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Developing Innovation Capability: Between Individual and Organizational Factors

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Abstract: The purpose of this study was to measure the influence of individual soft skills as individual factor on lecturer innovation capability through organizational learning as a organizational factor and mediating variable. Data were collected by using simple random sampling to the lecturer population of a private higher education in Indonesia. The number of returned and valid questionnaires was 103 samples. Data were processed by using SEM with SmartPLS 3.0. The results of the study concluded that individual soft skills had positive and significant influence on lecturer innovation capability, both directly and indirectly through a mediating effect of organizational learning. This study proposed a model for improving lecturer innovation capability of lecturers in Indonesia through individual soft skills (as individual factor) and organizational learning (as organizational factor). This study can open the way to improve lecturer readiness in facing education 4.0 era.

Keywords: *Education 4.0, individual soft skills, innovation capability, organizational learning.*

I. INTRODUCTION

The industrial revolution 4.0 become a new challenge for the world of education. The industrial revolution requires quality human resources that are qualified, agile, adaptive and responsive to rapid change. The world of education is facing rapid economic, social, political and technological changes. Therefore, a higher education must be flexible in adapting to changing situations and contexts. A higher education and other educational institutions need a positive and conducive environment to global human resource competition. Therefore, it cannot be denied that a higher education needs synergy between lecturers and the work environment that is able to make continuous improvements in innovation and performance. In the knowledge-based economy era, the knowledge society needs innovation and flexibility as energy to compete. Therefore, the strategic development of educational institutions in the future is to increase knowledge resources, especially lecturers, which open space for innovation and growth. To ensure an educational institution, especially a higher education, is competitive and adaptive, lecturers need to be directed and involved in improving higher education performance. Lecturers must be empowered and able to empower. As a result, a higher education must become organizational learning that empowers lecturers as one of the main elements of higher education transformation and makes lecturers an instrument of civilization. A higher education as organizational learning is very important in a rapidly changing and unpredictable environment. So that the response to change becomes an absolute requirement to form competitive human resources and win global HR competition.

The knowledge of lecturers is intellectual capital which quickly becomes a new icon of the economic value of a higher education. This is the new paradigm adapted from industrial revolution 4.0. Dependence on traditional productive assets such as buildings, land and other tangible assets is no longer a major investment in the future. Productive and sustainable assets in the future are intangible assets in the form of lecturer knowledge. The purpose of this study was to understand and explain the influence of individual soft skills of lecturers on lecturer innovation capability and the influence of organizational learning mediation on the relationship between hard skills, individual soft skills and lecturer innovation in Indonesia.

II. LITERATURE REVIEW AND HYPHOTESES DEVELOPMENT

A. Individual Soft Skills

Knowledge is classified into two types, individual soft skills and hard skills (Polanyi, 1966). Individual soft skills are knowledge in the human mind and very personal (Chen et al, 2018; Holford, 2018; Khoshorour & Gilaninia, 2018; Zebal, Ferdous & Chambers, 2019; Agyemang & Boateng, 2019; Perez-Fuillerat, 2018; et al, 2018), are difficult to formulate and share naturally (Deranek, McLeod & Schmidt, 2017; Wang & Liu, 2019; Asher & Popper, 2019) so that the transformation requires personal interaction (Lee, 2019; Asbari et al, 2020). These individual soft skills are rooted in actions and experiences, including idealism, values, and emotions (Boske & Osanloo, 2015; Kawamura, 2016; Hartley, 2018; Asbari, Nurhayati & Purwanto, 2019).

