IRJE |Indonesian Research Journal in Education|
|Vol. 6| No. 2|Dec|Year 2022|

The Relationships among Lecturers' Performance, Knowledge Management, Budget Planning Models and Innovation: Evidence from Three Universities in Jambi

FITRIATY[1*], DESSY ELLIYANA[2], AND TONA AURORA LUBIS[3]

Abstract

This study aimed to provide an understanding of knowledge management, budget planning models, lecture performance and innovation at universities in Jambi Province. This study adopted an inferential research design. This study was a cross-sectional survey study. The data were collected from 485 lecturers at 3 universities in Jambi province. This study used a structural equation modeling (PLS-SEM) to analyze the data. The results of this study showed that 1) budget planning models (BPM) affect performance lecturer and innovation, 2) knowledge management affects lecturer performance and innovation, 3) innovation affects lecturer performance, 4) budget planning models affect lecturer performance moderated by innovation, and 5) knowledge management affects the performance of lecturers mediated by innovation. In organizations that place greater emphasis on budgetary objectives by using budget planning models with greater flexibility, it is important to create an enabling atmosphere for leaders of both universities and faculties to maximize the effectiveness of evaluation and monitoring.

Keywords

budget planning models, knowledge management, innovation and, lecturer performance

Article History

Received 18 June 2022
Accepted 29 October 2022

How to Cite

Fitriaty, Elliyana, D., & Lubis, T.A. (2022). The relationship among lecturers' performance, knowledge management, budget planning models and innovation: Evidence from three universities In Jambi. *Indonesian Research Journal in Education |IRJE|*, *6*(2), 206–221. https://doi.org/10.22437/irje.v6i2.18950

[1*] Assistant Professor, Faculty of Economics and Business, Universitas Jambi, Jambi, Indonesia, Corresponding author's email: Fitriaty@unja.ac.id
[2] Graduate Student, Faculty of Economics and Business, Universitas Jambi, Jambi, Indonesia
[3] Associate Professor, Faculty of Economics and Business, Universitas Jambi, Jambi, Indonesia

Introduction

Universities in Indonesia have started to show quite good performance, including universities in Jambi Province, there are 3 state universities and more than 20 private universities in Jambi. With the increase in the quantity of universities in Jambi Province, it is necessary for educators or lecturers to be able to improve their performance by conducting education, research, and community service because of rapid technological developments in all areas of life, as a result of the effects of globalization and the very accelerating development of information technology (Moffet & Porkinson, 2020). This condition has clearly resulted in the need for new ways of responding to all that is happening in order to survive. To facilitate human resources in education, it is necessary to have the ability to manage and develop the knowledge possessed by Ndou and Menlah (2015). The role of knowledge and learning is an effective approach to building the foundation of organizational competitiveness in this case, namely higher education (Thompson & John, 2019). Universities must be able to use their knowledge to build strategies (Bano & Taylor, 2015). This connects management with strategy, universities articulate strategies, identify the knowledge needed to implement the desired strategy, and compare it with actual knowledge to bridge the gap in strategic knowledge. Knowledge management (KM) is known as a technical tool, and strategy to maintain, analyze, organize, improve, and share understanding and experience. University management is becoming more challenging, complex, analytic and data driven (Bano & Taylor, 2015). Developing innovative management approaches to support the University in utilizing knowledge from existing organizational information and data sources to plan improvements will provide practical assistance to University leaders and contribute to University management theory (Ahmad et al., 2019). Universities in Indonesia have long faced various challenges in terms of development under education reform and curriculum reform designed to meet the demands of the global community.

Management control system perspective, the budgeting process is able to provide companies with information relevant to their operations and applicable financial plans through coordination, communication, control, performance evaluation, and incentives (Chenhall & Euske, 2007). Achieving company goals through these functions requires a budgeting system that is in accordance with the organizational culture of Motsamai, Jacob, and Wet (2011). In addition, the attitude and knowledge of management regarding the attributes of the budgeting system and the influence of the budgeting system on employee behavior are important factors that determine whether the budget system functions effectively (Frow, Marginson, & Ogden, 2005). The difference between policy and financial theory or the gap between policies implemented with needs and university finances is due to the absence of a clear policy direction regarding leadership and control (Thompson & John, 2019). The researchers believe that these practices also occur in universities in Indonesia, especially in the province of Jambi. So that researchers are interested in seeing how the phenomenon of financial management exists at universities in Jambi Province. Researchers wanted to explore how to apply knowledge management (KM) in education as a new concept as universities especially in Jambi Province need a KM model to help conceptualize the different elements of the complete picture in a way that leads to a deeper understanding

of how knowledge processes work in organizations. The following hypotheses were sought to answer.

