Linear Regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	**14.232**	4,536		3.138	.003
	X1	**2.269 _**	.050	.555	5.414	.000
	X2	**3.005 _**	.049	.010	0.098 _	. 00 2

Source : Out Put Results of SPSS version 25 (processed data)

The table about results SPSS processing , then could made equality regression multiple as following :

$$\mathbf{Y = 14.232 + 2{,}269}\ X_{1\_} \mathbf{+ 3{,}005}\ X_{2\_}$$

Equality multiple linear regression on could interpreted that:

1. constant is of 14,232 . This thing means if no influenced IC and Innovation so the magnitude of Organizational Performance of 14,232 .
2. Coefficient variable IC amounted to 2,269. This thing means if occur enhancement IC as big as one unit then Organizational Performance also experiences enhancement of 2,269 with assumption that the other factor is constant or fixed .
3. Coefficient variable Innovation of 3,005. This thing means if occur enhancement Innovation as big as one unit then Organizational Performance also experiences enhancement of 3,005 with assumption that the other factor is constant or fixed .

Coefficient Test Determination (R^2)

SPSS calculation results regarding the analysis addressed by the table below:

Table 3. R Square Test Results

Source: Results of SPSS version 2 5 (processed)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.557 [a]	.310	.289	2.838	9.400 _

a. Predictors: (Constant), X2, X1

b. Dependent Variable: Y1

In the table above is known that score The correlation coefficient R is 0.557 or close to 1. This means that there is a strong correlation between the independent variables which include IC and Innovation and the dependent variable, namely Organizational Performance.

Meanwhile, for the analysis of multiples of determination, the table above shows the percentage of influence of the independent variable on the dependent variable which is responded to by the R square value of 0.310 so that the multiple of the coefficient of determination is 0.310 x 100% = 31.0% and the remainder is 100% - 31% = 69% . This means that the rise and fall of the dependent variable, namely Organizational Performance, is influenced by the independent variables, namely IC and Innovation, by 31%. Meanwhile, the remaining 69% was influenced by other variables not examined in this research.

T test (Partial test)

Table 4. Partial Test Results (t-Test)

Model		Unstandardized Coefficients		Standardized Coefficients	**t**	**Sig.**
		B	Std. Error	Beta		
1	(Constant)	14.232	4,536		**3.138**	**.003**
	X1	2.269 _	.050	.555	**5.414**	**.000**
	X2	3.005 _	.049	.010	**0.098 _**	**. 00 2**

Source: Out Put Results of SPSS version 2 5 (processed)

1. Test used multiple linear regression on the hypothesis Influential IC Against Organizational Performance show score significance as big as 0, 00 0 , more small from 0.05 , so that **H 1** which states that variable Influential IC Against Organizational Performance **accepted .**
2. Test used regression multiple linear on the hypothesis innovation Take effect Against Organizational Performance show score significance as big as 0, 00 2 , more small from 0.05 , so that **H2** which stated that variable innovation affect organizational performance **accepted .**

Innovation Strategy take effect positive on Organizational Performance

Innovation strategies can influence organizational performance because innovation strategies have innovation business goals. Using effort methods and direction from business methods and innovation strategies will help organizations identify challenges and opportunities for new developments and organizational progress (Witjaksono and Amir, 2022). Every organization is certainly required to innovate in order to be able to provide good performance and be able to adapt to changes in the external competitive environment. Innovation is a method for continuing to build and develop an organization which can be achieved through the introduction of new technology, new applications in

forming products and services, developing new markets and introducing new organizational forms, combining various aspects of innovation which in turn form an innovation arena (Kusumawati, 2010). An innovation strategy is certainly needed to develop new things so that the organization can always keep up with developments. If the innovation strategy is implemented well, it is hoped that it will provide maximum results, namely increasing business performance (Yasa and Sukaatmaja , 2017).

