
Development of Knowledge Management Model in Establishing Innovation and Company Performance in UMKM/ SME¹ in Indonesia

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Abstract:

Knowledge management is defined as formalization and access to experience, knowledge and expertise that creates new skills that enables prime performance, as well as stimulate innovation and increases the value of SMEs.

The sample data used in this study are thirty SMEs in Surabaya that are part of HIPMI (Association of Young Entrepreneurs in Indonesia), with turnover of not more than IDR fifty billion per year. The sampling technique used is simple random sampling.

The hypothesis testing used is done using Structural Equation Modelling-- PLS (Partial Least Square) and the methodology used is causal research analysis which resulted in the finding that knowledge management affects innovation, knowledge management affects company performance and that innovation affects company performance for UKM⁴ in Surabaya.

Keyword: Knowledge Management, Innovation and Company Performance, UMKM/ SME in Surabaya.

¹ UMKM/ SME: Usaha Mikro, Kecil dan Menengah: small, micro and medium enterprises. To be exact, in Indonesia, micro enterprises is defined as businesses with total worth (not including land and work property) of no more than 50 million with maximum total sales of IDR 300 million annually. Small enterprises has total worth of IDR 50- 500 million with total sales of IDR 300 million – 2.5 billion annually. Medium enterprises has total worth of IDR 500 million- 10 billion with total sales of IDR 2.5 billion- 50 billion annually (<http://www.etrade.id/2016/05/umkm-definisi-kasifikasi-dan-contohnya.html>)

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⁴ UKM: Usaha Kecil dan Menengah: Small and medium enterprises

1. Introduction

To maximize the gain from knowledge that the company already have, the company which applies an effective strategy should also effectively obtain knowledge. Knowledge that is processed through knowledge management which is a kind of habit, expertise, skills, understanding gained from experience, practice or through learning process (Warouw and Kawet, 2014). Through knowledge management, company will identify knowledge that they already have and make use of it.

There are a few existing studies that shows that there are several factors that affect the practice of knowledge management, such as innovation and company performance. These existing studies includes of study done Kusuma and Devie (2013) that proved that knowledge management has a significant effect to a company's competitive power and performance. Study done by Rasula *et al.* (2012), Syed and Xiaoyan (2013) and Sumual (2013) proved that innovation can be increased through knowledge management. Aside from that, study done by Nawaz *et al.* (2014) also showed that there is a positive relationship between knowledge management and company performance.

Due to this phenomenon, there are resulting questions that are being studied by researchers which are: 1) Does knowledge management affect innovation? 2) Does knowledge management affect company performance? 3) Does innovation affect company performance?

2. Literature Review

2.1 Knowledge Management

Knowledge management is defined as formalization and access to experience, knowledge and expertise that creates new skills that enables prime performance, as well as stimulate innovation and increases the value of SMEs (Kusuma and Devie, 2013; Setyawan *et al.*, 2014; Stroeva *et al.*, 2015).

2.2 Innovation

Innovation is a term that is closely linked to technology and function to expand a company's horizon to new products (Sumual 2013). Innovation consists of several types, which are (Hapsari *et al.*, 2014):

a) Administrative innovation; b) Technical innovation; c) Product/service innovation; d) Process innovation; e) Radical innovation; f) Incremental innovation.

2.3 Company Performance

According to Daft (Lukito and Elsy, 2014) company performance is ability that is useful to achive company's goals by using available resources effectively and efficiently (Kuznetsova *et al.*, 2017).

2.4 Relationship between Knowledge Management and Innovation

Innovation can be understood as a process in which organization can create and decide problems, which will then actively enable the development of new knowledge to solve the existing problem (Salimova and Makolov, 2016).

2.5 Relationship between Knowledge Management and Company Performance

Effective use of knowledge has been observed to improve company performance. Through knowledge management, organization will consciously identify knowledge that they already have and use it to improve performance.