H1: Budget Planning Models → Innovation
H2: Budget Planning Models → Performance
H3: Knowledge management → Innovation
H4: Knowledge management → Performance
H5: Innovation → Performance
H6: Budget Planning Models → Innovation -> Performance
H: Knowledge Management → Innovation -> Performance

Literature Review

Budget planning models and knowledge management

The budget planning model consists of two components, namely participation in budgeting and communication in budget preparation. Participation in budgeting is a managerial approach that generally can improve managerial performance. Communication is at the core of the budgeting process. From a contingency theory perspective, increased uncertainty in the external environment of the organization inevitably leads to increased differentiation in the organizational structure, which requires a response through the use of integration mechanisms. Kung, Huang, and Cheng (2013) stated that budget communication plays a role in the formation of budget planning models by 85.6%.

Knowledge management (KM) in universities can be conceptualized as a strategic management activity that supports university leaders and educators to utilize and utilize organizational knowledge resources to plan and carry out teaching assignments effectively (Hansen, Nohria, & Tierney, 1999; Nonaka, Von Krogh, & Voelpel, 2006). The implementation of knowledge management in universities is very important because universities as knowledge collectors transfer the knowledge of each individual as an intangible asset to an organizational asset.

The knowledge management model in this study focuses on 5 plans, namely implementation, evaluation, externalization, combination and culture collaboration, in this case knowledge that explains how tacit knowledge is converted into explicit knowledge and then returned as the basis for individual, group, and organizational innovation. The question that underlies this research is how to build a KM mechanism to transform knowledge in universities and organizations into knowledge thinking which then becomes an innovative plan for institutional development and improve performance in this case the performance of lecturers (Spee & Jarzabkowski, 2011).

Lecturer performance and innovation

Performance is defined as the behavior required to develop the responsibilities of the assigned position to achieve productivity, efficiency or effectiveness (Belogolovsky & Somech, 2010; Rich & Whittaker, 2017). Performance of Lecturers according to Law No. 14 of 2005 Lecturers are professional educators and scientists with the task of developing and

transforming, disseminating science, knowledge, technology and art through education, research and community service or what is known as the *tri dharma* of higher education.

Innovation is a person's desire or desire to learn about new things on a broad and diverse concept (Klein & Bhagat, 2016). The process of receiving, forming ideas, and applying thought designs to a product is part of innovation. There are two types of innovation according to Doran and Ryan (2014), namely radical innovation and incremental innovation. Radical innovations are innovations that are managed or carried out by a research agency or researcher in accordance with their field. Meanwhile, incremental innovation is a series of improvements from something that already exists but the scale is still in the low category. There are five indicators that can be used to measure innovation: creativity, passion, expertise, thinking style, and psychographics (Klein & Bhagat, 2016).

Methodology

The study of the integration of technology and pedagogical innovation in higher education is a very complex process. In the quantitative perspective, the researchers will use a survey approach, non-experimental research. Creswell (2014) a survey design is a different research design from experimental research because it does not involve the care given to participants by the researchers as survey researchers do not experimentally manipulate conditions, they cannot explain cause and effect nor can experimental researchers. Instead, survey studies describe trends in the data more than offer strict explanations. Survey research is a quantitative procedure in which a researcher conducts a survey of a sample or an entire population of people to describe the attitudes, opinions, behaviors, or characteristics of the population.

Data collection methods

Previously designed and validated questionnaires were used in this study, as recommended for quantitative research. Instruments in this study include Budget Planning Models (BPM) the authors adopted from the research of Kung et al. (2013) with 3 indicators budget participation, budget communication, budget detail, knowladge management author adopted from Cheng et al. (2021) research with 6 indicators planning, implementation, evaluation, externalization, combination, collaboration culture, employee performance (ghasemy, mohajer, cepeda-carrión, & roldán, 2020; ryu & vũ, 2020) with 4 indicators: task performance, contextual performance, leanrning performance, innovation performance, innovation capacity (saunila, 2014) with 3 indicators: participatory leadership culture, organizing ideas and structures and regeneration.

Data analysis

Online questionnaires were distributed and collected from Indonesian consumers who were actively using the internet. The questionnaires were administered via Google Forms and social networking sites (SNS such as Facebook, Twitter, etc.), including a cover letter stating the purpose of the study as well as instructions for the survey. Based on..., social media is a relatively new technological method suitable for transportation data

collection. Snowball sampling (also called network or respondent-driven sampling) was chosen because respondents were asked to share the survey with friends and colleges as well as to publish links, which is in agreement with Sarstedt, Ringle, and Hair (2017) and Neuman (2014).

