

Knowledge Management and Performance: Evidence from Public Universities in Indonesia

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ABSTRACT

The purpose of this paper is to investigate the impact of knowledge management on performance in public universities. Analyzes data from a sample of 141 respondents using the Partial Least Squares Structural Equation Model (PLS-SEM). The results suggest that knowledge management significantly influence on performance. This study is limited to a specific region in western Indonesia covering 3 universities and specifically focuses on the performance of public universities. Nevertheless, this study provides valuable insights into understanding the determinants of performance particularly in public universities. This study provides new insights into the role of knowledge management in explaining performance in public universities, and highlights the importance of considering the values of knowledge creation, knowledge capture and storage, knowledge sharing, and knowledge application and use, in this context.

Keywords: Knowledge Management; Performance; Public University

INTRODUCTION

Higher education is an educational institution that organizes formal education after the general secondary education level, in Indonesia, the form of higher education can be in the form of academies, polytechnics, high schools, institutes, and universities. The government has made many efforts to provide guidelines for the management of higher education, both through the National Education System Law, Government Regulations, and other legal products, including to encourage accreditation activities by the National Accreditation Board which are increasingly clear, measurable, and regular.

Organizations face severe challenges in this era of globalization such as the development of information technology that inevitably must be followed, the increasing demands for improved customer service and others, so that the readiness of human resources must continue to be improved as well. This is in accordance with the statement (Bohlander & Snell, 2012) which states that "Organizations face increasing challenges in terms of globalization, innovation, technology and customer service". Higher education institutions are no exception, which have limited human resources that must continue to be developed and empowered in order to face this challenge.

Higher Education institutions face great challenges in many ways such as the development of information technology, high demands for performance, improving services and improving teaching and learning facilities and admitting more qualified students. This is in accordance with the statement (Karpagam & P. Suganthi, 2010) which states that "Higher education faces new challenges, namely globalization trends, new economic challenges, and the rapid growth of information and technology to improve its performance". This requires universities to become business-oriented organizations to answer these increasingly severe challenges. Being a business-oriented organization means that it must really have working principles that priorities customer service "Costumer Service". So that the organization's workforce must be trained and fostered to be able to carry out services to consumers.

In the 1960s and 1970s, OP was defined as an organization's ability to exploit its environment for accessing and using the limited resources (Seashore & Yuchtman, 1967). According to (Moehariono, 2014) the definition of performance or performance is a description of the level of achievement of the implementation of a program of activities or policies in realizing the goals, objectives, vision and mission of the organization as outlined through the strategic planning of an organization. Organizational performance reflects the organization's ability to meet the needs of its stakeholders and survive in the market, it is also known as the result of actions or activities carried out by members of the organization to measure how well the organization has achieved its goals (Ha et al., 2016). Increasing competitive pressures, the need for effective and efficient performance, cost control and productivity have made performance evaluation of HEIs an important issue (Ngoc-Tan & Gregar, 2019).

Discussions about Knowledge management (KM) began to emerge after the publication of Ikujiro Nonaka's *The Knowledge Creating Company* in the Harvard Business Review in 1991. This study is associated with the previous writing of Peter F. Drucker, a management expert who is often referred to as a pioneer of modern management in the 20th century, entitled *The Coming of the New Organization* in 1988. KM became an important concept in management and became the subject of scientific study. The application of KM in various multinational companies has contributed greatly to the development of this concept as an important concept that needs to be applied in organizations in order to achieve their goals effectively and efficiently (Omotayo, 2015).

KM was first associated specifically with business by Tom Davenport in 1998 with his bestselling book, *Working Knowledge: How Organizations Manage What They Know* published by Harvard Business School Press. With that book, Davenport pioneered 'business knowledge management' and galvanized the business world's interest in KM. Sedziuviene & Vveinhardt (2009) concluded that KM systems are needed in higher education to demonstrate knowledge, develop methods to receive, transform and consolidate knowledge, initiate and start the process of creation, transfer and assessment of knowledge and to optimisme assessment. Conduct knowledge improvement among members/lecturers and students, continuously monitor information and make appropriate future decisions.