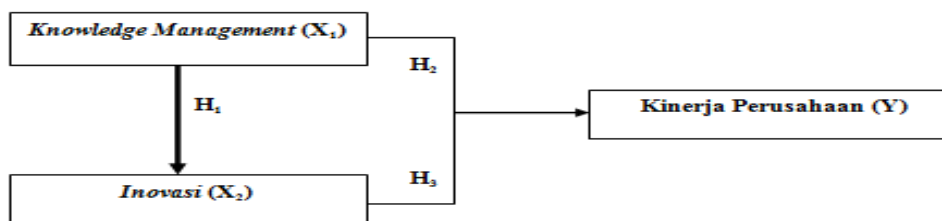
2.6 Relationship between Innovation and Company Performance

Company is required to be able to create new evaluations, new ideas and offer innovative services and improve service performance to satisfy customers (Summual, 2013).

3. Methodology

Analysis model explains the existence of the impact of independent variable Innovation (X_2) to dependent variable Company Performance (Y). The methodology used is causal research analysis which studies the causality between two or more variables. In other words, whether or not a change in the value of one variable causes a change in the value of the other variable (Silalahi, 2009).

Figure 1. Research Model.



Source: Derived by the Author (2016).

3.1 Research Population

In this research the population used is SMEs (*UMKM*) in Surabaya with turnover of IDR 50 billion and is part of *HIPMI* (Association of Young Entrepreneurs in Indonesia).

3.2 Research Sample and Sampling Method

The research includes 30 *UMKM* in various regions in Surabaya is a part of *HIPMI* and is chosen using the simple random sampling technique.

3.3 Data Type and Data Source

The data type obtained in this research is interval quantitative, complete with a known scale (using Likert scale). Data sources for this research are primary and

secondary data. Primary data is obtained from questionnaires directly distributed and submitted. Secondary data is obtained from literature studies in the form of theories, journals, articles, internet and existing studies.

3.4 Operational Definition of Research Variables

To easily understand how the measurement of variable is done, operational definition is needed for each variable in this research. Below is the operational definitions of the variables used in this study:

1. Exogenous Variables (X):

a. Knowledge management (X1)

This variable has four indicators (Kusuma and Devie, 2013): knowledge acquisition, knowledge conversion, knowledge application and knowledge protection.

b. Innovation (X2)

This variable has five indicators (Schiffman and Kanuk, 2010): relative advantage, compatibility, complexity, trialability and observability.

2. Endogenous variable (Y):

Company performance; company performance is ability that is useful to achieve company's goals by using available resources effectively and efficiently. (Lukito and Elsy, 2014). According to Moorman (Lukito and Elsy, 2014) there are several aspects that can be used to measure company performance which are cost, sales, profitability and market share.

3.5 Data Analysis

This study uses statistical analysis technique such as the Structural Equation Modelling (SEM) and the Partial Least Square (PLS). SEM analysis technique consist of seven steps, which are: 1) Developing model based on the theory; 2) Form a path diagram; 3) Convert the path diagram to a series of inner and outer models; 4) Choose the input matrix and do the model estimation; 5) Input matrix consist of correlation matrix and variance-covariance matrix; 6) Evaluate the identifications from the inner model; 7) Evaluate goodness-of-fit criteria.

4. Results and Research Discussion

SMEs (UMKM) that are part of HIPMI (Association of Young Entrepreneurs in Indonesia) Surabaya became the sample in this study. HIPMI became a platform to share knowledge, experience, and to find solutions to every problem that has ever occurred in the SMEs field of business. The number of respondents taken in this study is 30, all of which are SMEs that are part of HIPMI Surabaya and has a turnover of IDR 50 billion.