Based on the definition, individual soft skills are categorized as personal knowledge or in other words knowledge obtained from individuals or individuals (Nonaka & Toyama, 2015; Munoz et al, 2015; Stewart et al, 2017; Razmerita et al, 2016; Jaleel & Verghis, 2015; Wang et al., 2016; Serna et al., 2017; Jou et al., 2016; Rothberg & Erickson, 2017). The experience gained by each lecturer certainly varies based on situations and conditions that cannot be predicted. Individual soft skills are not easily articulated and converted to hard skills (Mohajan, 2016; Prasarnphanich et al, 2016; Addis, 2016; Cairo Battistutti, 2017; Zang et al, 2015; Spraggon & Bodolica, 2017). However, individual soft skills can be empowered by the process of knowledge spiral or SECI Model (Li, Liu & Zhou, 2018; Nonaka & Hirose, 2018; Chatterjee et al, 2018; Sasaki, 2017; Lievre & Tang, 2015; Stanica & Peydro, 2016; Norwich et al., 2016; Hodgins & Dadich, 2017; Balde et al., 2018; Okuyama, 2017; Huang et al., 2016).
Every higher education or educational institutions must utilize the individual soft skills of lecturers to share knowledge and keep learning. Higher education or educational institutions will become more creative, innovative and lead in the era of education 4.0. A higher education can facilitate the management and use of tacit knowledge that is in the subconscious mind of each lecturer with an embedding and sharing approach (Ma et al, 2018; Ferreira et al, 2018; Borges et al, 2019; Ferraris et al, 2018; Guo et al, 2018; Tsai & Hsu, 2019; Swierczek, 2019; Cantwell & Zaman, 2018).

B. Organizational Learning

Good organizational learning will be more resilient to crises (Starbuck, 2017). Dimensions such as desire, discipline, decision making, and alignment are presented as important elements of organizational learning (Wetzel & Tint, 2019; Urban & Gaffurini, 2018; Asbari, Santoso & Purwanto, 2019). Organizational learning is an important performance indicator to evaluate overall organizational performance (Qi & Chau, 2018; Hyun eta al, 2020; Asbari et al, 2020) that can build the necessary knowledge resources and maintain higher education growth and continuity. The ability to access knowledge is a distinguishing factor between one higher education and another. The success of the higher education strategy is very significant related to the solid knowledge base that is owned by every individual in a higher education.

C. Innovation Capability

The industrial era 4.0 requires lecturer innovation capability as a competitive advantage in a higher education (Malik, 2019; Muscio & Ciffolili, 2019; Durana et al, 2019; Lund & Karlsen, 2019; Haseeb et al, 2019; Jakhar et al, 2018; Hamada, 2019), a competitive strategy (Culot, Orzes & Sartor, 2019), a key to facing industry era 4.0 (Stachova et al, 2019) a part of 21st-century quality management (Gunasekaran, Sabramanian & Ngai, 2019), has many advantages towards business (Zambon et al, 2019; Parida, Sjodin & Reim, 2019). Innovative capability is recognized as one of the most important internal resources that can produce superior higher education performance (Zouaghi et al, 2018; Santoro et al, 2017; Castela et al, 2018; Ruiz-Torres et al, 2018; Huesig & Endres, 2019). Innovation is an important aspect of quality education (Klaeijsen, Vermeulen, & Martens, 2017).

D. The Influence of Individual Soft Skills on Organizational Learning

Organizational learning is one strategy for an organization to study the dynamics of its business environment (Senge, 1990; Zhu et al, 2018; Kasim et al, 2018; Darwish et al, 2018). A higher education with a managed learning routine will produce a collection of knowledgeable individuals, both individual soft skills (Hussain et al, 2018). Some researchers concluded that organizational learning was influenced by collaborative culture and

knowledge sharing (Nugroho, 2018). The soft skill was a very significant predictor for the development of organizational learning (Muthuveloo, Shanmugam & Teoh, 2017). Based on the explanation above, there are hypotheses as follows:

H1: Soft skill has a direct effect on organizational learning

E. The Influence of Individual Soft Skills on Innovation Capability

In the industry 4.0 era with increasingly fierce competition, sustainability remains an important concern and issue. Lecturer innovation capability becomes a driver of business sustainability. This performance depends on the culture of knowledge in an organization, which consists of tacit knowledge and hard skills. Many researchers discussed lecturer innovation capability and they concluded that innovation was influenced by leadership (Samsir, 2018; Schuckert et al, 2018; Villaluz & Hechanova, 2019), employee involvement climate (Naqshbandi, Tabche & Choudhary, 2019) knowledge sharing (Kim & Shim, 2018) knowledge search (Wang, Chen & Chang, 2019) collaborative culture (Yang, Nguyen & Le, 2018) and knowledge process (Imran et al, 2018). The purpose of this study was to test the influence of individual soft skills on lecturer innovation capability in a higher education to face industrial revolution 4.0. Previous studies proved the positive and significant influence of individual soft skills on lecturer innovation capability (Ganguly et al, 2019; Aulawi, 2018; Rumanti et al, 2018 & 2019; Torres & Liang, 2016; Li et al, 2019). More specifically, many researchers concluded that individual soft skills had a significant and positive influence on lecturer innovation capability (Perez-Luno et al, 2018) within the scope of business organizations. However, several researchers stated that formal & informal learning had an influence on lecturer innovation capability in a higher education (Lecat, Beausaert, & Raemdonck, 2018). Based on the explanation above, there are hypotheses as follows:

H2: Soft skill has a direct effect on lecturer innovation capability

F. The Influence of Organizational Learning on Innovation Capability

Knowledge creation conditioned by organizational learning will improve lecturer innovation capability and organizational performance (Asbari, Purwanto & Santoso, 2019; Vijande & Sanchez, 2017; Lin & Lee, 2017). Higher education innovation will be sustainable if it is based on a learning culture that has added value. This learning culture makes all lecturers interact with each other so that their current knowledge and new knowledge acquired can be effectively transferred, exchanged and combined into higher education intelligence and knowledge (Lin & Lee, 2017; Lee et al, 2016; Chang & Lin, 2015). An organizational environment that provides excitement at work is an important factor of lecturer innovation capability (Bani-Melhem, Zeffane & Albaity, 2018). Based on the explanation above, there is a hypothesis as follows:

H3: Organizational learning has a direct effect on lecturer innovation capability

G. A mediating effect of Organizational Learning on the Relationship of Individual Soft Skills and Innovation Capability

Honeycutt (2000) explained that knowledge management is a discipline that manages intellectual capital from managed assets. Basically, the concept of knowledge management develops from the fact that in the present and future, the main assets of an organization to be able to compete are intellectual assets rather than physical assets. In general, knowledge management carried out by organizational learning is a way to manage knowledge in organizations to create value and increase competitive advantage. Organizational learning as a mediating variable plays a role between hard skills, individual soft skills, and organizational innovation. In addition, this process has been considered a system where knowledge and skills are input, organizational learning is the main process, and organizational innovation is an important output (Nouri & Ghorbani, 2017; Chang, Liao & Wu , 2017). Based on the explanation above, there are hypotheses as follows:

H4: Individual soft skills has an indirect effect on lecturer innovation capability through a mediating effect of organizational learning

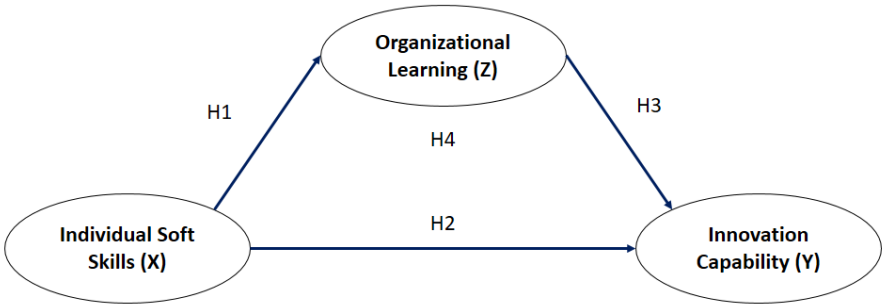

Figure 1. Research Model

III. METHODS

A. Operational Definitions of Variables and Indicators.

This study used quantitative methods. Data were collected by distributing questionnaires to all lecturers in higher educations. This study used 4 items to measure individual soft skills by Hendarman & Cantner (2017). Organizational learning by Jimenez-Jimenez and Sanz-Valle (2011) was measured by using 5 items. Lecturer innovation capability by Lee & Choi (2003) was measured by using 5 items. This study uses close-ended questionnaires except for questions/statements about the identity of respondents in the form of semi-open questionnaires. Each closed question/statement item has five answer options, namely: strongly agree (SA) with a score of 5, agree (A) with a score of 4, Neutral (N) with a score of 3, disagree (DA) with a score of 2, and strongly disagree (SDA) with a score of 1. Data were processed by using the PLS method with SmartPLS version 3.0 software.