Nonaka & Takeuchi (1995) studied how knowledge is produced, used and diffused within organizations and how such knowledge contributes to the diffused of innovation. Chen & Chen (2005) proposed a four-stage model of the KM process that includes

knowledge creation, which, in addition to adding new knowledge, includes correction of existing knowledge, knowledge conversion and knowledge circulation and completion. KM in educational institutions can be defined as the organized and systematic process of generating and disseminating information, and selecting, distilling and deploying explicit and tacit knowledge to create unique value that can be used to strengthen teaching-learning environment (Raj Adhikari, 2010). KM is vital to every aspect of a HEI including research, curriculum development, student and alumni services, administrative services and strategic planning (Kidwell et al., 2000).

Knowledge Management (KM) serves as a catalyst to enhance collaboration and exploration (Iqbal et al., 2019; Ramjeawon & Rowley, 2019). Higher Education (HE) is undergoing a transformational shift as research and the economic revolution have transcended the myth of old-fashioned teaching (Ramjeawon & Rowley, 2019). Today, HEIs are regarded as institutions that should focus on the production and dissemination of robust and innovative knowledge (Bano & Taylor, 2015). Universities are critical in the creation, acquisition, storage and dissemination of knowledge that can contribute significantly to social and economic development (Ahmad et al., 2017; Fullwood & Rowley, 2017).

There are many studies showing that KM is an antecedent and foundation for organizational performance (OP) (Lee & Choi, 2003; Tanriverdi, 2005; Bogner & Bansal, 2007). The literature also shows that KM significantly influences OP (Masa'deh et al., 2017; Abualoush et al., 2018). Despite its importance for HEIs given the complexity and massive presence of knowledge (Yasir et al., 2017), few empirical studies have attempted to clarify the relationship between KM processes and organizational performance specifically in HEIs (Ngoc-Tan & Gregar, 2019; Iqbal et al., 2019; Sahibzada et al., 2020; Sahibzada et al., 2022).

This research article aims to provide empirical evidence on how KM impacts OP in Indonesian universities. In addition, this paper also contributes to the KM and OP management literature by exploring the impact of KM on OP in Indonesian universities. Smart-PLS will be used to facilitate the analysis. The results of the data analysis will be shown and discussed before the paper comes to a conclusion. Recommendations for future research are also presented.

METHOD

Research questionnaire

This study uses a quantitative research methodology. The measuring instrument used in this study consists of 43 items, which are shown in the table below. The questionnaire was divided into two parts, with questions obtained from previous research. The first part focuses on dependent and independent factors. The dependent variable in this study is performance, consisting of 3 dimensions including innovation performance, quality performance, and operational performance, which is adopted from (Balasubramanian et al., 2020). The independent variable is knowledge management, consisting of 4 dimensions including knowledge creation (Lawson, 2003), knowledge capture and storage, knowledge sharing, and knowledge application and use (Lawson,

2003; Lee & Wong, 2015). The questions are structured on a 5-point Likert scale, where 1 indicates strongly disagree/somewhat disagree/somewhat neutral/somewhat agree/strongly agree (Çelik & Oral, 2016). The second section recorded the demographic profile of the respondents, including gender, age, education level, occupation, and institution.

Data collection and sample

The judgemental sampling technique was used in this study, also known as purposive sampling. Purposive sampling is a type of non-probability sampling that targets a specific group of people either because they have information the researcher needs or because they fulfill certain criteria or standards set by the researcher (Sekaran & Bougie, 2016). Then, the judgemental sampling technique is used when the researcher sets certain standards or criteria for the sample or respondents (Cooper & Schindler, 2013). Therefore, in this study, the authors collected data from respondents who are stakeholders from 3 state universities, namely Indonesia University of Education, Bandung Institute of Technology, and Universitas Padjadjaran both from lecturers, education staff, and students. The minimum sample size in Partial Least Squares (PLS) is 100 (Hair et al., 2017). Therefore, 141 respondents were selected for this study.

Data analysis techniques

The PLS-SEM modelling technique was used to analyze the data in this study, which is particularly useful for simultaneous analysis of multiple relationships in a research model. After a two-stage analysis procedure (Anderson & Gerbing, 1988), first the measurement model is estimated and then the structural model with hypothetical relationships between variables is tested. The bootstrap method was used with 141 samples based on the path-loading significance test (Hair et al., 2017).

RESULT AND DISCUSSION

Responden's Profile

As shown in Table 1, most of the respondents were female (62%). Respondents in this study were mostly in the age group of 41 to 50 years (63%). In terms of educational background, most respondents had completed undergraduate programmers (31%). Most of the respondents work at the Indonesia University of Education (50%), and most of their positions are as education staff (57%).

