The role of knowledge management in MSMEs business performance

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Abstract. This research purpose is to examine the effect of knowledge management on MSMEs business performance and how these relationships are mediated by business innovation. The population in this study was the owner of MSMEs in the city of Semarang. Data collection methods were observation, questionnaires, and interviews. Purposive sampling was used in this study, in addition, 100 respondents collected as a sample. Structural Equation Modeling (SEM) through the Warp PLS program was used to test the hypothesis. The results of the study revealed that knowledge management is influencing business innovation. Business innovation also affects business performance. In this study, knowledge management has no direct influence on business performance, however, knowledge management affects business performance through business innovation as a mediation. This study provides an overview of the importance of knowledge management to be applied in large or small and medium enterprises. This research provides an understanding of the mechanism of the role of knowledge management in MSMEs.

1. Introduction
Creative MSMEs have contributed significantly to economic development, especially the national income, employment, and cultural heritage[1]. Each year, these MSMEs contributions show a passably well improvement in some aspects, such as the business unit, employment, Gross Domestic Income (GDI), total exports, and the investment value (Ministry of Cooperatives and SMEs Indonesia, 2012). MSMEs have an important and strategic role in national economic development. Its contributions to the Indonesian economy are without doubt. MSMEs business should be supported through the role of adequate human resources that are able to compete globally and having innovations, business orientation and competition[2]. Concerning the workforce, some constraints faced by the MSMEs owners are limited knowledge and skill, low motivation, weak on discipline and productivity, the labor does not pay sufficiently, and less the use of information technology and internet. Based on recent competitions, MSMEs should have creativity and innovations necessarily. The problem of today’s MSMEs is the low ability possessed by its human resources, thus it has an impact on the poor innovations capability and performance[1]. Creative MSMEs owners have not been aware of the importance of innovation development and creativity[3].

This notion is in parallel with previous study showing that there is a significant positive correlation between innovation and organization performance in MSMEs[4]. Innovation has been proven as a bridge to facilitate business practices in improving the competitiveness and the sustainability of an organization. Thereby, it is a must for the MSMEs doers to give attention to the development and improvement of the innovation capability. One of the concrete steps taken by the creative MSMEs doers in developing and improving innovation capability and creativity is by taking notice and implementing knowledge management[5], [6]. Knowledge management can be referred as a strategy creating, getting, transferring, bringing to the use of knowledge in order to fix the organization performance, to support the organization adaptation, the sustainability and competitiveness, to get competitive advantage, and the customers commitment, to improve upon the HR understanding, to protect the intellectual asset, to improve the decision quality, goods and services, and to reflect the new insight and knowledge[5]. Several pieces of research have reported the importance of knowledge management implementation in improving the new perception, innovation and business performance of the MSMEs.
Knowledge sharing as one of the dimensions of knowledge management is proven to be able to boost the MSMEs’ business performance of MSMEs[7]. The implementation of knowledge management in certain MSMEs will influence the improvement of innovation and business performance[8]. Knowledge management is proven to be an impetus for the key success of MSMEs business [9]. Previous studies have indicated that knowledge management is paramount of importance in improving organization performance and innovation. MSMEs have to implement excellent knowledge management would show a positive impact on innovation capability and business performance[1], [10], [11]. Knowledge management proved as playing a key factor in improving the innovation, competitive advantage [12], and business performance [13]. Previous studies have not dealt with the explanation of how the process or mechanism of Knowledge Management can become the reference of the implementation of knowledge management in MSMEs, then how the implementation process becomes the key role for the success of the innovation and business performance improvement[14]–[17]. In other words, those previous studies were done in such a separate way. Thereby, this study has an attempt to completely explain how the mechanism of the knowledge management implementation will improve the innovation and business performance of MSMEs.

Knowledge Management (KM) is the process of creating knowledge, capturing knowledge, organizing knowledge, accessing knowledge and using knowledge. There are three levels of KM, that is, individual, team, and organization level. Individual-level focuses on the knowledge exchange between the employees individually in the same or different team. Team-level KM focuses on the interaction among team members in doing collaborative cooperation in order to evaluate the information and knowledge management. Organization-level KM concerns the mechanisms that support and facilitate knowledge distribution across individuals in the organization. Organizational performance is the totality of the work achieved by an organization. The performance can be seen from to what extent the organization is able to achieve afore goals set [1]. In this study, organizational (business) performance is measured using three approaches, encompassing profit, sales growth, and market share[8]. Innovation is a process to make a change, big and small, suddenly and gradually, to produce, to process, and to serve in which its result is introducing something new for the organization and adding value for the customers and contributing to add new knowledge in the organization[6]. Knowledge management is a management system that has proved a key factor in improving innovation in a big company. Even, some researchers have demonstrated that the implementation of knowledge management in MSMEs also has the same impact—increasing the positive outcome of the MSMEs. For this reason, with the implementation of knowledge management, it is hoped that it will be able to increase the innovation of MSMEs, which in turn will improve the business performance of the MSMEs[4], [12], [13], [18].

