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The impact of knowledge-oriented leadership on innovation performance with e-based knowledge management system as mediating variable

Nurdjanah Hamid[a*], Musran Munizu[a] and Ria Mardiana[a]

[a]*Faculty of Economics and Business, Universitas Hasanuddin, Makassar, Indonesia*

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A B S T R A C T

This study investigates how knowledge-oriented leadership impacts on innovation performance both directly and indirectly mediated electronic based knowledge management systems (e-based KMS). Where, electronic knowledge management system consists of knowledge management infrastructures, and knowledge management processes. Primary data was obtained through a questionnaire given to 110 managers or directors of the manufacturing company as respondents. In addition, data were also obtained through observation techniques, and interviews with respondents. Both descriptive statistical analysis, and structural equation modelling (SEM) was used as an analysis method. The findings suggest that knowledge-oriented leadership has a positive, direct, and significant influence on knowledge management infrastructures as well as knowledge management processes. However, knowledge-oriented leadership has no direct influence on innovation performance. The findings also indicate that electronic knowledge management systems that consist of knowledge management infrastructures, and knowledge management processes have a direct, positive, and significant influence on innovation performance. This study suggested that there are two key pathways for businesses to improve their innovation performance i.e.: enhancing the technological, cultural, and structural infrastructure of the company, and enhancing knowledge creation, use, and utilization.

1. Introduction

The rapidly changing competitive environment has increased the recognition of the important role of knowledge in organizations. Knowledge is one of the most important organizational resources in an organization and is included in the category of intangible assets. In practice, many companies have used knowledge as an important variable to win the competition in the global market, especially in the knowledge-based economy era (Amayah, 2013; Banmairuroy et al., 2022). Business organizations that are run based on knowledge fully understand that knowledge can play a very important role as a basic element to produce innovation and superior performance for every organization (Belawati et al., 2019). Therefore, the ability of a company to collect, create and use knowledge significantly determines the added value of an organization. Knowledge is the main means to increase creativity and innovation in organizations, which is one of the important resources in achieving an organization's goal (Bharadwaj et al., 2015). Knowledge can be thought of as a body of ideas, skills, and information that can be developed and applied to add value to the company's products (Liang et al., 2007).

Grant (1996) explains that knowledge-based theory is a derivative of resource-based theory. This theory considers the organization as a container for collecting, creating, integrating, and using knowledge in carrying out its business processes. Knowledge-based theory originates from resource-based theory which emphasizes the importance of utilizing strategic assets of a company to produce competitiveness. Knowledge-based theory also emphasizes the importance of knowledge as the main

* Corresponding author.
E-mail address: nunung@fe.unhas.ac.id (N. Hamid)

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strategic resource to many organizations. When knowledge is used effectively, then companies can generate higher value, and better performance (Singh, 2008).

Internalization of knowledge in an organization requires the full support of managers. Knowledge-oriented leadership (KOL) can be observed from the mindset, actions, and attitudes of organizational leaders who use knowledge as the key in running their business (Gürlek & Cemberci, 2020). Managers are aware that to deal with the phenomenon of a dynamic business environment and the pressure from very strong external factors, knowledge must become the driving force behind the operation of the company. This is what spurs the widespread application of knowledge, giving rise to knowledge management as a novel idea and standard for conducting business operations to boost innovation, and competitiveness (Cui et al., 2020).

Knowledge management is well known as the science and art of creating corporate values from intangible assets. Thus, it is a system that allows companies to absorb several knowledge, experience, and creativity of their employees for improvement and improvement of company performance (Bergeron, 2003). Knowledge management can play an important role both in improving organizational performance and increasing the level of organizational innovation (Rahimi et al., 2017). Increasing company innovation is greatly benefited by the process of knowledge management. It includes acquisition, sharing, and using knowledge (Obeidat et al., 2016).

Knowledge management in an organizational context is intended to create creativity and innovation which in turn can increase organizational value and performance, as well as produce sustainable corporate competitiveness. Companies that manage knowledge using IT-based or electronic based knowledge management systems will be faster in creating, communicating, and applying all the knowledge needed to produce innovation, competitiveness, and high performance. The dynamics of the use of knowledge management in organizations can be found in company activities that are carried out routinely such as: training, workshops, coffee mornings, and socialization of the results of training and human resource development (Tiwana, 2002).