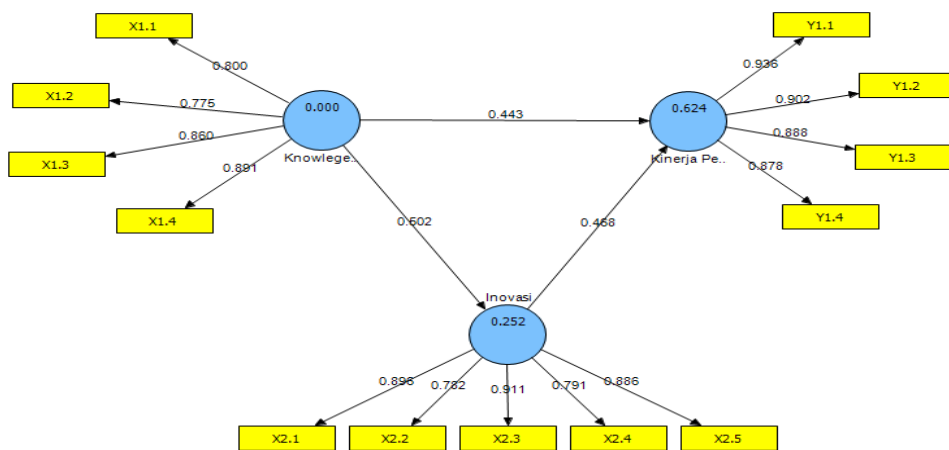
4.1 Respondents Characteristic Descriptions

The respondents' gender consists of 43,33% male and 56,67% female. The respondents' age is 15-20 years 6,67%, 21-25 years 46,67%, 26-30 years 26,67% and 31-35 years 13,33%, more than 36 years 6,66%. the highest degree of education among the respondents is high school diploma 6,67%, undergraduate/college degree 63,33%, master's degree 23,33%, and others 6.67%.

4.2 Data Processing Using PLS-SEM

Below is the result of data processing by PLS-SEM method using Smart PLS 2.0 M3. Evaluation is divided into two, evaluation of outer model and evaluation of inner model.

Figure 2. PLS Outer Model and Inner Model.



Source: Derived by the Author (2016).

Below is an explanation for the evaluation of the outer model consisting of validity test and reliability test of the relationship between the indicator and one variable as a reflective relationship.

- A. Reflective Outer Model Evaluation
 - 1. Validity Test

Table 1. AVE.

	AVE	Composite Reliability	Cronbachs Alpha	Communality	Redundancy
Inovasi	0.730868	0.931139	0.907924	0.730868	0.173899
Kinerja Perusahaan	0.811872	0.945212	0.922731	0.811872	0.345478
Knowledge Management	0.693789	0.90035	0.852611	0.693789	

Source: SmartPLS 3.0 Format Word.

Table 2. Convergent Validity.

	Inovasi	Kinerja Perusahaan	Knowledge Management
X1.1			0.800258
X1.2			0.775421
X1.3			0.859502
X1.4			0.891472
X2.1	0.895979		
X2.2	0.782449		
X2.3	0.910863		
X2.4	0.790528		
X2.5	0.88585		
Y1.1		0.935575	
Y1.2		0.901621	
Y1.3		0.887905	
Y1.4		0.878004	

Source: SmartPLS 3.0 Format Word.

Table 3. Cross Loading.

	Inovasi	Kinerja Perusahaan	Knowledge Management
X1.1	0.3452	0.5041	0.8003
X1.2	0.2909	0.5378	0.7754
X1.3	0.4660	0.5621	0.8595
X1.4	0.5293	0.6423	0.8915
X2.1	0.8960	0.5211	0.4224
X2.2	0.7824	0.5406	0.3264
X2.3	0.9109	0.7285	0.5059
X2.4	0.7905	0.4957	0.2331
X2.5	0.8859	0.6162	0.5693
Y1.1	0.7082	0.9356	0.6538
Y1.2	0.5919	0.9016	0.6765
Y1.3	0.5525	0.8879	0.5773
Y1.4	0.6257	0.8780	0.5255

Source: SmartPLS 3.0 Format Word.

2. Reliability Test

Table 4. Composite Reliability (CR).

	AVE	Composite Reliability	Cronbachs Alpha	Communality	Redundancy
Inovasi	0.730868	0.931139	0.907924	0.730868	0.173899
Kinerja Perusahaan	0.811872	0.945212	0.922731	0.811872	0.345478
Knowledge Management	0.693789	0.90035	0.852611	0.693789	

Source: SmartPLS 3.0 Format Word.