Based on the research framework above, the hypotheses can be formulated as follows:
H1: Knowledge management has a positive influence on innovation of MSMEs in Semarang city.
H2: Knowledge management has a positive influence on business performance of MSMEs in Semarang city.
H3: Innovation has a positive influence on business performance of MSMEs in Semarang city.
H4: Innovation mediates the relationship of knowledge management on business performance of MSMEs in Semarang City.
2. **Method**

2.1 **Research Design and Population**

The research design was quantitative approach. The source of data was obtained from the primary data. This approach aims to have a better and deeper understanding of how the MSMEs doers understand the concept of knowledge management and its importance to be implemented. 100 respondents were collected as the research sample. The sampling technique applied is purposive sampling, where researchers select a respondent who meets the criteria required in this study.

Knowledge management variable was measured using the instrument including knowledge acquisition, knowledge sharing dan responsiveness to knowledge [8]. While innovation variable measured compromises product innovation, process and market innovation[8]. The business performance measured using instruments including sales growth and market share[8]. Structural equation modeling (SEM) analysis through Warp PLS program was used to test the hypotheses.

3. **Result and Discussion**

3.1 Result

3.1.1 Instrument Test

Convergent and discriminant validity were used in this study. Convergent validity is measured using factor loading for reflective indicator model or component loading for formative indicator model. If the factor loading is \( \geq 0.30 \) or the factor loading and component loading indicator is significant, it means that the related indicators have confirmed convergent validity. Based on the calculation using WarpPLS 6.0, it shows that all statements are claimed accepting convergent validity because the factor loading is \( \geq 0.30 \), thus the question items are used in this study. The discriminant validity of the questionnaires can be seen from the comparison of the root value of AVE (Average Variance Extracted) and the correlation coefficient. If the root value of AVE is greater than the correlation of the related variable, the questionnaires are valid.

| Table 1. Root of AVE and Correlation Coefficient |
|-----------------------------------------------|
| KM    | INOV  | BP    |
| KM    | 0.662 | 0.262 | 0.047 |
| INOV  | 0.262 | 0.616 | 0.369 |
| BP    | 0.047 | 0.369 | 0.677 |

Based on AVE root test and Correlation Coefficient result, Table 1 depicts that all statement items are bigger than the correlation of the related variable, thus the discriminant validity is accepted. It means that all statements are able to represent all issues in this study and it completely reflects the real condition of the study object.

3.1.2 Reliability Test Result

This following table describes the result of the instrument reliability test:

| Table 2. Composite Reliability dan Cronbach’s Alpha |
|----------------------------------------------|
| No. | Variable | Composite Reliability Coefficient | Cronbach’s Alpha Coefficient |
|-----|----------|----------------------------------|------------------------------|
| 1   | KM       | 0.859                            | 0.812                        |
| 2   | INOV     | 0.808                            | 0.722                        |
| 3   | BP       | 0.883                            | 0.849                        |

In accordance with the Table 2, about the result of reliability test against the variables, it shows that all variables in this study have met composite reliability as composite reliability coefficients \( > 0.70 \) and all variables have also met internal consistency reliability because Cronbach's alpha coefficient \( > 0.60 \), meaning all variables fulfill composite reliability and internal consistency. Therefore, implies that all questions are able to measure all issues constantly, thus it can be claimed as a reliable measurement.
3.1.3 The Result of Descriptive Variable Analysis

Table 3. Descriptive Analysis

| No. | Variable | Mean |
|-----|----------|------|
| 1.  | KM       | 27.76|
| 2.  | BP       | 31.39|
| 3.  | INOV     | 25.69|

Based on Table 3, it can be concluded that the mean of the respondents’ answers is in a different category. Noticing the biggest variable perceived by the respondents, business performance is in the first rank (31.39), followed by knowledge management (27.76), and innovation (25.69). By this means, the best variable perceived by the respondents is business performance, and the worst perceived is innovation.