Berchicci's (2013) explains that an organization's information technology capabilities can increase its opportunities to create and develop new products and markets. Masseni et al. (2012) also found the important role of technology in creating organizational innovation. Innovation performance is also determined by the collective knowledge stored and shared among all employees in the organization (Wang & Han, 2011). Organizational innovation is benefitted from knowledge sharing as part of process management because it facilitates the presentation of fresh ideas and allows for learning from the experiences of others (Lai et al., 2009).

According to several research findings, leadership factors have a significant impact on innovation performance. On the other hand, a few other studies have discovered a non-significant correlation. Additionally, several arguments from earlier research discovered a favorable relationship between knowledge management practices and innovation (von Krogh et al., 2012). Research on the impact of knowledge-oriented leadership on innovation performance mediated by electronic based knowledge management systems (e-based KMS) is still comparatively uncommon in developing nations. Based on existing facts, phenomena, and empirical research, the goal of this study is to analyze and explain how knowledge-oriented leadership affects innovation performance directly and indirectly by IT based/ electronic based knowledge management system.

2. Literature Review and Hypothesis Development

2.1 Knowledge-Oriented Leadership

The term “leadership” does not always refer to a person's position at the top of the organization; rather, it can apply to all positions within the company, even if that person does not hold a position. The ability to persuade others to cooperate to accomplish organizational goals is a necessary component of leadership (Alharthi et al., 2020). Knowledge-oriented leadership is one of the important concepts in leadership studies in organizations (Gharama et al., 2020). It is related to actions that can encourage knowledge in term of creation, sharing, and utilization in effective ways in bringing about change in collective performance results that can encourage better e-KMS, and innovation in organizations (Vaccaro et al., 2012; Mabey et al., 2012; Donate & de Pablo, 2015). To turn opportunities and challenges from external into organization's core strengths and competencies. Knowledge-oriented leadership becomes crucial in organizations. So that it can support the development of the company's innovative and high-quality products. External forces like the accelerating development of information technology, shifting consumer preferences, rising customer needs, and escalating competitive dynamics have compelled every organization to adopt and adjust its business strategy by implementing the best practices available. It aims to maintain the company's performance and prevail in the global market competition (Novitasari et al., 2020).

Furthermore, knowledge-oriented leadership can encourage knowledge-sharing among organizational elements. Besides being able to create innovative behavior for its employees. Knowledge-oriented leadership can also increase efficiency within the company (Donate & de Pablo, 2015). Leaders who have certain behaviors can accelerate and encourage employee innovation thinking, which in turn will make a positive contribution to improving organizational innovation (Bass & Riggio, 2006). In organizations where managers embrace the idea of transformational leadership, Knowledge-oriented leadership is more effective. Effective managers can motivate employees to share knowledge within the company by using this leadership

style. In addition, transformational leadership promotes the efficient exchange of knowledge within an organization. Employee motivation is positively impacted by transformational leadership, which can also boost organizational performance (Singgih et al., 2020). Knowledge-oriented leadership can support and encourage both creativity and performance in a better direction. In actuality, the organization's strategy is constantly being improved in tandem with the dynamics of the rapidly shifting external environment. As a result, to effectively lead an organization, knowledge-based leadership is a necessary concept (Alkathiri et al., 2019).

Previously studies have shown the types of transformational leadership and transactional leadership to develop knowledge-oriented leadership variables and find positive influence of knowledge-oriented leadership variables toward e-knowledge management systems and performance of innovation. A comprehensive paradigm of knowledge-based leadership type needs to be developed consistently and sustainably to support knowledge-sharing activities in organizations (Donate & de Pablo, 2015; Shamim et al., 2017). Effective knowledge-oriented leadership can be realized through transformational, and transactional leadership in different types of organizations, and their implementation can improve overall organizational performance (Oke et al., 2009; Pieterse et al.,2010; Trung & Khalifah, 2019).

Knowledge-oriented leadership variable is measured through five indicators i.e.: environment that shapes employee behavior, openness and mediation efforts to achieve company goals, learning from experience, external knowledge acquisition, and rewards for share and apply knowledge by employees (Donate & de Pablo, 2015; Almatrooshi et al., 2020).