Table 1. Respondent Demographics

	Category	Numbers	Percentages
Gender	Male	53	38%
	Female	88	62%
Age	21-30	19	13%
	31-40	10	7%
	41-50	89	63%

	51-60	10	7%
	>60	13	9%
Education	Senior High School/Equivalent	20	14%
	Beachelor's Degree	44	31%
	Master	40	28%
	Doctoral	37	26%
Institution	Indonesia University of Education	70	50%
	Bandung Institute of Technology	35	25%
	Universitas Padjadjaran	36	26%
Position	Lecturer	61	43%
	Education Staff	80	57%

Descriptive Analysis

Table 2. Score of Knowledge Management Variables at Legalized State Universities

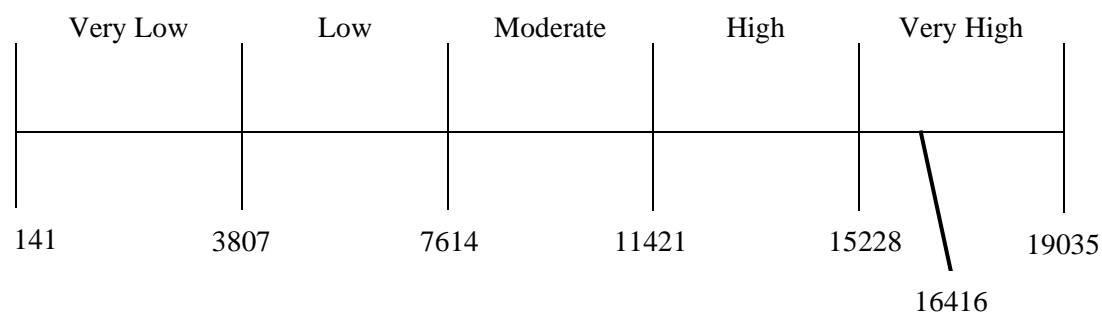
Instrument Item	Total Score
1	641
2	639
3	620
4	621
5	614
6	582
7	612
8	613
9	613
10	599
11	584
12	601
13	592
14	618
15	587
16	562
17	610
18	606
19	598
20	606
21	641
22	606
23	619
24	612
25	631
26	603
27	586

In the table, the item that has the lowest score is item number 13, namely the knowledge sharing dimension on the College Management indicator sends reports and newsletters on time to lecturers, employees, stakeholders, and other related organisations, while the highest score is item number 21 of the knowledge sharing dimension on the College Management indicator using modern technological means to transfer and exchange information, such as the internet and e-mail and mobile phone messages.

Based on the results of the questionnaire answers, it can be described Knowledge Management at Legal State Universities under study from the total score, namely:

1. Very low total score
27 item x 141 respondent x score value 1 = 3807
2. Low total score
27 item x 141 respondent x score value 2 = 7614
3. Moderate total score
27 item x 141 respondent x score value 3 = 11421
4. High total score
27 item x 141 respondent x score value 4 = 15228
5. Very high total score
27 item x 141 respondent x score value 5 = 19035

The results of the calculation of the Knowledge Management variable at State Universities with Legal Status based on the answers of the respondents as a whole 16416. The continuum can be described as follows:



Based on the continuum line above, the total score of the knowledge management variable is 16416 which is in the very high category. The information presented regarding the knowledge management variable can be concluded that Knowledge Management at Legalised State Universities can be said to be very good.

Table 3. Organisational Performance Variable Score at Legal State Universities

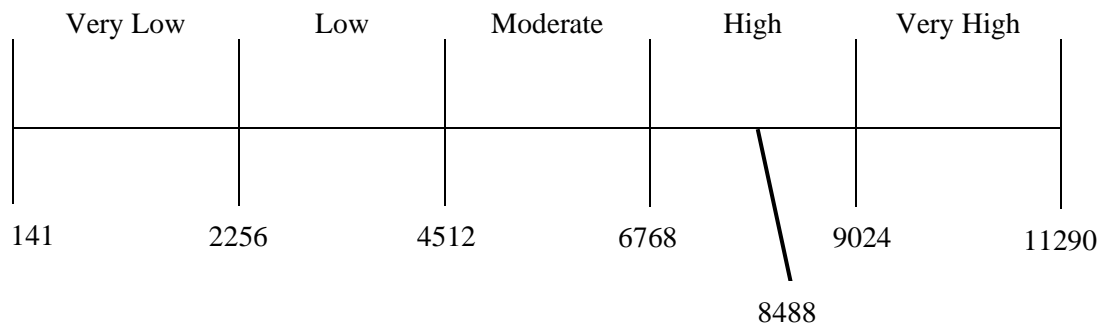
Instrument Item	Total Score
1	641
2	639
3	620
4	621
5	614
6	582
7	612
8	613
9	613
10	599
11	584
12	601
13	592
14	618
15	587
16	562