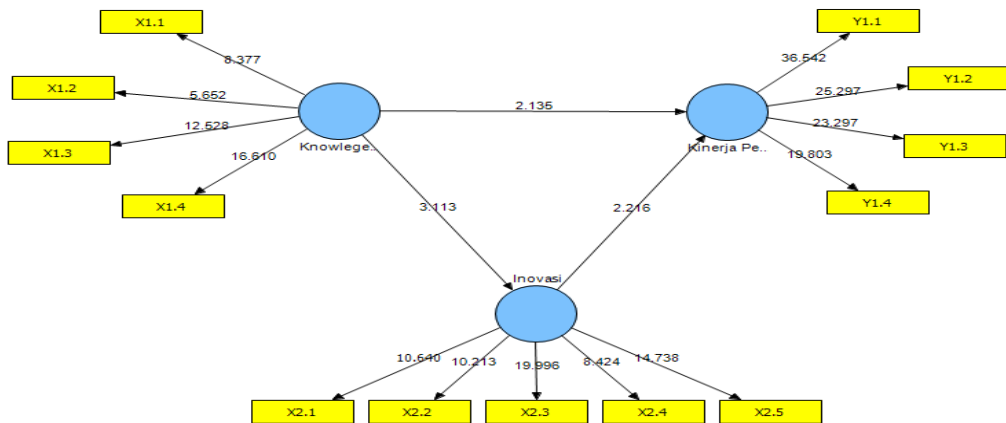
Table 5. Cronbach Alpha (CA).

	AVE	Composite Reliability	Cronbachs Alpha	Communality	Redundancy
Inovasi	0.730868	0.931139	0.907924	0.730868	0.173899
Kinerja Perusahaan	0.811872	0.945212	0.922731	0.811872	0.345478
Knowledge Management	0.693789	0.90035	0.852611	0.693789	

Source: SmartPLS 3.0 Format Word.

Reflective Inner Model Evaluation

Figure 2. Inner Model Construction.



Source: SmartPLS 3.0 format png (2016).

Table 6. Outer Loading.
Outer Loadings

	Inovasi	Kinerja Perusahaan	Knowledge Management
X1.1			0,800258
X1.2			0,775421
X1.3			0,859502
X1.4			0,891472
X2.1	0,895979		
X2.2	0,782449		
X2.3	0,910863		
X2.4	0,790528		
X2.5	0,88585		
Y1.1		0,935575	
Y1.2		0,901621	
Y1.3		0,887905	
Y1.4		0,878004	

Source: SmartPLS 3.0 format png (2016).

1. Path Coefficient

The significance from the coefficients obtained from path model is by calculation of the standard error of the latent variable. Standard error values can be obtained from bootstrapping analysis using smart-PLS program. Using standard error, t-value of each latent variable can be calculated using the formula:

$$t = \frac{P_{xy}}{se_{pxy}}$$

Table 7. Path Coefficient.

	T Statistics (O/STERR)
Inovasi -> Kinerja Perusahaan	2,216288
Knowlege Management -> Inovasi	3,1134
Knowlege Management -> Kinerja Perusahaan	2,135079

Source: SmartPLS 3.0 format png (2016).

B. Goodness of Fit test for the Inner Model

1. R- Squared

The model's Goodness of Fit is measured using the R-squared of the dependent latent variable using the same interpretation as regression. The value of this R^2 is in par with Q-Square in path analysis.

2. Q-Square

Q-Square is a predictive relevance for inner model, measuring how relevant the observed result from the model and its parameter estimation. Q-square > 0 suggests that the model has predictive relevance, on the contrary if Q-Square ≤ 0 means that the model has less or no predictive relevance. Q-Square calculation is done using the formula:

$$Q^2 = 1 - (1 - R_1^2) (1 - R_2^2) \dots (1 - R_p^2)$$

$$\begin{aligned} Q^2 &= 1 - (1 - R_{\text{innovation}}^2) (1 - R_{\text{company performance}}^2) \\ &= 1 - (1 - 0.251) (1 - 0.624) \\ &= 0.719 \end{aligned}$$

The resulting Q^2 shows a high value close to 1, which is 0.719. This means that the PLS inner model can explain up to 71.9% of the variance studied.

3. SRMR

Table 8. SRMR Analysis.