IC readiness positively affect Organizational Performance

IC readiness is important for financial organizational performance because it has a close relationship with future organizational performance. The higher the IC value of an organization, the higher the future performance of the organization. IC plays an important role in improving organizational performance because IC has a positive influence on the performance of finance companies. IC is a scalable power source. To increase competitive advantage, IC will contribute to organizational performance (Murti, 2010).

Intellectual capital presented in financial statements results from the increasing difference between market value and book value. Then, if the market is efficient, investors will give high value to organizations that have greater IC. Intellectual capital and company performance are operational cost ratios that describe the level of bank efficiency including its ability to manage it. If an organization can utilize and manage the potential of its members well, then this will increase organizational productivity. If employee productivity increases, then organizational performance will also increase (Diarti et al , 2020). As awareness of intellectual capital increases so that organizations gain added value and competitive advantage to compete, organizations need a method of disclosing IC. Intellectual capital is used to measure assets that are not formed based on the company's ability to manage capital effectively correctly, have superior sources of strength, and the existence of an appropriate company structure that will provide added benefit value for the company so that it can face global competition (Silviani , 2021).

CONCLUSION

The research results show that IC influences organizational performance, while innovation influences organizational performance. It is hoped that the results of this research can contribute to the development and implementation of PTMA leadership policies and strategies, as well as provide information for the Higher Education Council of PP Muhammadiyah, regarding higher education management in facing the era of the Industrial Revolution 4.0. Policies regarding New Literacy (Data Literacy, Technology Literacy and Human Literacy) are very necessary in the future era. Through this empirical study, it still provides an opportunity for future researchers to find indicator instruments for organizational performance. Apart from that, certain research respondents, for example in universities based on cluster determination, accreditation scores from PTMA, use of mixed methods in universities, or others.

The limitation in this research is that respondents' understanding of answering statements is not necessarily consistent, although in this research it has been minimized by using the Common Method Bias (CMB) analysis test; and research subjects are minimal in responding to research through this questionnaire.

REFERENCES

Abdillah, W., & Hartono, J. (2015). *Partial Least Square (PLS) Alternatif Structural Equation Modeling (SEM) Dalam Penelitian Bisnis* (1 Ed.). ANDI.

Ahmad, I. (2018a, Januari 17). *Proses Pembelajaran Digital Dalam Era Revolusi Industri 4.0*. Direktur Jenderal Pembelajaran Dan Kemahasiswaan KEMENTERIAN RISET, TEKNOLOGI, DAN PENDIDIKAN TINGGI, Medan.

Ahmad, I. (2018b, Februari 16). *Pendidikantinggi "4.0" Yang Mampu Meningkatkan Daya Saing Bangsa*. Direktur Jenderal Pembelajaran Dan Kemahasiswaan KEMENTERIAN RISET, TEKNOLOGI, DAN PENDIDIKAN TINGGI, Makasar. Http://Lib.Um.Ac.Id/Wp-Content/Uploads/2018/03/Presentasi-Intan-Ahmad.Pdf

Al-Husseini, S. J., & Elbeltagi, I. (2012). The Impact Of Leadership Style On Innovation In Iraq'S Higher Education Institutions. *Proceedings Of The 4th European Conference On On Intellectual Capital.*

Al-Husseini, S. J. H. (2014). *The Impact Of Leadership Style On Innovation In Iraq's Higher Education Institutions: The Role Of Knowledge Sharing*. University Of Plymouth.

Altındağ, Ö., Fidanbaş, Ö., & İrdan, G. (2019). The Impact Of Intellectual Capital On Innovation: A Literature Study. *Business Management Dynamics Vol.8, No.12, Jun 2019, Pp.01-12*, *8*(12), 01–12.

Aoun, J. E. (2017). *Robot-Proof Higher Education In The Age Of Artificial Intelligence*. The MIT Press.