In the table, the item that has the lowest score is item number 16, namely the operational performance dimension on the indicator In my college, the service delivery cycle time has been reduced, while the highest score is item number 7 of the quality performance dimension on the indicator In my college, the appearance of physical facilities is in accordance with the services offered and visually appealing.

Based on the results of the questionnaire answers, it can be described the Organisational Performance of the Legal State Universities studied from the total score, namely:

1. Very low total score
16 item x 141 respondent x score value 1 = 2256
2. Low total score
16 item x 141 respondent x score value 2 = 4512
3. Moderate total score
16 item x 141 respondent x score value 3 = 6768
4. High total score
16 item x 141 respondent x score value 4 = 9024
5. Very high total score
16 item x 141 respondent x score value 5 = 11290

The results of the calculation of the Organisational Performance variable at State Universities with Legal Status based on the answers of the respondents as a whole 8488. The continuum can be described as follows:



Based on the continuum line above, the total score of the organisational performance variable is 8488 which is included in the high category. The information presented regarding the organisational performance variable can be concluded that the Organisational Performance of Legal State Universities can be said to be good.

Measurement Model Evaluation

In this study, we evaluated item loading, Cronbach's alpha, combined reliability (CR), and average variance extracted (AVE) to confirm the validity of the measurement model. According to Hair et al., (2017), the minimum scores for item loading, Cronbach's alpha, CR, and AVE are 0.70, 0.70, 0.70, and 0.50, respectively. As shown in Table 2, all item reads, Cronbach's Alpha, CR, and AVE scores exceeded their respective minimum thresholds, indicating the reliability of all components of this study.

In addition to assessing convergence validity, we also tested the discriminant validity of variables in our analytical framework using the procedural approach of Fornell and Lacker. We found that the correlation coefficient for each cell was less than the square root of the corresponding AVE value for any row or column (Table 2). This confirms the discriminant validity requirement proposed by (Fornell & Larcker, 1981).

Table 4. Output of the reliability and validity analysis

Constructs (Cronbach's Alpha)	Loading	AVE	CR
Knowledge creation (0.862)			
My College has mechanisms for creating and acquiring knowledge from various sources such as lecturers, employees, stakeholders, College partners, and other Colleges	0.737		
My College encourages and has processes for the exchange of ideas and knowledge between individuals and groups	0.842	0.593	0.897
My College rewards lecturers and employees for new ideas and knowledge	0.749		
My College has mechanisms for creating new	0.785		

knowledge from existing knowledge			
The College ensures rapid flow of information between departments	0.753		
The College regularly organises cross-departmental meetings to exchange information	0.751		
Knowledge capture and storage (0.917)			
My College responds to the ideas of lecturers, employees and stakeholders and documents them for further development	0.787		
My College has mechanisms to capture knowledge from lecturers, employees, stakeholders, College partners and other Colleges	0.772		
The College has a mechanism for patenting and copying correct new knowledge	0.684		
The knowledge captured by my College is codified and stored in the College's knowledge repository	0.783	0.603	0.932
Knowledge stored in my organisation is easily accessible to faculty, staff and stakeholders who need it	0.790		
The College uses various electronic means to store the knowledge they capture from employees	0.750		
The College regularly trains its employees on knowledge storage and retrieval	0.841		
The College works to keep relevant research and information up to date	0.771		
The College regularly maintains employees with a high level of knowledge	0.800		
Knowledge sharing (0.875)			
The College sends timely reports and newsletters to faculty, employees, stakeholders and other relevant organisations	0.783		
The College organises symposiums, lectures, conferences and training sessions regularly for knowledge sharing	0.797		
Lecturers, staff and students in my College are encouraged to participate frequently in informal discussions for knowledge sharing	0.803	0.617	0.906
Lecturers, staff and students in my College use the latest file sharing systems to share knowledge efficiently	0.813		
The College regularly ensures that all the latest information on operating procedures is made available to employees	0.822		
The College uses modern technological means to transfer and exchange information, such as the internet and e-mail and mobile phone messaging	0.685		
Knowledge application and use (0.885)	0.821	0.638	0.913