2.2 Electronic based Knowledge Management System (e-based KMS)

Conceptually, knowledge management is a process of knowledge creation, knowledge acquisition, knowledge sharing, and the application or use of knowledge in an organization's business activities (Nonaka & Takeuchi, 1995). Knowledge management was developed from the Resource Based View which emphasizes the use of the firm's strategic resources to generate competitiveness (Dayan et al., 2017). Then, electronic based knowledge management system (e-based KMS) is an IT-based knowledge management system, where this system provides a quick solution for management for decision making in the organization (Zhang et al., 2013). The knowledge management system can be divided into two dimensions, namely knowledge management infrastructures (KMI), and (2) knowledge management processes (KMP), where KMI includes technological infrastructure, cultural infrastructure, and structural infrastructure, while KMP consists of knowledge acquisition, knowledge creation, and knowledge utilization. The interaction and collaboration of these two dimensions in an organization that is supported by a knowledge-based leadership type will increase innovation, competitiveness, and company performance (Ting et al., 2021).

The combination of tacit and explicit knowledge produces organizational knowledge. The four main processes in knowledge management are the processes of socialization, externalization, combination, and internalization which are carried out continuously in a knowledge management system. Knowledge-based management systems can assist organizations in enhancing their performance through collaboration from several key aspects, including organizational culture, business processes, technology, and human resources (Grandinetti, 2016). According to Zack et al. (2009) knowledge management is a series of activities, initiatives, and strategies used by companies to generate, store, transfer, and apply knowledge to improve company performance through innovation. Debowski (2006) divides knowledge management into two parts. The first part is the process, which includes utilization, storing, acquisition, distribution/sharing, and creation. Then the second part covers the structure, technology, measurement, organizational design, leadership, and culture. The existence of knowledge is very important for every organization. In practice, the company's management always tries to develop a number of strategies, programs, and activities to strengthen the knowledge of its employees. Management is also trying to find an appropriate leadership style to support the effective application of IT based knowledge management because it is expected to contribute to improving innovation and company competitiveness (Johan et al., 2021).

This study focuses on knowledge management infrastructures which is assessed using four indicators: the extent to which technological infrastructure devices are adopted and used; the degree to which a knowledge-based corporate culture and environment are fostered; the extent to which management information systems are increasingly used; and the extent to which company policies support staff members' ongoing learning (Intezari et al., 2017; Ting et al., 2021). While the knowledge management processes variable is also measured through four indicators, namely, knowledge is gained through participation in training/workshops/project teams, the company supports ideas flowing from employees, the company intensively encourages employees to learn to some previous mistakes to solve problems. Then, companies encourage employees to apply the lesson learned from their experience to get best results (Tseng & Lee, 2014; Muthuveloo et al., 2017; Ting et al., 2021).

2.3 Innovation Performance

Organizational performance is a term commonly used to describe how well policies, programs and activities are implemented to accelerate the achievement of the vision, mission, goals and objectives of an organization. An organization's strategic planning document usually contains and explains this in detail, so that it is easy to measure its achievements (Gao et al., 2016).

Furthermore, innovation performance can include the overall capabilities and innovation capabilities of an organization to introduce new products and market through both strategic and innovation within the organization (Wang & Ahmed, 2004).

Innovation performance is one of the sources of organizational competitiveness. In general, innovation performance is influenced by several knowledge sources that are managed effectively within the organization, which include knowledge, skills, attitudes, and experience. This collection of knowledge and skills can be shared and accessed by all elements of the organization to be used in producing, finding, creating, and using new knowledge (Capaldo & Messeni, 2015). Innovation performance in this study is measured through four main indicators, namely: company's ability to develop new products, to modify existing products, to introduce new products than main competitors, and to introduce new products than average industry (Donasi & de Pablo, 2015; Ting et al., 2021). Furthermore, the conceptual framework model can be illustrated below.