3.1.4 Model Fit and Quality Indices

The criteria listed in the goodness of fit model in Table 4 act as the rule of thumb, meaning the test result for that matter should not be applied in a rigid and absolute manner. If there are one or two indicators of fit and quality indices model, indeed the model still can be used. The test result is available in Table 4

Table 4. Model Fit and Quality Indices

| No. | Model Fit and Quality Indices | Fit Criteria | Analysis Result | Note |
|-----|--------------------------------|--------------|-----------------|------|
| 1.  | Average path coefficient (APC) | $p < 0.05$   | 0.246 ($P<0.001$) | Good |
| 2.  | Average R-squared (ARS)       | $p < 0.05$   | 0.138 ($P<0.001$) | Good |
| 3.  | Average adjusted R-squared (AARS) | $p < 0.05$   | 0.125 ($P<0.001$) | Good |
| 4.  | Average block VIF (AVIF)      | Accepted if $< = 5$, Ideally $< = 3.2$ | 1.099 | Ideal |
| 5.  | Average full collinearity VIF (AFVIF) | Accepted if $< = 5$, Ideally $< = 3.2$ | 1.161 | Ideal |
| 6.  | Tenenhaus GoF (GoF)           | Small $> = 0.1$, medium $> = 0.25$, large $> = 0.36$ | 0.243 | Ideal |
| 7.  | Sympton’s paradox ratio (SPR) | Accepted if $> = 0.7$, Ideally 1 | 1.000 | Ideal |
| 8.  | R-squared contribution ratio (RSCR) | Accepted if $> = 0.9$, Ideally 1 | 1.000 | Ideal |
| 9.  | Statistical suppression ratio (SSR) | Accepted if $> = 0.7$ | 1.000 | Ideal |
| 10. | Nonlinear bivariate causality direction ratio (NLBCDR) | Accepted if $> = 0.7$ | 0.833 | Ideal |

Table 4 demonstrate that the goodness of fit model has a good result to explain the relationship between the latent variable and their assumptions.

3.1.5 Hypotheses Testing Result

Hypothesis testing uses the resampling method and done by t-test. The decision rule in hypothesis testing is done as follows. If the obtained $p$-value $\leq 0.10$ (alpha 10%), it is said to be significantly weakened. If the $p$-value $\leq 0.05$ (alpha 5%), it is said to be significant and if the $p$-value $\leq 0.01$ (alpha 1%), it is said to be significantly high as mentioned in Table 5 below.
### Table 5. Direct Effects Hypotheses Testing Result

| No. | Relations among Variables | Path Coeff. | P-Value | Note |
|-----|---------------------------|-------------|---------|------|
| 1.  | KM INOV                   | 0.327**     | <0.001  | Significant |
| 2.  | KM BP                     | 0.000ns     | 0.499   | Insignificant |
| 3.  | INOV BP                   | 0.412**     | <0.001  | Significant |

3.1.6 Mediation Testing Result

### Table 6. Mediation Hypotheses Testing Result

| X   | M   | Y   | Path Coeff. of Indirect Effects | P-Value | Note. |
|-----|-----|-----|---------------------------------|---------|------|
| KM  | INOV| BP  | 0.135                           | 0.025   | Sig  |

3.2 Discussion

3.2.1 The Influence of Knowledge Management on Innovation

Based on the table of direct effects hypotheses testing result, it describes that there is an influence of knowledge management on innovation with the path coefficient of 0.327 and p < 0.001. Given that p <0.01, it is said to be significant, so H1 is supported. The path coefficient marked positive (0.327) indicates that the higher the influence of Knowledge Management, the increase the Innovation. The previous result postulated that the implementation of knowledge management in an MSME will have an impact on increasing the business innovation[8], [12], [19]. Concerning this matter, the better the implementation of knowledge management, the better the business innovation of the MSMEs.

Knowledge management and intellectual property within the company produce innovation activities. In other words, implicit and explicit knowledge is transformed into new ideas, which represent an important component of innovation activities in business[20]. In this research, knowledge management, reflected in knowledge acquisition, knowledge sharing and responsiveness to knowledge, is proven to be able to encourage product innovation, process innovation and market innovation.