Appe, J. (2018). *Peran Perguruan Tinggi Dan Lembaga Litbang Dalam Menyongsong Pengembangan Inovasi Menuju Era Industri 4.0*.

A.R. Fakhrudin. (1985). *Muhammadiyah Menuju Masa Mendatang, Yogyakarta*. Persatuan.

Asif, M., & Searcy, C. (2013). *A Composite Index For Measuring Performance In Higher Education Institutions*. 19.

Assety, N. A., & Suhardianto, N. (2016). *Item Pengungkapan Intellectual Capital Disclosure* [Data Set]. Unpublished. Https://Doi.Org/10.13140/RG.2.2.25113.83049

Aswani, S. (2013). *Strategic Innovation And Performance Of Public Universities In Kenya*.

Azar, G., & Ciabuschi, F. (2017). Organizational Innovation, Technological Innovation, And Export Performance: The Effects Of Innovation Radicalness And Extensiveness. *International Business Review*, *26*, 324–336.

Badri, M. A., & Abdulla, M. H. (2004). Awards Of Excellence In Institutions Of Higher Education: An AHP Approach. *International Journal Of Educational Management*,

18(4), 224–242. Https://Doi.Org/10.1108/09513540410538813

Ball, R., & Wilkinson, R. (1994). The Use And Abuse Of Performance Indicators In UK Higher Education. *Higher Education*, *27*(4), 417–427. Https://Doi.Org/10.1007/BF01384902

Barney, J., Wright, M., & Ketchen, D. J. (2001). The Resource-Based View Of The Firm: Ten Years After 1991. *Journal Of Management*, *27*(6), 625–641. Https://Doi.Org/10.1177/014920630102700601

Basuki, B., & Sianipar, M. (2012). INTELLECTUAL CAPITAL AND ITS IMPACT ON FINANCIAL PROFITABILITY AND INVESTORS' CAPITAL GAIN ON SHARES. *Journal Of Economics, Business, And Accountancy | Ventura*, *15*(1), 101. Https://Doi.Org/10.14414/Jebav.V15i1.63

Basuki, & Kusumawardhani, T. (2012). Intellectual Capital, Financial Profitability, And Productivity: An Exploratory Study Of The Indonesian Pharmaceutical Industry. *Asian Journal Of Business And Accounting*, *5*.

Bontis, N. (1998). Intellectual Capital: An Exploratory Study That Develops Measures And Models. *Management Decision*, *36*(2), 63–76. Https://Doi.Org/10.1108/00251749810204142

Bontis, N. (1999). Managing Organizational Knowledge By Diagnosing Intellectual Capital: Framing And Advancing The State Of The Field. *International Journal Of Technology Management*, *18*. Https://Doi.Org/10.1504/IJTM.1999.002780

Bontis, N. (2001). Assessing Knowledge Assets: A Review Of The Models Used To Measure Intellectual Capital. *International Journal Of Management Reviews*, *3*, 41–60. Https://Doi.Org/10.1111/1468-2370.00053

Bontis, N., Chua Chong Keow, W., & Richardson, S. (2000). Intellectual Capital And Business Performance In Malaysian Industries. *Journal Of Intellectual Capital*, *1*(1), 85–100. Https://Doi.Org/10.1108/14691930010324188

Brooking, A. (1997). *Intellectual Capital*. London: International Thomson Business Press.

Cabrita, M. D. R., & Bontis, N. (2008). Intellectual Capital And Business Performance In The Portuguese Banking Industry. *International Journal Of Technology Management*, *43*(1/2/3), 212. Https://Doi.Org/10.1504/IJTM.2008.019416

Carmona, M., & Sieh, L. (2004). *Measuring Quality In Planning: Managing The Performance Process*. Publisher: Taylor & Francis, Inc.

Cave, M., Hanney, S., Kogan, M., & Trevett, G. (1988). *The Use Of Performative Indicators In Higher Education. A Critical Analysis Of Developing Practice.* Jessica Kingsley, London.

