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Fostering Innovation Through Knowledge Management with the Role of Electro Companies Culture in Indonesia

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A R T I C L E I N F O

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Knowledge Management,
Organizational Culture

A B S T R A C T

The purpose of this study is to look for direct and indirect effects of organizational culture, knowledge management on innovation in electro manufacturing companies in Indonesia. This research is a quantitative approach. Data obtained by conducting a survey of 433 employees of electro companies. The analytical method used is Structural Equation Modeling (SEM) analysis with AMOS tools. Model testing is carried out and declared fit. The results of this study indicate that there is a direct influence of organizational culture and knowledge management on innovation in Indonesian electro manufacturing employees. Organizational culture can also have a significant effect on knowledge management. This study also shows the indirect effect of organizational culture on innovation through knowledge management. The novelty of this research is that there has been no research related to organizational culture, knowledge management and innovation, especially in the electrical companies in Indonesia. Further research opportunities are domain keys identified.

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1. Introduction

Electrical companies in Indonesia continue to grow along with the existence of large projects from the Indonesian government. The project is known as the 35,000 Megawatt (MW) power plant mega project. With this project, of course, electro companies in Indonesia are trying to take the market or opportunity by trying to create innovations in order to create effectiveness and efficiency at work. Knowledge management plays a positive role in increasing innovation (Teixeira et al., 2018). This research shows that the rapid development of business in the world makes innovation a focus for companies. The complexity of innovation can be increased by gaining knowledge or doing knowledge management appropriately (Candi et al., 2018).

This study also shows that knowledge management can affect innovation in a company. Organizational culture can significantly influence innovation in a company (Tian et al., 2018). Organizational culture can play a positive role in improving knowledge management (Usoro & Abiagam, 2018). This study shows the importance of organizational culture in improving company effectiveness and creating knowledge management that is compatible with company culture. Innovation, knowledge management and corporate culture are very interrelated (Le et al., 2020).

Innovation is certainly very much related to new behavior, ideas, products or services or the use of technology. Innovation requires culture to be willing to change and face challenges. The relationship between organizational culture and innovation has become an interesting study every time (Wang et

al., 2021). If the company's leadership wants to make radical changes, it is necessary to develop a culture to be able to create innovation (Wipulanusat et al., 2018).

Manufacturing companies, especially in the electrical sector, find it very difficult to innovate. This difficulty occurs because of the rigidity of manufacturing companies to innovate, which is caused not only because of technology, finance but also because of human factors. The importance of innovation in companies, especially in Indonesia, will create competitive advantages and make companies more efficient and effective (de Fretes, 2020).

The lack of research on electrical manufacturing related to innovation in Indonesia makes it difficult for companies to guess which factors have the most influence on efforts to foster innovation. So that this research is expected to be able to be used as literature in the field of innovation with the aim to show the direct and indirect influence of organizational culture on innovation through knowledge management.

2. Method

Organizational culture can have a positive and significant effect on innovation (Abdi et al., 2018). Knowledge becomes something very important in a company, especially in creating creativity and innovation. Many scientists have conducted research on how organizational culture significantly influences innovation (Alharbi et al., 2019). But in the effort of knowledge management it becomes important in making new interpretations and increasing knowledge in accordance with changes and needs. Innovation is very dependent on the evaluation of knowledge with knowledge management (Mardani et al., 2018). Knowledge management is a valuable strategic tool that can help in making decisions and creating competitive strategies (Bongso, 2020). Organizational culture can strengthen the influence on knowledge management (Chandran & Alammari, 2021). Based on previous studies and hypothesis development that has been presented, the following is a research framework in this study:

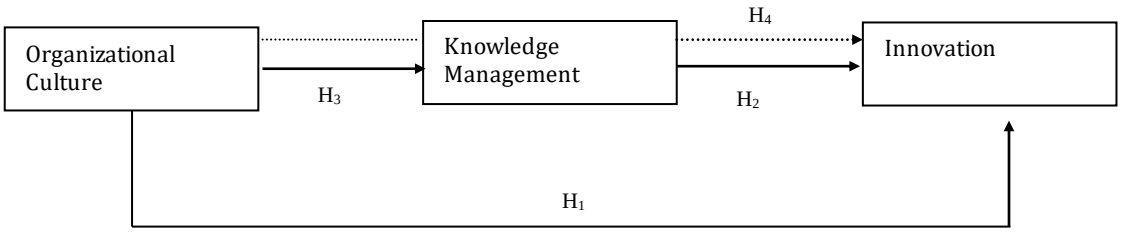

Figure. 1. Research Framework

The measurement scale used in this study is with Likert 1-5 (1 with strongly disagree and 5 with strongly agree). In measuring the variables studied, innovation, knowledge management and organizational culture are measured by the measurement tools used by previous research. Innovation is measured using 6 indicators with code names: IN01-IN06 (Rangus & Slavec, 2017). Innovation is measured by, our firm has performed worse / better than competitors in regard to the number of new products / services launched (IN01); our firm has performed worse / better than competitors in regard to pioneering the introduction of new products / services (you were one of the first to introduce a new product / service) as IN02; our firm has performed worse / better than competitors in regard to effort invested in the development of new products / services, taking into consideration the number of hours, people, teams and trainings (IN03); our firm has performed worse / better than competitors in regard to the number of introduced changes in processes (IN04); our firm has performed worse / better than competitors in regard to pioneering newly introduced processes (you've been one of the first to introduce new processes) as IN05; and our firm has performed worse / better than competitors in regard to responding to new processes introduced by other companies in your field (IN06). Knowledge management is measured using 4 indicators with code names: KM01-KM04 (Tseng, 2010). Knowledge management is measured by companies that have succeeded in changing tacit knowledge

into new tacit knowledge (KM01); the company has articulating tacit knowledge into explicit knowledge (KM02); the company has converted explicit knowledge into more complex and systematic sets of explicit knowledge (KM03); and the company has embodying explicit knowledge into tacit knowledge (KM04). Organizational culture is measured by 6 indicators with the code: OC01-OC04 (Li et al., 2018). Organizational culture is measured by learning and development where individual learning creates new ideas for organizations (OC01); participatory decision making where information flows from all corners and more involvement nurtures venues of innovativeness (OC02); participatory decision making where information flows from all corners and more involvement nurtures venues of innovativeness (OC03); encourages new ideas, and power sharing where status, authority, and politics are abandoned for the sake of collaboration on new ideas with overwhelming support in all concerns (OC04).

This company is carried out in 8 electro companies which produce electricity pannel in Indonesia. The company was chosen based on the area of Indonesia's capital city, Jakarta. Of the 800 questionnaires (every one company as many as 100) distributed only 433 questionnaires were declared eligible for use. This assessment is seen from the number of questionnaires that were not returned and were not completely filled. After the questionnaire is obtained, the data is processed with AMOS statistical tools. The analytical method used is Structural Equation Modeling (SEM). Before the research hypothesis is tested, a validity and reliability test is performed by considering the loading, construct reliability and Average Variant Extracted (AVE).

3. Result and Discussion

In the questionnaire also obtained characteristics from the respondents viewed from gender, age, length of work. Based on gender, male respondents were 80.14% while women were 19.86%. Based on the age of respondents between 18-30 years as much as 63.05%, 31-42 years as much as 22.17% and over 42 years as much as 14.78%. So it can be concluded that based on these characteristics, more young people tend to be millennial. While the number of men than women because in the electro industry is more concerned with the number of operational personnel, especially in making electrical panels. The following is the result of processing statistics with AMOS tools (figure 2):

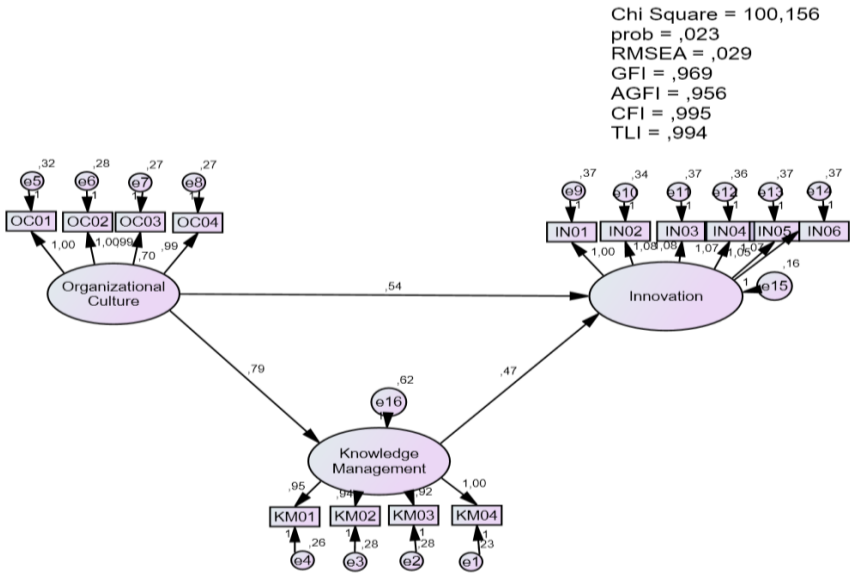

Figure 2. Measurement Model

In figure 2, we can see the results of the testing of goodness of fit. This research model has been declared fit seen from several criteria such as the Chi Square value of 100,156 with a probability value of 0.023. While the RMSEA has a value of 0.029 (good fit) which is below 0.08. Other criteria such as GFI of 0.969 (good fit) above 0.90; AGFI with a value of 0.956 (good fit) above 0.90; CFI with a value of 0.995 (good fit) because it is above 0.95; and TLI with a value of 0.994 (good fit) because it is above 0.95. Then the validity and reliability testing is done by looking at the value of standardized factor loading, construct reliability and Average Variant Extracted (AVE) in table 1.