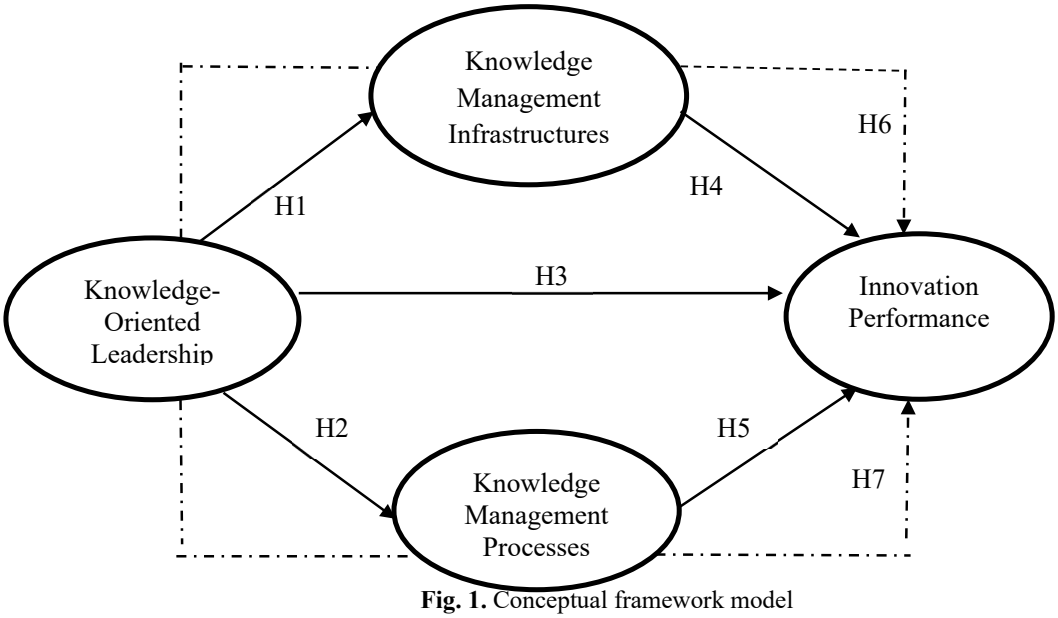

Fig. 1. Conceptual framework model

Based on the results of theoretical studies and a review of the results of previous studies, the following hypotheses can be formulated:

H_1: *Knowledge-oriented leadership affects knowledge management infrastructures.*
H_2: *Knowledge-oriented leadership affects knowledge management processes.*
H_3: *Knowledge-oriented leadership affects innovation performance.*
H_4: *Knowledge management infrastructures affect innovation performance.*
H_5: *Knowledge management processes affect innovation performance.*
H_6: *Knowledge-oriented leadership affects innovation performance indirectly through knowledge management infrastructures*.
H_7: *Knowledge-oriented leadership affects innovation performance indirectly through knowledge management processes.*

3. Research Method

The positivism paradigm is supported by qualitative information obtained through interviews with respondents. Makassar City and Gowa Regency, both in the Province of South Sulawesi, were chosen as research locations because they are the centres of industrial estates. The population in this study were all companies belonging to the category of medium and large-scale manufacturing (processing) industry. There are 296 active manufacturing companies with a total workforce of 27,542 people. The sample of this study was 110 companies, which were taken from the population using a simple random sampling technique. Using Structural Equation Modelling required more than 100 samples (Hair et al., 2006). Managers and supervisors who are competent enough to respond to questionnaires are considered research respondents. The variables tested for the relationship consisted of exogenous variables and endogenous variables. Knowledge-oriented leadership (KOL) is an exogenous variable, while electronic based knowledge management system (e-based KMS) consists of knowledge management infrastructures (KMI), knowledge management processes (KMP), and innovation performance (IP) are endogenous variables. Then, a Likert scale was used to measure variables with an answer score range of 1-5. Primary data were obtained through questionnaires and the results of direct interviews with respondents. Based on the results of the Pearson correlation analysis, the statement items/indicator variables of this study showed a high level of validity ($r > 0.30$). While the level of reliability of the variables is also still quite good based on the resulting Cronbach alpha value ($\alpha > 0.60$). The study's hypothesized causal relationship between exogenous and endogenous variables is tested using SEM in the meantime. Additionally, data processing with the aid of IBM SPSS and AMOS 26.