B. Population and Sample

The population in this study were 171 lecturers of a private higher education in Indonesia. The questionnaire was distributed electronically with a simple random sampling technique. The number of returned and valid questionnaires was 103. So, 60.2% questionnaires were valid from the number of lecturer population.

IV. RESULTS AND DISCUSSION

A. Sample Description

Table 1. Sample Description

Criteria		total	%
Age (as of March 2020)	<30 years	8	8%
	30 - 40 years	80	78%
	> 40 years	14	14%
The tenure as a lecturer	<5 years	67	65%
	5-10 years	28	27%
	> 10 years	8	8%
Highest diploma	S2	85	83%
	S3	18	17%

Source: The respondent profile table is derived from a summary of the questionnaire returned (authors, 2021)

B. Results of Validity and Reliability Tests

Measurement model tests include convergent validity, discriminant validity, and composite reliability tests. The results of the PLS analysis can be used to test the hypothesis if all the indicators in the PLS model meet the requirements of convergent validity, discriminant validity, and reliability tests.

1. Convergent Validity Test

Convergent validity test is performed by looking at the loading factor value of each indicator to the construct. For most references, a loading factor of 0.5 or more is considered to have validation that is strong enough to explain latent constructs (Chin, 1998; Hair et al, 2010; Ghozali, 2014). In this study, the minimum acceptable loading factor is 0.5, with the condition that the AVE value for each construct is> 0.5 (Ghozali, 2014).

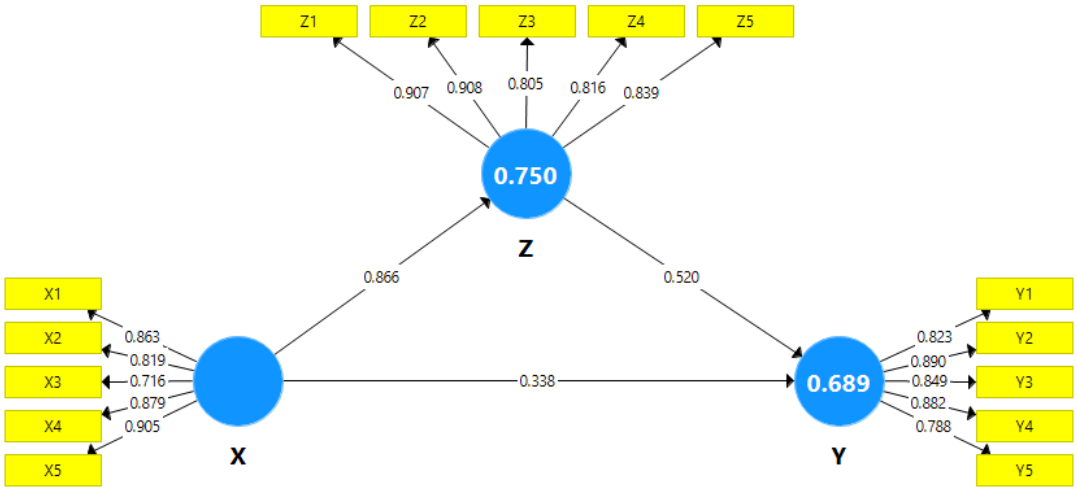

Figure 2. Valid model estimation

Based on the PLS model estimation results in the figure above, all indicators had a loading factor value above 0.5 so that the model met the convergent validity requirements. Apart from looking at the loading factor value of each indicator, convergent validity was also assessed from the AVE value of each construct. The AVE value for each construct was already above 0.5. So the convergent validity of this study met the requirements. The value of items loadings, Cronbach's alpha, composite reliability and AVE of each construct can be seen in Table 2:

Table 2. Items Loadings, Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE)