Data collection was carried out with 485 respondents from 3 universities in the city of Jambi, namely two state and one private universities. Finally, data analysis went through Cronbach alpha to see its reliability, its mean and standard deviation to understand their descriptive statistics, Pearson's product-moment coefficient for the relationship between variables, T-test and ANOVA for differences in moderating variables and partial least square structural equation modelling (PLS-SEM) for the best influencing factors.

To test the power in the analysis of this study, GPower was used to calculate the minimum sample size required, and the test suggested a total sampling of 485 to reach a power of 0.95. The data analysis method used was based on the SEM-PLS approach on SmartPLS version 3.2.7 following several steps. The first step is to assess the measurement model that tests the reliability and validity of the construct. The second step assesses a structural model that examines the direct relationship between exogenous and endogenous variables (Hair et al., 2017).

Findings

Description of research data

Based on table 1, it can be seen that teachers are divided into ages, consisting of 25-35 (90/41.0%), 36-45 years (81/37.6%), > 40 years (40/18, 4%), then the gender of male (90/41.4%) and female (128/56.6%). Furthermore, for teaching experience < 10 years (132/60%), 11 to 20 years (55 /25.5%) and >20 Years (30/28.6%) percentage.

Table 1. *Demographic Profile of the Participants*

Varible	Content	Frequency (n-294)	Percentagege	Mean
Age	25-35	90	41,0	1,596330
	36 -45	81	37	
	>46	40	18	
Gender	Male	90	41,3	1,587156
	Female	128	58,6	
Teaching Experience	<10 years	132	60,6	1,768349
	11 s/d 20 years	55	25,5	
	>20 years	30	28,6	

Table 2. *Description of statistics questionnaire and level of variables*

Variables	Constructs	Mean	Categories
	Item Description		
Budget Planning Models	Budget participation	4,228669	Good
	Budget communication(BudCom	4,361775	Good
	Budget detail (BudDet)	4,215017	Good
Knowledge Management	Planning	4,395904	Moderate/Enough
	Implementation	4,259386	Low
	Evaluation	4,25256	Good
	Externalization	4,361775	Good/High
	Combination	4,187713	Good
	Collaborative Culture	4,139932	Good
	Task Performance	4,047782	Good
	Contextual Performance	4,259386	Good
Performance	Learning performance	4,562799	Good
	Innovation Performance	4,426621	Very Good
Innovation Capacity	Participatory leadership culture	4,16041	Good
	Organizing ideas and structures	4,215017	Good
	Regeneration	4,047782	Good

The highest mean score level is 4.2 on the Budget quality variable (BudQuality) (very good category) and the second level is on Budget communication (BudCom), Budget detail (BudDet), Meeting Needs (MetNeed), Budget Flexibility (BudFlex) Knowledge Management, Performance (Pefrm) and Innovation Capacity (Good category).

The PLS-SEM technique was used because it has good predictive power, in addition it was chosen to analyze the data and proposed hypotheses using SmartPLS software (Carrión, Henseler, Ringle, & Roldán, 2016; Ratzmann, Gudergan, & Bouncken, 2016; Sarstedt et al., 2017). This study applies the PLS-SEM technique to develop a model that represents the relationship between the factors that support Lecturer Performance at the University. We consider the fact that universities are complex, but dynamic systems influenced by many factors (Mital, Moore, & Llewellyn, 2014) and, consequently, several attributes affect the success of technology integration.

To get a good model in SMART PLS, the instrument validity test is carried out again, so that the instrument can measure what it should measure (Blumberg, Cooper, & Schindler, 2014). Test the validity of this study using the method of Convergent validity and discriminant validity with the help of Smart PLS 3.0. The first step is to enter raw data with commadelimited CSV excel format, after that raw data is entered, the data analysis stages can be carried out as follows.

Indicator reliability

Indicator reliability aims to assess whether the latent variable measurement indicators are reliable or not by evaluating the results of the outer loading of each indicator. A loading value above 0.7 indicates that the construct can explain more than 50% of the indicator variance (Sarstedt et al., 2017; Wong, 2013). In this study, all loading values were above 0.7, only one was below 0.7, and all of them were above 0.7.

Table 3. *Construct reliability and validity*

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Budget Planning Models	0,962	0,966	0,966	0,656
Innovation	0,860	0,898	0,893	0,532
Knowledge Management	0,978	0,979	0,979	0,682
Performance	0,938	0,944	0,946	0,575

Internal consistency reliability

Internal consistency reliability measures how capable the indicator can measure its latent construct (Memon, Bhutto, & Abbas, 2017). The tools used to assess this are composite reliability and Cronbach's alpha. If the composite reliability value is 0.6 - 0.7, it is considered to have good reliability (Sarstedt et al., 2017), and the expected Cronbach's alpha value is above 0.7 (Ghozali & Latan, 2015).