4. Results and Discussion

4.1 Sample and Respondent Characteristics

A brief of sample characteristics includes 8 types of manufacturing companies i.e.: Food and beverage companies are the largest with a total of 43 units (39.09%); Wood and furniture processing, 16 units (14.55%); Frozen shrimp and fish processing companies, 15 units (13.64%); Building material factory, 10 units (9.09%); Ice factory and cold storage, 8 units (7,27%); Metal-steel and concrete, 7 units (6,36%); Other industries, 6 units (5,45%); Textile companies are the least with 5 units (4.55%) of the total research sample.

Table 1
Characteristics of respondents

No	Description	Frequency	Percentage (%)
1	Gender type:		
	Male	84	76.36
	Female	26	23.64
2	Age (years):		
	≤ 30	10	9.09
	31 - 40	28	25.45
	41 - 50	47	42.73
	≥ 50	25	22.73
3	Education level:		
	High School	8	7.27
	Diploma	16	14.55
	Undergraduate	71	64.55
	Postgraduate	15	13.64
4	Length of service (years):		
	≤ 5	6	5.45
	6 - 10	10	9.09
	11 - 15	34	30.91
	15 - 20	44	40.00

As summarized in Table 1, in this study, 84 men (76.36%) and 26 women (23.64%) participated as research respondents. 75 respondents, or 71.80%, were respondents, the majority of whom were between the ages of 30 and 50. In terms of education level, 87 respondents (79.10% of the total) had a diploma or undergraduate degree, and approximately 78 respondents (70.91%) had worked for between 11 to 20 years. Each respondent's level of education and the number of years of employment may reflect an adequate level of knowledge and the capacity to provide pertinent information.

4.2 Variable Characteristics

The level of implementation of indicators and variables is divided into five interval classes based on the average value (mean) of respondents' responses to make it simpler to interpret the analysis results. These interval classes are as follows: (1) 1.00 – 1.80 = not good/very low; (2) 1.81 – 2.40 = not good/low; (3) 2.41 – 3.20 = good enough/high enough; (4) 3.21 – 4.20 = good/high; (5) 4.21 – 5.00 = very good/very high. A brief description of the characteristics of the variables and their indicators in full is presented as follows.

Table 2
Characteristics of research variables

Variable	Indicator	Min.	Max.	Average (Mean)	Description
Knowledge-Oriented Leadership (X1); Mean = 4.06 (Good)	X1.1	3	5	4.25	Very good
	X1.2	2	5	4.02	Good
	X1.3	3	5	4.05	Good
	X1.4	3	5	3.9	Good
	X1.5	3	5	4.09	Good
Knowledge Management Infrastructures (Y1); Mean = 4.15 (Good)	Y1.1	2	5	4.14	Good
	Y1.2	3	5	4.28	Very good
	Y1.3	2	5	3.96	Good
	Y1.4	3	5	4.24	Very good
Knowledge Management Processes (Y2); Mean = 4.16 (Good)	Y2.1	3	5	4.27	Very good
	Y2.2	2	5	4.07	Good
	Y2.3	2	5	4.23	Very good
	Y2.4	2	5	4.05	Good
Innovation Performance (Y3); Mean = 4.13 (Good)	Y3.1	2	5	4.07	Good
	Y3.2	3	5	4.26	Very good
	Y3.3	2	5	3.98	Good
	Y3.4	3	5	4.19	Good

Based on Table 2, in the Knowledge-Oriented Leadership (X1), management has created an environment to shape responsible employee behavior and teamwork (X1.1) has the average value of respondents' answers with the highest score, 4.25 (very good). Then, on the Knowledge Management Infrastructures (Y1), knowledge-based culture and atmosphere within the company can support organizational elements (managers/employees) in generating new ideas (Y1.2) has the average value of respondents' responses with the highest score, 4.28 (very good). Additionally, the Knowledge Management Processes (Y2) shows that the company's indicator of gaining knowledge through participation in workshops, project teams, and training sessions with experts outside the organization (Y2.1) has the highest average value of respondents' answers and the highest score of 4.27 (very good). The indicator of modifying or improving existing products (Y3.2) on the Innovation Performance variable (Y3) has an average value of responses with the highest score of 4.26 (very good).

4.3 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is carried out to determine the important or dominant indicators that form a latent variable or construct based on the factor loading value. The results are presented as follows.