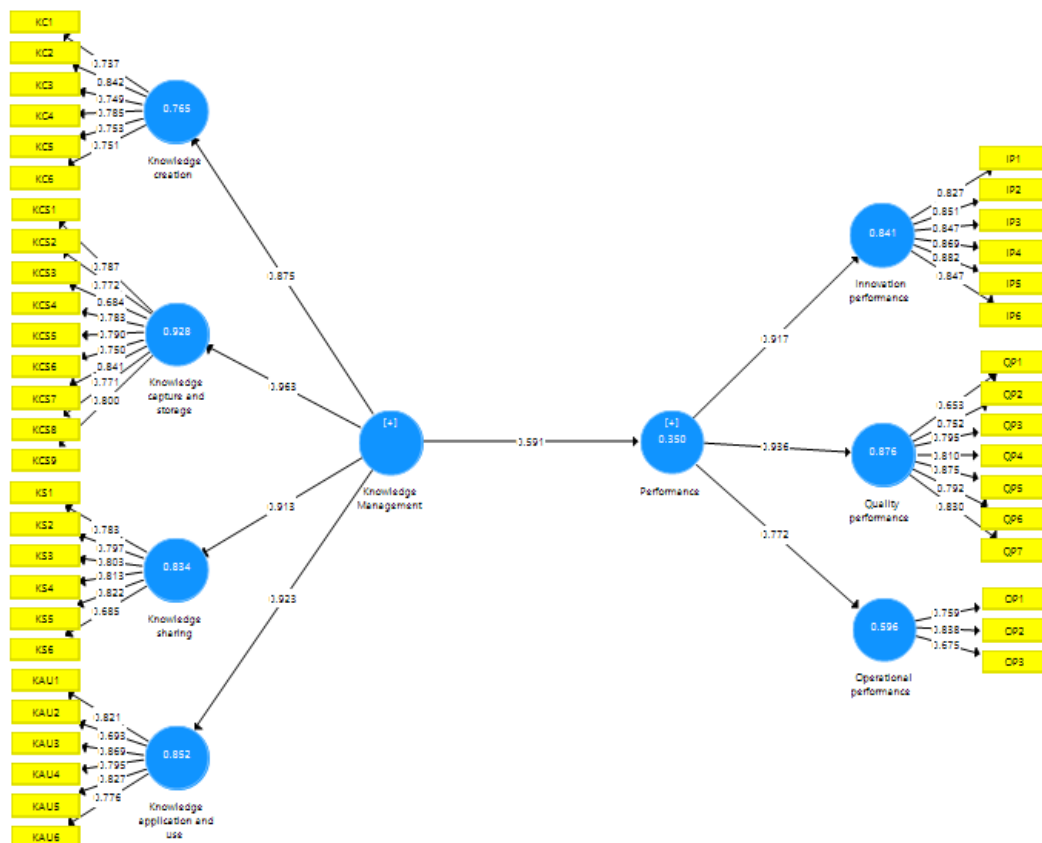
My College has processes and systems in place to apply knowledge learnt from past experiences			
My College's knowledge application is enhanced by existing mechanisms that match knowledge sources with problems	0.693		
Lecturers, staff and students of my College are encouraged to put useful proposals/ideas into practice	0.869		
Faculty, staff and students of my College are encouraged to apply their knowledge to solve problems	0.795		
The College regularly trains our employees to ensure that they understand all organizational processes	0.827		
The College regularly works on developing new business practices for the products and services we offer	0.776		
Innovation performance (0.926)			
In my College, there is a high level of service innovation (e.g. introduction of new services; changes to improve existing services).	0.827		
In my College, there is a high level of service delivery innovation (new or changed ways of providing public services).	0.851		
In my College, there is a high level of administrative and organisational innovation (changes in organisational structures and routines).	0.847	0.729	0.942
In my College, there is a high level of conceptual innovation (developing new views and challenging existing assumptions).	0.869		
In my College, there is a high level of policy innovation (changes in thinking or behavioural intentions).	0.882		
In my College, there is a high level of systemic innovation (new/better ways of interacting with other organisations and knowledge sources).	0.847		
Quality Performance (0.898)			
In my College, the physical facilities are appropriate for the services offered and visually appealing.	0.653		
In my College, promises about the services offered are always kept.	0.752		
In my College, the equipment used is up-to-date.	0.795		
In my College, stakeholders are always given individualised attention.	0.810	0.623	0.920
In my College, stakeholders always feel safe in their dealings with employees in my organisation.	0.875		
In my College, employees always show willingness to help stakeholders.	0.792		
In my College, employees always sympathise and reassure stakeholders in trouble.	0.830		