Convergent validity

Convergent validity is determined based on the principle that the measures of a construct should be highly correlated (Ghozali & Latan, 2015). The convergent validity of a construct with reflective indicators is evaluated by average variance extracted (AVE). The AVE value should be 0.5 or more. An AVE value of 0.5 or more means that the construct can explain 50% or more of the item variance (Sarstedt et al., 2017; Wong, 2013).

Reliability tests in smart PLS can use two methods, such as Cronbach's Alpha and Composite reliability. According to Hair et al. (2014), the composite reliability and Cronbach's alpha values were examined along with the extracted mean-variance (AVE) to check the reliability of the assessment model. All coefficients of Cronbach's alpha and composite reliability must be more than 0.7, although a value of 0.6 is still acceptable. However, the internal consistency test is not absolute if the construct validity has been met because a valid construct is reliable. On the other hand, a reliable construct is not necessarily valid (Blumberg et al., 2014). Composite reliability varies from 0.974 to 0.982. In addition, the AVE value varies from 635 to 707. All values in this research are in the table. Both Cronbach's alpha, composite reliability and AVE are acceptable. It means that the data above are valid and reliable.

Discriminant validity

The individual reflective measure is very high if it has a correlation of more than 0.70 with the construct to be measured. However, for research in the early stages of developing a measurement scale, a loading value of 0.50 to 0.60 is considered sufficient. Discriminant validity aims to determine whether a reflective indicator is a good measure of its construct based on the principle that each indicator must be highly correlated with its construct only. The measures of different constructs should not be very highly correlated (Ghozali & Latan, 2015). In the Smart PLS 3.2.7 application, the discriminant validity test uses cross-loadings values, the Fornell-Larcker Criterion, and Heterotrait-Monotrait (HTMT) (Carrión et al., 2016). The concept of measuring validity can be done by many methods, including the Keizer-Meiser-Ohlin procedure known as KMO (Alkhalaf, Drew, & Alhussain, 2012). The standard Smart PLS 3 approach recommends three procedures to measure validity, namely; (1) the Fornell-Larcker procedure, (2) the cross-loading procedure (Chian & Alves, 1988), and (3) the H*eterotrait-Monotrait ratio* procedure (Henseler et al., 2015). The data analysis of this research used the SEM – PLS approach with the help of the Smart PLS 3 program application to see the validity of this model. Figure 1 is about the Outer Model measurement display. Afterward, to get information on the measurement results in (1) the cross-loading procedure, (2) the Fornell-Larcker procedure, and (3) the Heterotrait-Monotrait ratio procedure.

The cross-loading value of each construct was evaluated to ensure that the correlation of the construct with the measurement item was greater than the other constructs. The expected cross-loading value is more than 0.7 (Ghozali & Latan, 2015). Based on statistical tests with the help of the Smart PLS application table 2 above, the cross-loading value of each research construct is more than 0.7, so it can be concluded that all research items have met the requirements of instrument validity.

Fernell larker criterion

The results of statistical measurements of discriminant validity tests through the Fernell Larker Criterion procedure with the Smart PLS application in this research can be seen in Table 4 as follows.

Table 4. *Fornell-Larcker Criterion*

	Budget Planning Models	**Innovation**	**Knowledge Management**	**Performance**
Budget Planning Models	0,810			
Innovation	0,777	0,729		
Knowledge Management	0,938	0,786	0,826	
Performance	0,836	0,896	0,838	0,758

The discriminant validity criteria discussed by Fornell-Larcker and their loading and cross-loading criteria. The *off-diagonal* value informed in Table 4 is the correlation between the constructs meanwhile; the diagonal value is the squared value of the AVE that indicates the AVE value in the construct itself is very high compared to all other constructs. Therefore, it can be explained that the AVE square root is greater than the correlation below it. In this case, the square root value of AVE in each construct is greater than the correlation value between constructs and other constructs in the tested model, so the model can be said to have had a good discriminant validity value (Fornell & Larcker, 1981). Thus, it is feasible to use for research.

Heterotrait – Monotrait Ratio (HTMT)

The results of the discriminant validity measurement carried out in this research through the Heterotrait-Monotrait Ratio procedure can be seen in the following table.