Chen, M.-C. (2004). Intellectual Capital And Competitive Advantages: The Case Of TTY Biopharm Company. *Journal Of Business Chemistry ; Vol 1(2004), Issue 1, P. 14-20 ISSN 1613-9615, ESSN 1613-9623*.

Cheng, M.-Y., Lin, J.-Y., Hsiao, T.-Y., & Lin, T. W. (2010). Invested Resource, Competitive Intellectual Capital, And Corporate Performance. *Journal Of Intellectual Capital*, *11*(4), 433–450. Https://Doi.Org/10.1108/14691931011085623

Choo, C. W., & Bontis, N. (2002). *Knowledge, Intellectual Capital, And Strategy. Themes And Tensions. The Strategis Management Of Intellectual Capital And Organizatioanl Knowledge.* Oxford University Press.

CIMA. (2005). *Understanding Corporate Value: Managing And Reporting Intellectual Capital.* Cranfield University. School Of Management.

Córcoles, Y. R., Ponce, Á. T., & González, A. B. (2013). Intellectual Capital Report For Universities. *World Academy Of Science, Engineering And Technology, International Journal Of Social, Behavioral, Educational, Economic, Business And Industrial Engineering*, *7*, 1423–1429.

Correa, J. A. A.́N-, Mora, V. J. G.́A-, & Pozo, E. C.́N-. (2007). Leadership And Organizational Learning's Role On Innovation And Performance: Lessons From Spain. *Industrial Marketing Management*, *36*, 349–359.

Damanpour, F. (1991). Organizational Innovation: A Meta-Analysis Of Effects Of Determinants And Moderators. *Academy Of Management Journal*, *34*(3), 555–590. Https://Doi.Org/10.5465/256406

Damanpour, F., & Evan, W. M. (1984). Organizational Innovation And Performance: The Problem Of "Organizational Lag." *Administrative Science Quarterly*, *29*(3), 392–409. JSTOR. Https://Doi.Org/10.2307/2393031

Damanpour, F., & Schneider, M. (2009). Characteristics Of Innovation And Innovation Adoption In Public Organizations: Assessing The Role Of Managers. *Journal Of Public Administration Research And Theory*, *19*(3), 495–522. Https://Doi.Org/10.1093/Jopart/Mun021

Damanpour, F., Szabat, K., & Evan, W. (2007). 'The Relationship Between Types Of Innovation And Organizational Performance.' *Journal Of Management Studies*, *26*, 587–602. Https://Doi.Org/10.1111/J.1467-6486.1989.Tb00746.X

Danneels, E. (2002). The Dynamics Of Product Innovation An Firm Competences. *Strategic Management Journal*, *23*(12), 1095–1121. Https://Doi.Org/10.1002/Smj.275

Darroch, J. (2005). Knowledge Management, Innovation And Firm Performance. *Journal Of Knowledge Management*, *9*, 101–115. Https://Doi.Org/10.1108/13673270510602809

Direktorat Sistem Inovasi. (2018). *Panduan Umum Peyelenggaraan Manajemen Inovasi Perguruan Tinggi*. Direktorat Sistem Inovasi, Direktorat Jenderal Penguatan Inovasi Kementerian Riset, Teknologi, Dan Pendidikan Tinggi.

Drucker, P. F. (2015). *Innovation And Entrepreneurship*. Routledge Classic. London.

Fagerberg, J., Mowery, D. C., & Nelson, R. R. (2004). *The Oxford Handbook Of Innovation*. Oxford University Press, USA.

Gogan, L. M., Artene, A., Sarca, I., & Draghici, A. (2016). The Impact Of Intellectual Capital On Organizational Performance. *Procedia - Social And Behavioral Sciences*, *221*, 194–202. Https://Doi.Org/10.1016/J.Sbspro.2016.05.106

Grant, R. M. (1991). The Resource-Based Theory Of Competitive Advantage: Implications For Strategy Formulation. *California Management Review*, *33*(3), 114–135.