Table 3
Factor loading of research variables

Variable	Indicator	Factor Weight	Prob.	GFI
Knowledge-Oriented Leadership (X1)	X1.1	0.715	0.000	0.974 (fit)
	X1.2	0.624	0.000	
	X1.3	0.575	0.000	
	X1.4	0.706	0.000	
	X1.5	0.593	0.000	
Knowledge Management Infrastructures (Y1)	Y1.1	0.601	0.000	0.990 (fit)
	Y1.2	0.641	0.000	
	Y1.3	0.619	0.000	
	Y1.4	0.589	0.000	
Knowledge Management Processes (Y2)	Y2.1	0.615	0.000	0.980 (fit)
	Y2.2	0.522	0.000	
	Y2.3	0.547	0.000	
	Y2.4	0.708	0.000	
Innovation Performance (Y3)	Y3.1	0.652	0.000	0.994 (fit)
	Y3.2	0.526	0.000	
	Y3.3	0.627	0.000	
	Y3.4	0.713	0.000	

According to Table 3, the knowledge-oriented leadership variable's goodness of fit index (GFI) is 0.974, which is higher than the average value (0.974 > 0.90). This indicates that the formed construct has a high suitability index. The GFI of knowledge management infrastructures variable is 0.990, which is higher than the reference value (0.990 > 0.90), as can also be seen. The analysis also reveals that the GFI of knowledge management processes, and innovation performance variables is greater than standard value (> 0.90) at 0.980 and 0.994, respectively. These indicate that formed constructs have a high suitability index. In addition, all indicators are valid and significant.

4.4 Structural Equation Modelling Analysis

4.4.1 Model Fit Test

Based on the cut-off values used in the confirmatory factor analysis (CFA), which is fully presented in Table 4, the suitability level of the structural equation model is tested.

Table 4
The goodness of fit model results

Criteria	Cut-off Value	Model Results	Model Evaluation
Chi-Square	Expected small	106.619	Marginal
CMIN/DF	2.00	1.002	Good
GFI	0.90	0.899	Marginal
AGFI	0.90	0.855	Marginal
RMSEA	0.08	0.004	Good
CFI	0.95	1.000	Good
TLI	0.95	1.000	Good

It can be inferred from the analysis presented in Table 4 that this model has met the standards for a good model because it meets some important criteria including CMIN/DF, RMSEA, CFI, TLI (Hair et al., 2006).

4.4.2 Hypothesis Testing

In accordance with the processed results and analysis of research data, then the results of testing hypotheses using IBM AMOS 26 software is presented on the following table.

Table 5
The result of the hypothesis testing

Hypothesis	Relationship between Variables	Regression Weight (standardized)	Prob.	Description
I	X → Y1	0.451	0.002	Significant (H1, accepted)
II	X1 → Y2	0.725	0.000	Significant (H2, accepted)
III	X1 → Y3	0.161	0.409	Not significant (H3, rejected)
IV	Y1 → Y3	0.288	0.035	Significant (H4, accepted)
V	Y2 → Y3	0.584	0.008	Significant (H5, accepted)
VI	X1 → Y1 → Y3	0.130	0.041	Significant (H6, accepted)
VII	X1 → Y2 → Y3	0.423	0.003	Significant (H7, accepted)

The data in Table 5 shows that there are six research hypotheses that are accepted, namely: Hypothesis 1, Hypothesis 2, Hypothesis 4, Hypothesis 5, Hypothesis 6, and Hypothesis 7, and one research hypothesis that is rejected, namely Hypothesis 3. In other words, 6 accepted hypotheses are supported by empirical facts, and 1 rejected hypothesis is not supported by empirical facts.

4.5 Discussion

4.5.1 The impact of Knowledge-Oriented Leadership towards Knowledge Management Infrastructures

The value of path coefficient (standardized) of 0.451 with a probability value (p) of 0.002, which is less than the value of =0.05, indicates the direct influence of the knowledge-oriented leadership variable on knowledge management infrastructures. This finding supports the first hypothesis, which states that knowledge-oriented leadership affects knowledge management infrastructures (H1, accepted). The positive and significant impact is an indication that better implementation of Knowledge-oriented leadership can increase the value of knowledge management infrastructures, which is reflected in the level of technology infrastructure device adoption and use, the development of a knowledge-based corporate culture and environment, the increased use of management information systems, and corporate policies that support the continuous employees' learning improvement.