Table 5. *Heterotrait-monotrait ratio*

	Budget Planning Models	Innovation	Knowledge Management	Performance
Budget Planning Models				
Innovation	**0,836**			
Knowledge Management	**0,861**	**0,843**		
Performance	0,852	**0,882**	0,852	

Some experts argue that cross-loading and Fornell-Larcker Criterion are less sensitive in assessing discriminant validity. HTMT is a recommended alternative method to assess discriminant validity. This method uses a multitrait-multimethod matrix as the basis for measurement. The HTMT value should be less than 0.9 to ensure discriminant validity between the two reflective constructs (Henseler et al., 2015). Based on the results of the data in the table above, all values are less than 0.9, so the research instrument used is valid.

Coefficient of determination (R2)

The coefficient of determination (R2) is a way to assess how much an endogenous construct can be explained by an exogenous construct. The value of the coefficient of determination (R2) is expected to be between 0 and 1. If the R2 values are 0.75, 0.50, and 0.25, it indicates that the model is strong, moderate, and weak (Sarstedt et al., 2017). Chin in Ghozali and Latan (2015) gave the criteria for an R2 value of 0.67; 0.33; and 0.19 partially strong, moderate, and weak. The results of the measurement of this research using the coefficient of determination (R2) can be seen in Table 6 below.

Table 6. *R-Square*

	R Square	Adjusted R Square
Budget Planning Models (BPM)	0,326	0,324
Innovation	0,669	0,668

The data in table 6 above show that the coefficient of determination model is strong for Performance, moderate for budget planning models and school-based budgeting, and weak for school effectiveness.

Cross-validated redundancy (Q^2)

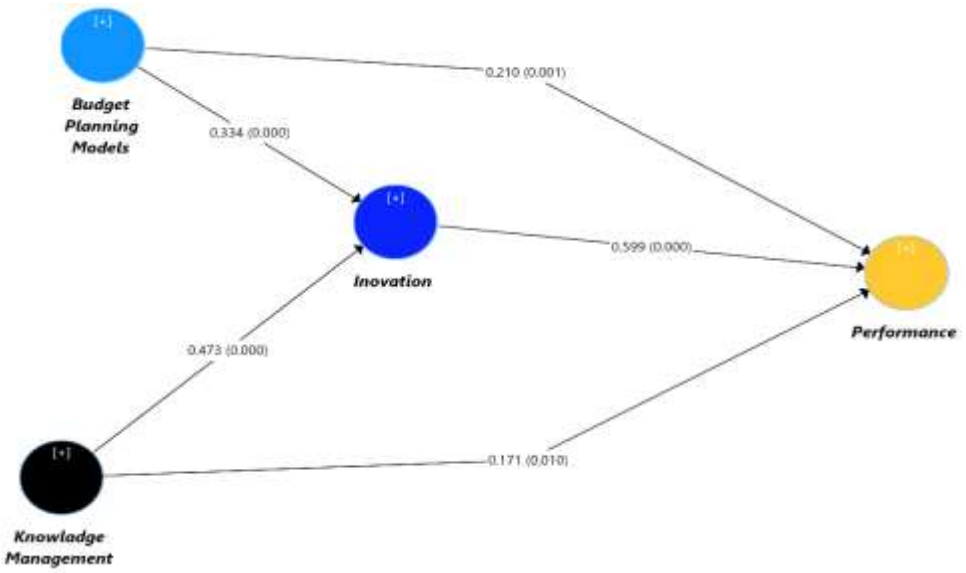
Cross-validated redundancy (Q2) or Q-square test was to assess predictive relevance. The value of Q2 > 0 indicates that the model has accurate predictive relevance to certain constructs, while the value of Q2 < 0 indicates that the model lacks predictive relevance (Sarstedt et al., 2017). The results of measurements using Cross-validated redundancy (Q2) in this research are in table 7 below.

Table 7. Q^2 Square

	RMSE	**MAE**	**Q^2_predict**
Budget Planning Models (BPM)	0,531	0,401	0,150
Innovation	0,498	0,337	0,634

The table above shows the value of Q2 > 0 that the model has accurate predictive relevance to the construct.