Varables	Items	Loadings	Cronbach's Alpha	Composite Reliability	AVE
Individual Soft Skills (X)	X1	0.863	0.893	0.922	0.704
	X2	0.819			
	X3	0.716			
	X4	0.879			
	X5	0.905			
Organizational Learning (Z)	Z1	0.907	0.908	0.932	0.733
	Z2	0.908			
	Z3	0.805			
	Z4	0.816			
	Z5	0.839			
Innovation Capability (Y)	Y1	0.823	0.901	0.927	0.718
	Y2	0.890			
	Y3	0.849			
	Y4	0.882			
	Y5	0.788			

Source: The Table is derived from the output of the SmartPLS 3.0 (authors, 2021)

2. Discriminant Validity Test

A discriminant validity test is carried out to ensure that each concept of each latent variable is different from the other latent variables. The model has good discriminant validity if the AVE squared value of each exogenous construct (the value on the diagonal) exceeds the correlation between the construct and other constructs (values below the diagonal) (Ghozali, 2014). The results of the discriminant validity test by using AVE squared values or by looking at the Fornell-Larcker Criterion Value can be seen in Table 3:

Table 3. Discriminant Validity

Variables	X	Y	Z
X	**0.839**		
Y	0.788	**0.847**	
Z	0.666	0.813	**0.856**

Source: The Table is derived from the output of the SmartPLS 3.0 (authors, 2021)

The results of the discriminant validity test in Table 3 showed that all constructs had the AVE square root value above the correlation value with other latent constructs (through the Fornell-Larcker criteria) so that it can be concluded that the model met the discriminant validity.

3. Construct reliability test

Construct reliability can be assessed from the value of Cronbach's alpha and composite reliability of each construct. The recommended composite reliability and Cronbach's alpha values are more than 0.7. (Ghozali, 2014). The reliability test results in table 2 above showed that all constructs had composite reliability and Cronbach's alpha values of greater than 0.7 (> 0.7). So it can be concluded that all constructs met the required reliability.

C. Hypothesis Testing

Hypothesis testing in PLS is also called the inner model test. This test includes a test of the significance of direct and indirect effects and measurement of the influence of exogenous variables on endogenous variables. To know the influence of individual soft skills on organizational learning and lecturer innovation capability, a direct influence test is needed. The direct effect test was performed by using the t-statistic test in a partial least squared (PLS) analysis model with SmartPLS 3.0 software. By using the bootstrapping technique, R Square values and significance test values were obtained as follows:

Table 4. R Square Value

	R Square	R Square Adjusted
Y	0.689	0.686
Z	0.750	0.749

Source: The Table is derived from the output of the SmartPLS 3.0 (authors, 2021)

Table 5. Hypotheses Testing

Hypotheses	Relationship	Beta	SE	T Statistics	P-Values	Decision
H1	X -> Z	0.866	0.019	46.687	0.000	Supported
H2	X -> Y	0.338	0.087	3.873	0.000	Supported
H3	Z -> Y	0.520	0.088	5.908	0.000	Supported
H4	X -> Z -> Y	0.450	0.079	5.722	0.000	Supported

Source: The Table is derived from the output of the SmartPLS 3.0 (authors, 2021)

Based on Table 4 above, the value of R Square of Z was 0.750 which means that organizational learning (Z) was explained by individual soft skills (X) variables by 75.0%, while the remaining 25.0% was explained by other variables not discussed in this study. Meanwhile, the value of R Square of lecturer innovation capability (Y) was 0.689 which means that the lecturer innovation capability variable was explained by individual soft skills and organizational learning by 68.9%, while the remaining 31.1% was explained by other variables not discussed in this study. Table 5 shows T Statistics and P-Values which show the influence between variables.