Hamid, E. S. (2018). *Peluang Dan Tantangan Perguruan Tinggi Pada Era Revolusi Industri 4.0*.

Hariyati, H., & Tjahjadi, B. (2015). The Relation Between Sustainable Innovation Strategy And Financial Performance Mediated By Environmental Performance. *Issues In Social And Environmental Accounting*, *9*(2), 146. Https://Doi.Org/10.22164/Isea.V9i2.103

Hashim, M. J., Osman, I., & Alhabshi, S. M. (2015). Effect Of Intellectual Capital On Organizational Performance. *Procedia - Social And Behavioral Sciences*, *211*, 207–214. Https://Doi.Org/10.1016/J.Sbspro.2015.11.085

Jakovljevic, M. (2018). A Model For Innovation In Higher Education. *South African Journal Of Higher Education*, *32*, 109–131.

Juneman. (2013). Common Method Variance & Bias Dalam Penelitian Psikologis. *Jurnal Pengukuran Psikologi Dan Pendidikan Indonesia*, *2*(5), 364–381.

Kaplan, R. S., & Norton, D. (1992). *The Balanced Scorecard: Measures That Drive Performance*. Harvard Business Review 70.

Karchegani, M. R., Sofian, S., & Amin, S. (2013). The Relationship Between Intellectual Capital And Innovation. *International Journal Of Business And Management Studies*, *2*, 561–581.

Kianto, A., Sáenz, J., & Aramburu, N. (2017). Knowledge-Based Human Resource Management Practices, Intellectual Capital And Innovation. *Journal Of Business Research*, *81*, 11–20. Https://Doi.Org/10.1016/J.Jbusres.2017.07.018

Kowang, T. O., Long, C. S., & Rasli, A. B. M. (2015). Innovation Management And Performance Framework For Research University In Malaysia. *International Education Studies*, *8*, 32–45.

Li, S., & Liu, B. (2018). Joseph E. Aoun: Robot-Proof: Higher Education In The Age Of Artificial Intelligence: MIT Press, 2017. Kindle Edition. *Higher Education*, *77*. Https://Doi.Org/10.1007/S10734-018-0289-3

Lukman, R, Krajnc, D, & Glavic, P. (2010). University Ranking Using Research, Educational And Environmental Indicators. *Journal Of Cleaner Production*, *Vol. 18*(No. 7), 619-628.

Marr, B., American Institute Of Certified Public Accountants, Chartered Institute Of Management Accountants, & Society Of Management Accountants Of Canada. (2008). *Impacting Future Value: How To Manage Your Intellectual Capital*. CMA Canada.

Mirfani, A. M., Sutarsih, C., & Rosalin, E. (2012). Strategi Dan Hasil Kompetisi Perguruan Tinggi. *Jurnal Administrasi Pendidikan*, *XIV*(1).

Moon, Y., & Kym, H. (2006). A Model For The Value Of Intellectual Capital. *Canadian Journal Of Administrative Sciences / Revue Canadienne Des Sciences De l'Administration*, *23*, 253–269. Https://Doi.Org/10.1111/J.1936-4490.2006.Tb00630.X

Mura, M., Lettieri, E., Spiller, N., & Radaelli, G. (2012). Intellectual Capital And Innovative Work Behaviour: Opening The Black Box. *International Journal Of Engineering Business Management*, *4*. Https://Doi.Org/10.5772/54976

Na'im, A. (2017). *Menghadapi Perekonomian Baru*. Kementerian Riset Teknologi Dan Pendidikan Tinggi.