Figure 1. *Partial effect measurement model output displays*



Based on Figure 2 above, the output display of the partial affects measurement model for each research variable includes the Budgeting Planning Model, Knowledge Management, Innovation, and Performance. Further information on the measurement results of (1) Mean, (2) STDEV, (3) T-Values, and (4) P-Values can be seen in Table 8 below:

Table 8. *Summary of results of hypothesis testing*

Hypotheses	Path Coefficient	P Values	
H1: Budget Planning Models → Innovation	0,334	0,000	Supported
H2: Budget Planning Models → Performance	0,210	0,001	Supported
H3: Knowledge Management → Innovation	0,599	0,000	Supported
H4: Knowledge Management → Performance	0,473	0,000	Supported
H5: Innovation → Performance	0,171	0,010	Supported
H6: Budget Planning Models → Innovation → Performance	0,200	0,000	Supported
H: Knowledge Management → Innovation → Performance	0,284	0,000	Supported

Discussion

In this study, 6 hypotheses were proposed with the results that there was the effect of budget planning on innovation with the original sample of (β) = 0.334, there was the effect of the budgeting planning model on performance with the original sample of (β) = 0.210, there was the influence of knowledge management on innovation with the original sample. of (β) = 0.599, There is an Influence of knowledge management on Performance with original sample of (β) = 0.473, there is an influence of innovation on Performance with original sample of (β) = 0.171, There is an influence of budget planning model on performance mediated by innovation with original sample of (β) = 0.200, Knowledge management on performance mediated by innovation with original sample of (β) = 0.284, all variables affect significantly which can be seen from the P Value between variables below 0.05.

According to the results of this study, knowledge management is positively related to lecturer performance. The structural model findings show that lecturer performance tends to be higher in universities where knowledge and competence are key factors in strategy and strategic planning, which updates strategy regularly and disseminates it thoroughly throughout the organization. in university. Thus, this study supports the arguments made by Donate and Canales (2012) about the advantages of proactive knowledge strategies in terms of maintaining a broad understanding of knowledge as a strategy, setting goals, utilizing specific KM tools, and recognizing the importance of KM culture and other tools to enhance innovation so that performance is also increasing. In addition, this study is in line

with the findings of Theriou, Maditinos, and Theriou (2011) about the important role of leadership and for the sake of KM influencing the performance of the institution.

Institutional performance at universities is determined through the performance of lecturers through teaching, research and community service. This is a challenge for universities to be competitive at local and international levels, the results of this study prove that it is necessary to create a good mechanism to improve lecturer performance through innovation supported by knowledge management, budget planning models so that educational staff or lecturers have programs that are implementable in improving lecturer performance to improve organizational performance.

Innovation is recognized as a necessary variable and has a significant influence on both public and private institutions to create value and maintain competitive advantage in an increasingly complex and rapidly changing environment (Bilton & Cummings, 2009; Subramaniam & Youndt, 2005). In general, innovation not only makes full use of existing resources, increasing efficiency and potential value, but also brings new intangible assets into the organization. Companies with greater innovation will be more successful in responding to customer needs, and in developing new capabilities that enable them to achieve better performance or superior profitability (Calantone, Cavusgil, & Zhao, 2002; Sadikoglu & Zehir, 2010). Innovation is very important to achieve operational efficiency and improve organizational quality (Hsueh & Tu, 2004; Parasuraman, 2010).

The budget planning model refers to budget control by university leaders or supervisors that emphasizes budgetary goals and the participation of subordinates in setting, monitoring, and communicating goals so that the budget made has positive implications and effects on performance (Merchant & Van der Stede, 2007). Investigating the reasons and causal antecedents of budget use in an institution and institution, the characteristics of budget planning have an influence on the effectiveness of budget use which is positively related to the performance of lecturers and institutions.

Conclusion

This study finds and explains the dimensions of knowledge management (KM) that enhance innovation and lecturer performance. Other empirical evidence explains that planning, implementation, evaluation, externalization and combination become knowledge that contributes to the innovation and performance of lecturers. KM is a predictor that contributes to improving innovation and performance. University leaders can use these findings to negotiate with stakeholders about implementing KM projects. This research can contribute to practitioners, as it provides organizations with new insights and findings that university leaders can translate into their own institutions. KM has a positive impact on innovation and performance. In particular, companies know that with a clear KM program they can be more innovative, achieve better financial results, improve processes and develop human resource capabilities.

This study reveals the fact that the budget planning model serves as a tool to facilitate decisions and achieve management objectives, can explain the greater influence on innovation and organizational performance. The results of this study provide a reference for universities, especially private universities in Jambi Province in designing budgeting systems.

During the design process, the budget planning model should take into account the level of emphasis the organization places on the budget. In organizations that place greater emphasis on budgetary objectives by using budget planning models with greater flexibility, it is important to create an enabling atmosphere for leaders of both universities and faculties to maximize the effectiveness of evaluation and monitoring. Consequently, it is critical to determine how to fully communicate with units and faculty during the budget participation process, as well as to share information and experiences, improve access to work-relevant information, and create a flexible control environment that empowers and engages activities at both the university and university levels faculty.