Table 1.
Validity & reliability test

Name Code	Standardized Factor Loading	Reliability Construct	Average Varian Extracted (AVE)
IN01	0,840	0,942	0,731
IN02	0,866		
IN03	0,857		
IN04	0,860		
IN05	0,851		
IN06	0,855		
KM01	0,907	0,907	0,709
KM02	0,871		
KM03	0,876		
KM04	0,886		
OC01	0,831	0,935	0,783
OC02	0,843		
OC03	0,848		
OC04	0,847		

Table 1 shows all indicators that have standardized factor loading values above 0.5. So the manifest variable has measured the latent variable precisely. While the reliability construct testing has a value above 0.7 so that each variable has been declared reliable. Average Variant Extracted (AVE) value is also above 0.5 so it is said that all measuring instruments used have been measured correctly, then hypothesis testing can be continued. The results of this study aim to see the direct and indirect effects on innovation. The following are the results of testing the hypothesis (table-2).

Table 2.
Estimate & probability

	Estimate	S.E.	C.R	P
Organizational Culture → Innovation	0,539	0,048	11,340	0,000
Knowledge Management → Innovation	0,471	0,038	12,440	0,000
Organizational Culture → Knowledge Management	0,788	0,059	13,317	0,000
Organizational Culture → Knowledge Management → Innovation	0,371 (0,788* 0,471)	-	9,071 (Sobel test)	-

The first hypothesis regarding the effect of organizational culture on innovation is accepted (H1 supported). Where the value of p = 0,000 less than 0.05. While estimate of the effect or β = 0.539, which has a positive value. The second hypothesis regarding the effect of knowledge management on innovation is accepted (H2 supported). Where the value of p = 0,000 less than 0.05. While estimate of

the effect or β = 0.471, which has a positive value. The third hypothesis regarding the effect of organizational culture on knowledge management is accepted (H3 supported). Where the value of p = 0,000 less than 0.05. While estimate of the effect or β = 0.788, which has a positive value. While the indirect effect was carried out with the Sobel test, which obtained a t-test number of 9.071> 1.648 (t-table with a probability = 0.95 and df = 430). The estimate of indirect effect is 0.371 (obtained from 0.788 * 0.471).

The influence of organizational culture, knowledge management on innovation directly and indirectly in this study has a significant influence. Electrical companies in Indonesia must focus on developing organizational culture because it has the most direct and stronger influence with knowledge management. However, companies must also focus on the application of knowledge management systems in electro companies because they also have a significant influence. Organizational culture has a direct influence on innovation. Organizational culture is a factor that creates organizational innovative orientation. Company leaders are expected to create different values and norms in their organizations. The results of this study indicate that each indicator of organizational culture can improve innovation within the company. In addition this study shows that organizational culture is very influential on innovation compared to knowledge management. So the company can focus on the OC02 indicator because it has the smallest average value compared to other indicators in measuring organizational culture. Therefore the company is expected to further enhance the culture that invites all company members to actively participate in decision making. Organizational culture can also indirectly influence innovation through knowledge management.

4. Conclusion

Organizational culture has the biggest role in enhancing innovation. Organizational culture is very difficult to explain to all members of the company, but if it is successful it will have a positive impact on the company. The role of organizational culture can not only affect innovation but can also affect knowledge management in the company. Organizational culture that focuses on learning will be able to make knowledge management more viable. Knowledge management is also important for electro manufacturing companies in Indonesia in creating innovation. The role of knowledge management will certainly be able to create good regeneration with tacit knowledge or explicit knowledge. This research model of organizational culture and knowledge management can measure innovation by 81.4% (shown by the r-square value). Whereas overall organizational culture can only measure 41.4% of knowledge management (indicated by the r-square value). Knowledge management also directly affects innovation, this research is in line with previous research (Mardani et al., 2018). This research shows that knowledge management becomes a mediator variable and is able to directly influence innovation. Knowledge management can also be improved by electro companies in Indonesia with a focus on the KM01 indicator because it has the smallest average value compared to other indicators in measuring knowledge management. The company is expected to form a system so that members of the organization who have tacit knowledge continue to want to change so as to bring up new tacit knowledge. This change is intended so that every member of the electro manufacturing company in Indonesia wants to continue learning so as to bring up new experiences. This study has limitations because it only focuses on organizational culture as an independent variable. Researchers can then explore related other variables that are thought to influence innovation. In addition, this study was only conducted once or with a cross sectional approach, so it is recommended that previous studies be able to do this research with a longitudinal approach in order to see the consistency of results. This research was also carried out in the electro manufacturing industry in Indonesia which only focused on the production of electrical panels. So that it can be suggested for further researchers to be able to use it in different industries so that they can compare the same model with this research.

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