Nasir, M. (2018a). *Pengembangan Iptek Dan Pendidikan Tinggi Di Era Revolusi Industri 4.0*. Kementerian Riset, Teknologi Dan Pendidikan Tinggi. Http://Www.Kopertis6.Or.Id/Component/Content/Article/49/4107-Pengembangan-Iptek-Dan-Pendidikan-Tinggi-Di-Era-Revolusi-Industri-40.Html

Nasir, M. (2018b). *Menristekdikti: Tak Ada Dikotomi Dalam Rangka Mendukung Peningkatan Daya Saing Bangsa Era Industri 4.0*. Biro Kerja Sama Dan Komunikasi Publik Kemenristekdikti. Https://Www.Ristekbrin.Go.Id/Menristekdikti-Tak-Ada-Dikotomi-Dalam-Rangka-Mendukung-Peningkatan-Daya-Saing-Bangsa-Era-Industri-4-0/

Nasir, M. (2018c). *Menristekdikti: Perlu Reorientasi Kurikulum Untuk Meningkatkan Inovasi Perguruan Tinggi Di Era Revolusi Industri 4.0*. Biro Kerjasama Dan Komunikasi Publik Kemenristekdikti. Https://Www.Ristekbrin.Go.Id/Menristekdikti-Perlu-Reorientasi-Kurikulum-Untuk-Meningkatkan-Inovasi-Perguruan-Tinggi-Di-Era-Revolusi-Industri-4-0/

Nasir, M. (2019). *Menristekdikti Minta Perguruan Tinggi Siap Akan Kemunculan Profesi Baru Di Era Revolusi Industri 4.0*. Biro Kerja Sama Dan Komunikasi Publik Kemenristekdikti. Https://Www.Ristekbrin.Go.Id/Menristekdikti-Minta-Perguruan-Tinggi-Siap-Akan-Kemunculan-Profesi-Baru-Di-Era-Revolusi-Industri-4-0/

Neely, A. (1998). *Measuring Business Performance – Why, What, How*. Economist Books. London.

Neely, A., Gregory, M., & Platts, K. (1995). Performance Measurement System Design: A Literature Review And Research Agenda. *International Journal Of Operations & Production Management*, *15*(4), 80–116. Https://Doi.Org/10.1108/01443579510083622

Örnek, A. Ş., & Ayas, S. (2015). The Relationship Between Intellectual Capital, Innovative Work Behavior And Business Performance Reflection. *Procedia - Social And Behavioral Sciences*, *195*, 1387–1395. Https://Doi.Org/10.1016/J.Sbspro.2015.06.433

Pett, T., & Wolff, J. (2009). SME Opportunity For Growth Or Profit: What Is The Role Of Product And Process Improvement? *International Journal Of Entrepreneurial Venturing*, *1*. Https://Doi.Org/10.1504/IJEV.2009.023817

Podsakoff, P. M., Mackenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common Method Biases In Behavioral Research: A Critical Review Of The Literature And Recommended Remedies. *The Journal Of Applied Psychology*, *88*(5), 879–903. Https://Doi.Org/10.1037/0021-9010.88.5.879

Podsakoff, P., & Organ, D. (1986). Self-Report In Organizational Research. *Journal Of Management - J MANAGE*, *12*, 531–544. Https://Doi.Org/10.1177/014920638601200408

Porter, M. E. (1990). New Global Strategies For Competitive Advantage. *Planning Review*, *18*(3), 4–14. Https://Doi.Org/10.1108/Eb054287

Prajogo, D. I. (2016). The Strategic Fit Between Innovation Strategies And Business Environment In Delivering Business Performance. *International Journal Of Production Economics*, *171*(P2), 241–249. Https://Econpapers.Repec.Org/Repec:Eee:Proeco:V:171:Y:2016:I:P2:P:241-249

Santos-Rodrigues, H., Faria, J., Cranfield, D., & Morais, C. (2013). Intellectual Capital And Innovation: A Case Study Of A Public Healthcare Organisation In Europe. *The Electronic Journal Of Knowledge Management*, *11*.