D. Discussion

Based on the results of the study, Individual soft skills had a significant and positive influence on lecturer innovation capability, both direct effects and the mediating effect of organizational learning. This shows that the better individual soft skills possessed by lecturers, the lecturer innovation capability will also increase. In addition, it can be concluded that organizational learning was a mediator between lecturer individual soft skills and lecturer innovation capability. This study concluded that individual soft skills had a positive and significant influence on organizational learning. This shows that the better the individual soft skills possessed by lecturers, the more positive the formation and development of organizational learning in a higher education. This is in line with a study by Qi & Chau (2018) on business organizations. It also showed that the rarest and most valuable resources in the digital age are not ordinary and mediocre lecturers, but lecturers who can create new ideas and innovations (Xu, David & Kim, 2018). Lecturers play a key role in producing and reusing knowledge and intellectual property through education and teaching (Al-Kurdi, El-Haddadeh & Eldabi, 2018). For this reason, the scarcity of lecturers who have adequate individual soft skills can inhibit the power of innovation, competitiveness, growth, and flexibility of a higher education. In the future, the talent and response of lecturers in improving individual soft skills will be an important factor in the future of the nation's education. Lecturers with skills and innovation will be the capital and instrument of civilization.

Several studies concluded that individual soft skills had a greater influence on innovation (Ibrahim, Boerhannoeddin & Bakare, 2017; Albandea & Giret, 2018; Viviers, Fouche & Reitsma, 2016; Escrig-Tena et al, 2018). Based on the results of the study, organizational learning had positive and significant influence on lecturer innovation capability. Organizational learning was mediating the influence of individual soft skills on lecturer innovation capability. This is in line with a study by Martinez-Costa (2018). This study also concluded that a higher education can manage past experiences to be combined with the current individual soft skills of lecturers. In essence, organizational learning could provide positive conditions in the process of knowledge creation in the 4.0 era.

V. CONCLUSIONS AND SUGGESTIONS

A. Conclusions

To add the role of individual soft skills as a predictor of lecturer innovation capability, a higher education needs to provide autonomy and concession to share knowledge with lecturers. Therefore, a higher education needs to create organizational learning as a positive environment that stimulates lecturer competence and engagement. Knowledge management will be effective if the individual performance of each lecturer is in good condition (Manaf et al, 2017). Researchers continue to learn about knowledge as an important higher education resource. It can be said that individual soft skills, can significantly improve higher education performance. Organizational learning transforms individual knowledge into higher education knowledge. This study concluded that organizational learning could be a catalyst for knowledge creation in lecturers in higher educations. In fact, the lecturer has an obligation to prepare students to study and work in a knowledge society.

B. Suggestions

Based on the conclusion, higher education management needs to build maximum involvement of all lecturers to continuously improve individual soft skills. Lecturer training in each section of the higher education is a necessity with a level of intensity and context that is adjusted to the key performance indicators of each lecturer. In essence, team learning behavior created in the higher education environment will be a driving force for lecturer innovation. The process of improving skills to improve lecturer innovation capability should not be limited to the internal processes of higher educations. However, higher education management needs to expand the process of innovation development through efforts to absorb, articulate, utilize and manage knowledge sourced from external higher education partners such as parents, government, community, and other educational institutions. Higher education management can activate learning from others when assigning their lecturers to attend training, seminars, workshops, to visit other higher educations, meet with higher education committees

and other strategic partners. Because external knowledge, such as those from trainers, coaches, parents, government, communities, and other educational institutions, supports lecturer innovation capability. In addition, commitment to learning and seriousness to be involved in managing the learning environment are things that need attention. Because higher education education institutions can become organizational learning when all members of the higher education educational institutions feel that they enjoy the learning process. The learning process becomes a higher education culture that encourages innovation (Asbari, Santoso & Purwanto, 2019). Key factors of organizational learning are trust, open communication, high involvement, the presence of industry challenges, and a creative work atmosphere. The task of higher education management is to facilitate the fulfillment of these key factors.

C. Limitation

This study had several limitations. First, this study analyzed the influence of individual soft skills on lecturer innovation capability of lecturers, both direct and indirect through organizational learning variables. Because there will be several other variables that influence lecturer innovation capability, the researchers strongly recommend to find, explore and analyze them. Secondly, this study was conducted in a higher education environment and may not be generalized to other industries. Therefore it is highly recommended that further studies can be performed on this topic in other industries.

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