3.2.2 The Influence of Knowledge Management on Business Performance

Based on the table of direct effects hypothesis testing result, it shows that there is no influence of knowledge management on business performance with the path coefficient of 0.000 and p = 0.499. Given p ≤ 0.10, it is said to be insignificant, so H2 is not supported. This indicates that high or low knowledge management will not affect business performance. The results of this study are not in line with previous studies which show that knowledge management has a positive influence on performance business[1], [7], [10], [13]. However, the results of this study are in line with previous studies, which shows that knowledge management has no significant effect on performance, the gap in the results of research on the influence of knowledge management on performance has become commonplace[19]. This is because knowledge management itself has several dimensions that may have different influences and roles in each context of the research. In this study, good or bad knowledge management applied directly does not affect the performance of the MSME business. The insignificant influence of knowledge management occur in previous study stating that organizations need to adopt training courses in the field of knowledge management to support the management staff and inform them about the role of knowledge management to improve organizational performance, and to compete with other organizations[21].
3.2.3 The Influence of Innovation on Business Performance

Based on the table of the direct effects of hypotheses testing results, it shows that there is an influence of Innovation on Business Performance with a path coefficient of 0.412 and p <0.001. Given p <0.01, it is said to be significantly high, therefore H3 is supported. The path coefficient is positive (0.412) indicating that the higher the influence of innovation, the higher the increase of the business performance. The results of this study are in line with previous studies found that innovation gives an impact on the performance of MSMEs\[4\], \[5\], \[19\], \[22\]. The better a company innovates, the better the MSME business performance will be. Innovation in this study shows an average of (25.69), which is the lowest average perceived. However, it is proven that even though innovation was perceived as not too high, it was able to drive the performance of MSMEs businesses. Innovations including product innovation, process innovation and market innovation are proven to be able to drive sales growth and market share.

Innovation is an important determinant of company performance, so companies need to rethink their strategies to pay more attention to innovation strategies, which enable them to achieve a competitive advantage and leading performance\[23\]. The results of this study also answer the importance of the MSME business to continue improving its HR innovation capabilities to get better business performance.

3.2.4 The Influence Knowledge Management on Business Performance through Business Innovation

Based on the results of the indirect effect hypotheses testing, it is noticed the influence of Knowledge Management on Business Performance through Innovation with path coefficients of 0.135 and p <0.002. Given that p <0.01, it is said to be significantly high, so that H4 is supported. It means that Innovation is a mediating variable because it is able to mediate the relationship between Knowledge Management (KM) on Business Performance (BP). The results of this study are similar previous research who suggested that the presence of innovation can mediate the influence of knowledge management on business performance\[5\].

In order to achieve a leading business performance in terms of profit, sales and market share, the managers must improve the market products, processes and innovations by effectively managing the acquisition, distribution and application of knowledge\[8\]. Another research asserted that without organizational innovation in knowledge management, knowledge may not affect organizational resilience\[24\]. Furthermore, it can be said that organizational resilience is built through innovation. In the case of full mediation, the predictor variable loses the power to influence the criteria variable except through a mediator.

Although in this study, knowledge management does not directly influence the performance of MSME business, knowledge management remains an important factor in increasing innovation. The increases in innovation will ultimately improve the performance of MSMEs. Thus, it is proven that knowledge management is an important aspect that needs to be continuously applied and improved in order to get a good business outcome of MSMEs.

4. Conclusions

The result shows that there is a positive relationship of knowledge management on innovation, the better knowledge management implementation, the better innovation will be. Innovation is proven influencing the business performance of MSMEs, the better innovation, the better business performance demonstrated. Yet, directly, knowledge management does not significantly influence the business performance of MSMEs. Notwithstanding this fact, knowledge management still has a focal role in improving business performance through innovation. In this study, it is proven that innovation is a mediating variable between knowledge management and business performance. In other words, better knowledge management in MSMEs, it will improve their ability to make an innovation. Being good at innovating, it will improve the performance of MSMEs.

The result of this study is able to give information stating that knowledge management is the first and foremost practice to be implemented in not only a big company, but also in MSMEs. Company in general and MSMEs in particular should keep paying attention and improving the implementation of knowledge management to get a positive result. This study still has a limitation, such as a sample used, which is limited only to Creative MSMEs. It is expected to add the sample for further research. More, this study only focuses on innovation as the mediating variable. As mentioned in many works of literature, the possibility of other aspects involved such as learning organization in mediating or moderating is recognized. Thus, for the next study, consideration to examine a different mediating variable may be taken into account. It is also possible to use a different approach for the variable measurement.
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