Root Mean Square Residual (RMR) = 0.065
Standardized RMR = 0.074
Goodness of Fit Index (GFI) = 0.73
Adjusted Goodness of Fit Index (AGFI) = 0.60
Parsimony Goodness of Fit Index (PGFI) = 0.49

Source: SmartPLS 3.0 format excel.

$$\begin{aligned} \text{Innovation} &= 0.602 (\text{Knowledge management}) + \varepsilon_1 \\ \text{Company Performance} &= 0.443 (\text{Knowledge management}) + 0.468 \\ &\quad (\text{Innovation}) + \varepsilon_1 \end{aligned}$$

4.3 Variable Characteristics

Knowledge Management (X₁): Variable characteristics for Knowledge Management (X₁). The average for this variable is 3.95. The highest value for this variable is from indicator X₁₋₂ (SME which is a part of HIPMI and has a good knowledge management) with the value of 4.07 and others with high values more than 3.00 are present in all the indicators. This suggests that the SMEs (UMKM) that are part of HIPMI already had a good process of knowledge acquisition, where the process of collecting knowledge and the access to knowledge are more than adequate so that the SMEs can obtain knowledge effectively through internal and external media.

SMEs are also able to process the knowledge gained to become knowledge for the entire organization and can be used effectively in business. SMEs can also process the knowledge gained to be applied in their business process. Lastly, the SMEs that are part of HIPMI Surabaya can also secure its knowledge well so that it can be counted as asset for the SME. The data analysis result is also in line with the study done by Kusuma and Devie (2013) that stated knowledge management is also viewed as formalization and access to experience, knowledge and expertise that creates new skills that enables prime performance, as well as stimulate innovation and increases the value of SMEs.

Innovation (X₂): Variable characteristics for Innovation (X₂). The average for this variable is 3.815. The highest value for this variable is from indicator X_{2.1} (SME which is a part of HIPMI that viewed ideas and brought economic profit to the business) with the value of 4.07 and others with high values more than 3.00 are present in all the indicators. This suggests that the SMEs that are part of HIPMI are well aware that innovative ideas can be applied if those ideas are compatible with the companies' values and the SMEs' needs.

Company Performance (Y): Variable characteristics for Company Performance (Y). The average for this variable is 3.81. The highest value for this variable is from

indicator Y_1 (SME is very concerned about cost of production before producing a product) with the value of 3.90. SMEs will make sure that the products produced can cover all costs economically.

Others with high values more than 3.00 are present in all the indicators. This suggests that the SMEs will measure its performance by making sure that the products produced can be sold and will receive good response from the market.

4.4 Managerial Implication of Knowledge Management towards Innovation

1. Conduct survey on how SMEs adjust an innovational idea with the existing values in the SME.
2. Valuate and map various effective methods that has been experienced by SMEs in applying knowledge and new innovations.

4.5 Managerial Implication of Knowledge Management towards Company Performance

1. Do inventory on knowledge channels that can be more easily accessed by SMEs.
2. Educate and establish the habit of always trying to find and gain new knowledge in the scope of SMEs in Surabaya.
3. Regularly evaluate to map potential skills that the SMEs already have in applying new knowledge that they gained.
4. Do mapping on the SOP and responsibility distribution in securing and storing of new knowledge gained.

4.6 Managerial Implication of Innovation towards Company Performance

1. Conduct survey about the effective system to allocate budget in designing new products and development stages.
2. Conduct survey on company's moral and ethics (whether they have done the right thing) in relation to profitability because profitability can be used as the main measure of an organization's success.
3. Conduct survey on the target market proportion that can be reached by the company.

5. Conclusion

1. Knowledge management affect innovation because through the help of innovation business owners can expand knowledge about new product, system and services to improve the quality of the SMEs' product.
2. Knowledge management affect company's performance, by applying knowledge about ways to use resources owned efficiently and effectively to achieve company's goals.
3. Innovation affect company's performance because with innovation the company can have the right management strategy based on knowledge that can help achieve company goals.

5.1 Suggestion

1. SMEs has to be able to follow technology development and innovation to be able to compete in the rapidly changing world. Knowledge management is a necessity for SMEs to apply and to grow in today's tougher market.
2. Continuous research on knowledge management so that SMEs' weakness in terms of knowledge and managerial can be minimized.

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