Limitations in this study, the author tries to design a model to maximize the performance of the organization seen from management knowledge and the budget planning model plays an important role in the management control system, the model is only part of the overall system. Conventionally, budgeting is considered as a passive tool, only providing information to assist decision making. One possible line of further investigation is to explore the optimal cost-benefit tradeoffs associated with other components and practices of management control systems.

Future research to create model for developing the performance of educators based on government regulations at the time and more implementing in line with the new industrial revolution. Future research may also study the influence of budgeting characteristics on the attitudes and behavior of educators. The researcher is aware of the complexities associated with individual responses to the social environment; it will be interesting to explore the mental state and behavior of superiors in the budget model to examine the reactions of subordinates to budgeting decisions. Furthermore, the management knowledge factor can also be seen from the leadership of organizational leaders and the emphasis on efforts to improve lecturer and teaching innovation is an effort that must also be made by leaders to make educational institutions better.

Disclosure statement

No potential conflict of interest was reported by the authors.

Acknowledgments

The authors' gratitude goes to Universitas Jambi for funding this research through the scheme of learning innovation research.

References

Ahmad, N., Lodhi, M. S., Zaman, K., & Naseem, I. (2017). Knowledge management: A gateway for organizational performance. Journal of the Knowledge Economy, 8(3), 859–876.

Alkhalaf, S., Drew, S., & Alhussain, T. (2012). Assessing the impact of e-learning systems on learners: A survey study in the KSA. *Procedia-Social and Behavioral Sciences*, *47*, 98-104.

Bano, S., & Taylor, J. (2015). Universities and the knowledge-based economy: Perceptions from a developing country. *Higher Education Research & Development*, *34* (2), 242–255.

Belogolovsky, E., & Somech, A. (2010). Teachers' organizational citizenship behavior: Examining the boundary between in-role behavior and extra-role behavior from the perspective of teachers, principals and parents. *Teaching and Teacher education*, *26*(4), 914-923.

Blumberg, B., Cooper, D., & Schindler, P. (2014). *EBOOK: Business research methods*. London: McGraw Hill.

Calantone, R. J., Cavusgil, S. T., & Zhao, Y. (2002). Learning orientation, firm innovation capability, and firm performance. *Industrial marketing management*, *31*(6), 515-524.

Carrión, G. C., Henseler, J., Ringle, C. M., & Roldán, J. L. (2016). Prediction-oriented modeling in business research by means of PLS path modeling: Introduction to a JBR special section. *Journal of business research*, *69*(10), 4545-4551.

Cheng, H., Concepcion, G. T., Feng, X., Zhang, H., & Li, H. (2021). Haplotype-resolved de novo assembly using phased assembly graphs with hifiasm. *Nature Methods*, *18*(2), 170-175.

Chenhall, R. H., & Euske, K. J. (2007). The role of management control systems in planned organizational change: An analysis of two organizations. *Accounting, Organizations and Society*, *32*(7-8), 601-637.

Chian, A. C. L., & Alves, M. V. (1988). Nonlinear generation of the fundamental radiation of interplanetary type III radio bursts. *The Astrophysical Journal*, *330*, L77-L80.

Creswell, J. W. (2014). *A concise introduction to mixed methods research*. Sage Publications.

Donate, M. J., & Canales, J. I. (2012). A new approach to the concept of knowledge strategy. *Journal of Knowledge Management*, *16*(1), 22-44.

Doran, J., & Ryan, G. (2014). Firms' skills as drivers of radical and incremental innovation. *Economics Letters*, *125*(1), 107-109.

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: *American Marketing Association, 18*(3) 382-388.

Frow, N., Marginson, D., & Ogden, S. (2005). Encouraging strategic behaviour while maintaining management control: Multi-functional project teams, budgets, and the negotiation of shared accountabilities in contemporary enterprises. *Management Accounting Research*, *16*(3), 269-292.

Ghasemy, M., Mohajer, L., Cepeda-Carrión, G., & Roldán, J. L. (2020). Job performance as a mediator between affective states and job satisfaction: A multigroup analysis based on gender in an academic environment. *Current Psychology*, *41,*1221-1236.

Ghozali, I., & Latan, H. (2015). *Partial least squares konsep, teknik dan aplikasi menggunakan program SmartPLS, 3.0 untuk penelitian empiris [Partial least squares concepts, techniques, and applications using the SmartPLS program 3.0 for empirical research]*. Semarang: Badan Penerbit Universitas Diponegoro.

Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2017). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*, *26*(2), 106-121.

Hansen, M. T., Nohria, N., & Tierney, T. (1999). What's your strategy for knowledge management. *Harvard Business Review*, *77*(2), 106-116.