The findings also concur with those of several earlier studies that discovered knowledge-oriented leadership promotes intensive knowledge seeking, knowledge creation, knowledge sharing, and the use of new knowledge that can support better knowledge management infrastructures (Mabey et al., 2012; Donate & de Pablo, 2015). Knowledge management infrastructures also includes structural, cultural, and technological infrastructure. The adoption and use of technological infrastructure, the internalization of cultural infrastructure, and organizational governance can all be accelerated by knowledge-oriented leadership (Debowski, 2006; Ting et al., 2021). The results of this study support the findings of Grandinetti's (2016) study, which discovered that knowledge-based management systems can assist organizations in enhancing their performance through the integration of organizational culture, technology, and business processes.

4.5.2 The impact of Knowledge-Oriented Leadership towards Knowledge Management Processes

The value of path coefficient (standardized) of 0.725 with a probability value (p) of 0.000, which is less than the value of =0.05, demonstrates the direct influence of the knowledge-oriented leadership variable on knowledge management processes. This finding supports the second hypothesis, which is that knowledge-oriented leadership affects knowledge management processes (H2, accepted). The knowledge gained from participation in workshops, training sessions, and project teams, as well as the company's support of employee ideas, intensive encouragement of employees to learn from mistakes to solve current problems, and encouragement of employees to put lessons learned into practice, all point to a better implementation of knowledge-oriented leadership can increase the value of knowledge management processes. The findings are consistent with those of Shamim et al. (2017), Donate & de Pablo (2015) who highlighted the significance of knowledge-based leadership in enhancing knowledge management procedures. Knowledge creation, utilization, and acquisition are all parts of knowledge management processes. Leadership that is focused on knowledge can speed up the process of acquiring knowledge, producing knowledge, and applying knowledge (Ting et al., 2021).

4.5.3 The impact of Knowledge-Oriented Leadership towards Innovation Performance

The value of path coefficient (standardized) of 0.161 with a probability value (p) of 0.409, which is higher than the value of =0.05, demonstrates the direct influence of the knowledge-oriented leadership variable on innovation performance. This finding indicates that the analysis does not support the third hypothesis, which states that knowledge-oriented leadership affects innovation performance (H3, rejected). This finding indicates that knowledge-oriented leadership implementation has not been able to significantly improve innovation performance, which is reflected in the ability of companies to create, improve, and introduce new products and market. The findings contradict with Oke et al. (2009), Trung and Khalifah (2019), and Banmairuroy et al. (2022) that found effective knowledge-oriented leadership can improve organizational performance and foster innovation performance. Lack of management awareness to use knowledge as a key asset in achieving organizational goals may be the root of problem so that knowledge-oriented leadership has less impact in supporting innovation performance.

4.5.4 The impact of Knowledge Management Infrastructures towards Innovation Performance

The value of path coefficient (standardized) of 0.288 with a probability value (p) of 0.035, which is less than the value of =0.05, indicates the direct influence of the knowledge management infrastructures variable on innovation performance. This finding implies that the fourth hypothesis, that knowledge management infrastructure affects innovation performance, is supported by evidence (H4, accepted). The outcome of the study provided evidence that better implementation of knowledge management infrastructure could enhance innovation performance. The findings of this study reinforce those of several earlier studies that showed improved knowledge management infrastructure has an impact on improving innovation performance in terms of technology, culture, and structure (Zack et al., 2009; Donate & de Pablo, 2015; Intezari et al., 2017; Munizu & Hamid, 2018; Ting et al., 2021). The results of this study support Masseni et al. (2012) who found the significance of the role of technology infrastructure in fostering company's innovation. The ability of the company to use information technology may increase the chances of creating and releasing new products. Additionally, information technology can help a company's knowledge assets, store knowledge, and access outside specialized resources, all of which can enhance innovative performance (Berchicci, 2013).