Operational performance (0.644)

In my College, day-to-day operational costs have been reduced.	0.759	0.578	0.803
In my College, employee productivity has increased.	0.838		
In my College, service delivery cycle time has reduced.	0.675		

Table 5. Discriminant validity (Fornell and Larcker method)

	IP	KAU	KCS	KC	KS	OP	QP
Innovation performance	0.854						
Knowledge application and use	0.582	0.799					
Knowledge capture and storage	0.564	0.848	0.776				
Knowledge creation	0.581	0.729	0.812	0.770			
Knowledge sharing	0.495	0.824	0.840	0.707	0.785		
Operational performance	0.591	0.373	0.378	0.355	0.362	0.760	
Quality performance	0.742	0.486	0.476	0.462	0.465	0.694	0.790

**Figure 1. Path analysis**

Structural Model Evaluation

In addition to assessing the reliability of the external model, the study also analyzed the internal model. Evaluation of structural models involves a five-step approach proposed by (Hair et al., 2017). In the first step, multicollinearity issues should be resolved before structural paths can be analyzed. This is because it is recommended that the predictors of the reference variables are not collinearly related.

Table 6. Structural model outputs

Relationship	Beta	t-value	p-value	Supported	R ²	F ²
Knowledge management -> Performance	0.591	9.489	0.000	Yes	0.372	0.592

This study followed the five-step approach proposed by (Hair et al., 2017) to evaluate the structural model. In the second step, bootstrapping with 141 resamples was used to check the significance of the assumed structural path relationships. Figure 2 and Table 4 show that the research hypotheses are significantly influential at the $p < 0.001$ level. Knowledge management has a positive impact on performance ($b = 0.591$, $t = 9.489$, $p < 0.000$), indicating that knowledge management is a strong predictor of performance.

In the third step, this study tested the adequacy of predictors on the dependent variable using the coefficient of determination (R^2). Table 3 shows that the latent variable performance has an R^2 value of 0.610, which means that the three independent latent variables of knowledge management explain 61% of the variance in performance. This R^2 value indicates that the model has considerable explanatory power.

The next step is to check the effect size (f^2) of the reference variable, as recommended (Hair et al., 2017). The f^2 values of 0.02, 0.15, and 0.35 are considered minor, moderate, and major effects, respectively. Table 3 shows that the independent variable, knowledge management (59.2%), has a major effect.

Finally, this study validated the predictive relevance (Q^2) (Hair et al., 2017). Table 3 shows that the Q^2 value of the performance variable is 0.616, which indicates major predictive relevance.