Hsueh, L. M., & Tu, Y. Y. (2004). Innovation and the operational performance of newly established small and medium enterprises in Taiwan. *Small Business Economics*, *23*(2), 99-113.

Klein, A., & Bhagat, P. (2016). Comparative study of technological innovativeness between individuals in the USA and India. *Review of International Business and Strategy*, *26*(1), 100-117.

Kung, F. H., Huang, C. L., & Cheng, C. L. (2013). An examination of the relationships among budget emphasis, budget planning models and performance. *Management Decision*, *51*(1), 120-140.

Memon, F., Bhutto, N. A., & Abbas, G. (2012). Capital structure and firm performance: A case of textile sector of Pakistan. *Asian Journal of Business and Management Sciences*, *1*(9), 9-15.

Merchant, K. A., & Van der Stede, W. A. (2007). *Management control systems: Performance measurement, evaluation and incentives*. Harlow, England: Pearson education.

Mital, P., Moore, R., & Llewellyn, D. (2014). Analyzing K-12 education as a complex system. *Procedia Computer Science*, *28*, 370-379.

Moffett, S., McAdam, R., & Parkinson, S. (2002). Developing a model for technology and cultural factors in knowledge management: A factor analysis. *Knowledge and Process Management*, *9*(4), 237-255.

Motsamai, M. J., Jacobs, L., & Wet, C. D. (2011). Policy and practice: Financial management in schools in the Mafeteng district of Lesotho. *Journal of Social Sciences*, *26*(2), 105-116.

Ndou, N., & Menlah, N. M. D. H. (2015). The management of finances by school governing bodies. *Journal of Social Sciences*, *43*(2), 153-159.

Neuman, D. (2014). Qualitative research in educational communications and technology: A brief introduction to principles and procedures. *Journal of Computing in Higher Education*, *26*(1), 69-86.

Nonaka, I., Von Krogh, G., & Voelpel, S. (2006). Organizational knowledge creation theory: Evolutionary paths and future advances. *Organization Studies*, *27*(8), 1179-1208.

Parasuraman, A. (2010). Service productivity, quality and innovation: Implications for service-design practice and research. *International Journal of Quality and Service Sciences*, *2*(3), 277-286.

Ratzmann, M., Gudergan, S. P., & Bouncken, R. (2016). Capturing heterogeneity and PLS-SEM prediction ability: Alliance governance and innovation. *Journal of Business Research*, *69*(10), 4593-4603.

Rich, L., & Whittaker, P. (2017). Collagen and picrosirius red staining: A polarized light assessment of fibrillar hue and spatial distribution. *Journal of Morphological Sciences*, *22*(2), 97-104.

Ryu, E. K., & Vũ, B. C. (2020). Finding the forward-Douglas–Rachford-forward method. *Journal of Optimization Theory and Applications*, *184*(3), 858-876.

Sadikoglu, E., & Zehir, C. (2010). Investigating the effects of innovation and employee performance on the relationship between total quality management practices and firm performance: An empirical study of Turkish firms. *International Journal of Production Economics*, *127*(1), 13-26.

Sarstedt, M., Ringle, C. M., & Hair, J. F. (2017). Partial least squares structural equation modeling. *Handbook of Market Research*, *26*(1), 1-40.

Saunila, M. (2014). Innovation capability for SME success: Perspectives of financial and operational performance. *Journal of Advances in Management Research*, *11*(2), 163-175.

Spee, A. P., & Jarzabkowski, P. (2011). Strategic planning as communicative process. *Organization Studies*, *32*(9), 1217-1245.

Theriou, N. G., Maditinos, D., & Theriou, G. (2011). Knowledge management enabler factors and firm performance: An empirical research of the Greek medium and large firms. *European Research Studies, 14*(2), 97-134.

Thompson, P. N., & St. John, M. (2019). The effects of performance audits on school district financial behavior. *Public Finance Review*, *47*(6), 1042-1075.

Wong, K. K. K. (2013). Partial least squares structural equation modeling (PLS-SEM) techniques using SmartPLS. *Marketing Bulletin*, *24*(1), 1–32.

Biographical Notes

FITRIATY is an assistant Professor, Faculty of Economics and Business, Universitas Jambi, Jambi, Indonesia, Corresponding author's email: fitriaty@unja.ac.id

DESSY ELLIYANA was a graduate Student, Faculty of Economics and Business, Universitas Jambi, Jambi, Indonesia

TONA AURORA LUBIS is an associate Professor, Faculty of Economics and Business, Universitas Jambi, Jambi, Indonesia