4.5.5 The impact of Knowledge Management Processes towards Innovation Performance

The value of path coefficient (standardized) of 0.584 with a probability value (p) of 0.008, which is less than the value of =0.05, indicates the direct influence of the knowledge management processes variable on innovation performance. This finding shows that the fifth hypothesis, which states that knowledge management processes affect innovation performance, is supported by evidence (H5, accepted). The results demonstrated that innovation performance can be improved by knowledge management processes when it is used more effectively. The findings of this study are consistent with those of Johan et al. (2021), who found that the implementation of knowledge management processes in organizations will improve innovation performance and organizational competitiveness. According to Intezari et al. (2017), when there is greater support for boosting creativity and innovation performance, the process for acquiring, creating, and utilizing knowledge in the company's business processes is better. Additionally, Lai et al. (2009) found that variable knowledge sharing as part of the knowledge management process has a significant impact on innovation performance. This result is in line with previous studies such as Damang & Munizu (2019), and Pono et al. (2018) mentioned innovation as one of the sources of competitiveness and superior organizational performance which is supported by sustainable knowledge management within an organization. Moreover, Pono & Munizu (2021) emphasizes the importance of innovation as part of the competitiveness element that results from the process of knowledge, and ideas that are managed within the company to improve company performance.

4.5.6 The impact of Knowledge-Oriented Leadership towards Innovation Performance through Knowledge Management Infrastructures

The value of path coefficient (standardized) of 0.130 with a probability value (p) of 0.041, which is less than the value of = 0.05, shows the indirect impact of the knowledge-oriented leadership variable on innovation performance through knowledge management infrastructure. This finding shows that the sixth hypothesis, which states that knowledge-oriented leadership has a significant effect on innovation performance through knowledge management infrastructures, is supported by evidence (H6, accepted). These findings are in line with study by Donate & de Pablo (2015), who found that knowledge-oriented leadership can enhance innovation performance if the elements of knowledge management infrastructure which consists of technology, culture, and an effective organizational structure is prepared and supported for it.

4.5.7 The impact of Knowledge-Oriented Leadership towards Innovation Performance through Knowledge Management Processes

The value of path coefficient (standardized) of 0.423 with a probability value (p) of 0.003, which is less than the value of = 0.05, indicates the indirect effect of the knowledge-oriented leadership variable on innovation performance through knowledge management processes. This finding shows that the seventh hypothesis, which states that knowledge-oriented

leadership innovation has a significant effect on innovation performance through knowledge management processes, is supported by empirical facts (H7, accepted). These findings are consistent with those of Donate & de Pablo (2015), who found that knowledge-based leadership can enhance innovation performance, when it is supported by the company's capacity for knowledge creation, acquisition, and application in the business operation. Related to this finding, Riyadi & Munizu (2022) has emphasized the importance of the knowledge and ability of company management to use opportunities from advances in information technology that sourcing from the external environment to increase innovation, competitiveness and company performance. Additionally, Wang & Han (2011) also emphasizes that innovation performance is influenced by collective knowledge that is stored and shared among all employees in the organization. Knowledge-oriented leaders will understand the importance of an electronic-based knowledge management system. Therefore, this knowledge management system will continue to be improved both in terms of process and infrastructure. Electronic/ IT-based knowledge management systems (e-based KMS) can be used optimally to produce sustainable organizational innovation.

5. Conclusions

This study proves some hypotheses that are proposed are supported by empirical fact. There is one hypothesis rejected. Therefore, it can be concluded that knowledge-oriented leadership has a significant direct effect in encouraging increased use of electronic-based knowledge management systems (e-based KMS), both in knowledge management infrastructure and knowledge management processes. However, knowledge-oriented leadership does not have a significant direct effect on innovation performance. The implementation of electronic/IT-based knowledge management systems (e-based KMS) consisting of knowledge management infrastructure and knowledge management processes has a significant direct effect on innovation performance. The results of this study also found that knowledge-oriented leadership can indirectly improve innovation performance through the mediating role of knowledge management infrastructure variables and knowledge management processes. A number of research findings emphasize the importance of using electronic/IT-based knowledge management systems in supporting company programs and activities, particularly with regard to management efforts to improve innovation performance. In addition, the adoption and use of electronic-based knowledge management systems/enterprise IT management will increase with the support of corporate leaders or knowledge-oriented managers. These findings also have implications for managers that they need to optimize the role of electronic/IT-based knowledge management systems to support solving organizational problems and decision making, especially in an effort to encourage increased innovation performance. Companies that continue to innovate with strong support from company leaders and electronic based knowledge management systems (e-based KMS) will continue to exist in the market, and have the potential to win the competition in the global market.

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