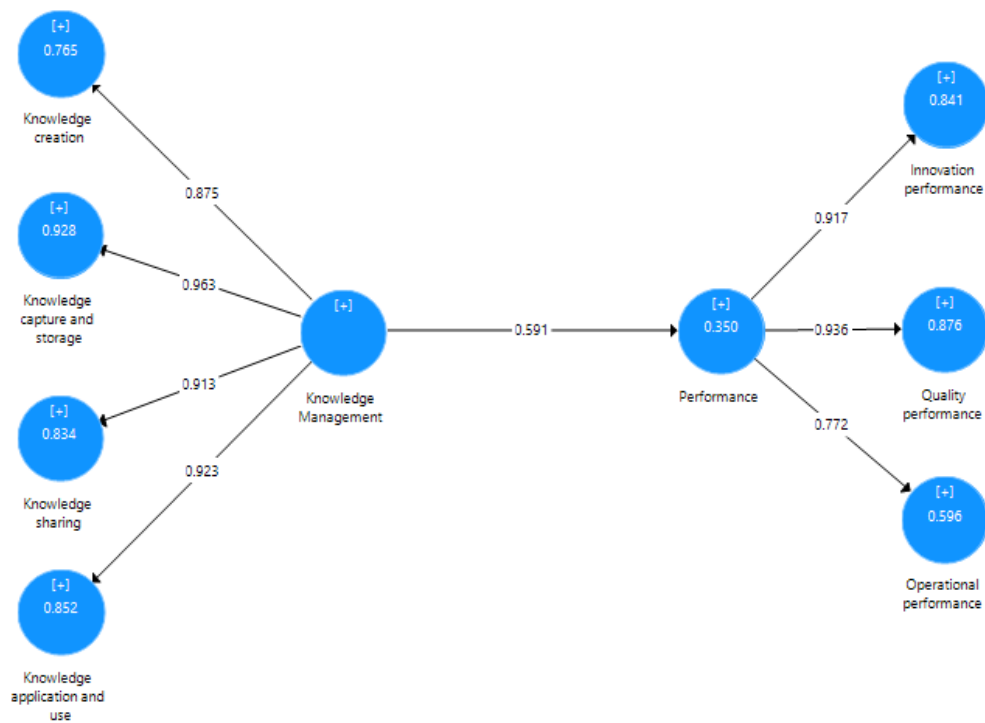


Figure 2 Evaluated Model

Discussion

The problem to be answered is how the influence of knowledge management as an independent variable on organizational performance as the dependent variable. Empirically, the results of testing the first hypothesis show that knowledge management has a positive and significant effect on organizational performance. This result indicates that the quality of organizational performance in universities is also determined by knowledge management, which consists of: 1) knowledge creation; 2) knowledge capture and storage; 3) knowledge sharing; and 4) knowledge application and use. The higher the knowledge management, the higher the quality of organizational performance of the university. The organizational performance includes: innovation performance, quality performance, and operational performance.

Recent academic studies have also shown similar results that there is a significant positive relationship between knowledge management practices and organizational performance (Ahmad et al., 2017; Abubakar et al., 2019; Iqbal et al., 2019; Latilla et al., 2018; Meher & Mishra, 2019). Thus, this study validates and confirms the results of (Iqbal et al., 2019; Sahibzada et al., 2020; Sahibzada et al., 2022), the overall organizational performance especially in the university context depends on effective knowledge management practices, which has been proven to be an important reason for improving organizational performance towards excellence.

Theoretically, referring to Iqbal et al., (2019) opinion that the implementation of effective knowledge management processes plays an important role in university performance, effective knowledge resource management can facilitate organizations to achieve superior performance. The management of knowledge management processes in universities can improve student satisfaction, research productivity, quality development, academic efficacy, university rankings and graduate rates, all knowledge management procedures, including knowledge creation, sharing, acquisition, storage and utilization, can promote creative organizational learning, resulting in improved organizational performance for sustainable competitive advantage in Higher Education Institutions (Sahibzada et al., 2021).

More specifically, to enhance academic excellence, in particular, research and publication and capacity building, knowledge management has an important role especially in the context of knowledge utilization, knowledge acquisition, knowledge generation and knowledge dissemination (Paudel et al., 2021). In line with this opinion, Sahibzada et al., (2022) argues that the implementation of knowledge management processes is at the core of the performance of Higher Education Institutions, increasing research productivity of Higher Education Institutions, student satisfaction, curriculum development, university rankings, academic efficacy, quality development, and responsiveness to environmental challenges, effective implementation of knowledge management processes can be the focus in terms of higher organizational performance and sustainable competitive advantage.

CONCLUSION

In general, the University stakeholders who were respondents in this study perceived that the influence of knowledge management on organizational performance was high. This high level of influence indicates that in general knowledge management is perceived to have a high ability to improve organizational performance, includes innovation performance, quality performance, and operational performance. The results of this unique study show that knowledge management processes can significantly contribute to improving organizational performance at the University. However, the relationship between knowledge management and organizational performance still needs to be better analyzed, particularly in the Indonesian higher education sector. Several researchers have examined the relationship between knowledge management processes and organizational performance in universities (Ahmad et al., 2017; Iqbal et al., 2019; Sahibzada et al., 2020; Sahibzada et al., 2022).

This study is limited to a specific region in western Indonesia covering 3 public universities. Furthermore, this study specifically focuses on the performance of public universities. Nevertheless, this study provides valuable insights in understanding the determinants of performance particularly in public universities in Indonesia. Previous research conducted on Universities in China and Pakistan, the results showed a significant positive effect of knowledge-oriented leadership on knowledge management processes and knowledge management processes on organizational performance through the partial

mediating effect of creative organizational learning (Sahibzada et al., 2021). This research provides new insights into the role of knowledge management in explaining performance in public universities, and highlights the importance of considering the values of knowledge creation, knowledge capture and storage, knowledge sharing, and knowledge application and use.

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