Sharabati, A. A., Naji Jawad, S., & Bontis, N. (2010). Intellectual Capital And Business Performance In The Pharmaceutical Sector Of Jordan. *Management Decision*, *48*(1), 105–131. Https://Doi.Org/10.1108/00251741011014481

Shisia, A., Sang, W., Matoke, J., & Omwario, B. N. (2014). Strategic Innovation And Performance Of Public Universities In Kenya. *European Journal Of Business And Management*, *6*(23).

Sivalogathasan, V., & Wu, X. (2013). Intellectual Capital For Innovation Capability: A Conceptual Model For Innovation. *International Journal Of Trade, Economics And Finance*, *4*, 139–144. Https://Doi.Org/10.7763/IJTEF.2013.V4.274

Stewart, T. A. (1997). *Intellectual Capital: The New Wealth Of Organizations*. Bantam Doubleday Dell Publishing Group. Inc., New York, NY.

Subramaniam, M., & Youndt, M. (2005). The Influence Of Intellectual Capital On The Types Of Innovative Capabilities. *Academy Of Management Journal*, *48*, 450–463. Https://Doi.Org/10.5465/AMJ.2005.17407911

Subramanian, A., & Nilakanta, S. (1996). Organizational Innovativeness: Exploring The Relationship Between Organizational Determinants Of Innovation, Types Of Innovations, And Measures Of Organizational Performance. *Omega*, *24*(6), 631–647. Https://Doi.Org/10.1016/S0305-0483(96)00031-X

Sudlow, B. (2019). Review Of Joseph E. Aoun (2017). Robot Proof: Higher Education In The Age Of Artificial Intelligence. *Postdigital Science And Education*, *1*(1), 236–239. Https://Doi.Org/10.1007/S42438-018-0005-8

Suwignjo, P. (2018, Januari 17). *Kebijakan Kelembagaan Menghadapi Revolusi Industri 4.0*.

Sveiby, K.-E. (1998). Intellectual Capital: Thinking Ahead. *Australian CPA*, *68*, 18–23.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic Capabilities And Strategic Management. *Strategic Management Journal*, *18*, 509–533. Http://Dx.Doi.Org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z

Telbani, N. E. (2013). The Relationship Between Intellectual Capital And Innovation In Jawwal Company-Gaza. *Jordan Journal Of Business Administration*, *9*(3).

Tjahjadi, B., & Soewarno, N. (2015). Dampak Mediasi Market-Driven Costing Terhadap Hubungan Intensitas Persaingan Dan Karakteristik Pelanggan Dengan Kinerja Keuangan. *Jurnal Akuntansi Dan Keuangan*, *16*(2), 102–112. Https://Doi.Org/10.9744/Jak.16.2.102-112

Wang, X. (2010). *Performance Measurement In Universities. Managerial Perspective.* University Of Twente.

Yeganeh, M. V., Sharahi, B. Y., Mohammadi, E., & Beigi, F. H. (2014). A Survey Of The Relationship Between Intellectual Capital And Performance Of The Private Insurance Companies Of Iran. *Procedia - Social And Behavioral Sciences*, *114*, 699–705. Https://Doi.Org/10.1016/J.Sbspro.2013.12.770

Yitmen, I. (2011). Intellectual Capital: A Competitive Asset For Driving Innovation In Engineering Design Firms. *Engineering Management Journal; EMJ*, *23*, 3–19. Https://Doi.Org/10.1080/10429247.2011.11431891

Zambon, S., & Monciardini, D. (2015). Intellectual Capital And Innovation. A Guideline For Future Research. *Journal Of Innovation Economics & Management*, *17*(2), 13–26. Cairn.Info. Https://Doi.Org/10.3917/Jie.017.0013

Zerenler, M., Hasiloglu, S. B., & Sezgin, M. (2008). Intellectual Capital And Innovation Performance: Empirical Evidence In The Turkish Automotive Supplier. *Journal Of Technology Management & Innovation*, *3*, 31–40.