

Using Knowledge Management System: A Taxonomy of SME Strategies

(Critical Review)

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ABSTRACT—*Research on the implementation of knowledge management systems (KMS) in an organization has been written in many scientific articles. This topic has been widely discussed since experts recognize that knowledge is a resource that can provide a competitive advantage for organizations. One interesting scientific article compiled by Roberto Cerchione and Emilio Esposito that identifies in full the taxonomy of KMS used by SME, because the use of KMS can create new opportunities for SME that cause lower-cost weight, more user-friendly and more effective. The identification results in the article clearly help SME to realize their position regarding the diffusion level and the intensity of KMS usage. Unfortunately, in this article, Roberto Cerchione and Emilio Esposito are not sufficiently clear in their method of measuring the intensity of the use of KMS (KM-Tools and KM-Practice) so that readers find it difficult to interpret the main point of the article.*

Keywords--*Knowledge management, Taxonomy, SME strategies*

I INTRODUCTION

The implementation of knowledge management in an organization has been proven to be able to improve business processes, operational processes and strategic decision making, the integral development of communities and communities, with the support of information and communication technology, to detect opportunities and add value to their customers (Córdova& Gutiérrez, 2018). SME in Southern Italy has also implemented KMS (KM-Tools / KM-Practice) as a method and tool for managing their knowledge, despite having different levels of diffusion and intensity of use (Cerchione&Esposito, 2018). This is the object of research by Roberto Cerchione and Emilio Esposito. In their article entitled "Using knowledge management system: A taxonomy of SME strategies", Roberto Cerchione and Emilio Esposito measure the level of diffusion and intensity of KM-Tools and KM-Practices of SMEs in southern Italy so that it can be concluded correlation or reciprocal relationship between KM-Tools and KM-Practice. The correlation conclusions that exist offer taxonomies that provide opportunities for SME to be able to identify strategies in the use of KM-Tools and KM-Practices. Stages of research conducted by Roberti Cerchione and Emilio Esposito in compiling the taxonomy of SMEs began with a literature study to find out KM-Tools and KM-Practices used by organizations, the results of which were validated by experts in the IT field specifically for SMEs. When KM-Tools and KM-Practices were determined to determine their use, Roberto Cerchione and Emilio Esposito measured the degree of diffusion and user intensity with the research object, 61 SMEs in southern Italy. From the degree of diffusion level and usage intensity, correlation analysis is performed to measure the reciprocal relationship between KM-Tools and KM-Practice. This reciprocal relationship is used as the basis for making the taxonomy. However, in the measurement

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phase of the intensity of use, the writers in his writings did not explain clearly how to codify the respondents' qualitative judgments into the fuzzy numbers written on their writings, giving rise to different expectations regarding how to translate the numbers in the fuzzy set. Regardless of how to measure KM-Tools and KM-Practices usage intensity, this paper clearly guides readers on how to create taxonomies.

II SUMMARY

In this paper, writers compiled SMEs taxonomy for the strategy of using KM-Tools and KM-Practices. In the initial stage, writers present a systematic review of literature reviews that serves to analyze the state of the art of KMS in SME. The steps taken in conducting a systematic review of the literature review are paper selection and content analysis. The paper selection begins with determining the academic database namely Scopus and web of science, with a span of 1960 to 2014. The keywords used in the paper selections are KMS, Knowledge management systems, knowledge management system tools, knowledge management practices combined with SMEs, small companies, small and medium businesses. From those selection stages, 243 papers were found. Out of the 243 papers, 49 were then selected accordingly, for further processing. The stages of content analysis categorize the paper into six areas. The results of this systematic literature review are a list of KM-Tools and KM-Practices used by SMEs and then validated by IT experts operating in the SME field, so that taxonomies from KM-Tools and KM-Practices are grouped into three KM process phases, namely knowledge creation, knowledge storage, and knowledge transfer. To determine degree of diffusion and usage intensity of KM-Tools and KM-Practice, writers chose a sample of 61 SMEs (based on the definition of SMEs according to the EU community). Results from this field analysis, writers identified the degree of diffusion and usage intensity of KM-Tools and KM-Practices of the surveyed SMEs. Writers believe that KM-Tools diffusion degree is defined as the number of SMEs who adopt KM-Tools divided by the number of SMEs sample. Whereas, the degree of KM-Practice diffusion rate is defined as the number of SMEs adopting KM-Practice divided by the number of SMEs sample. According to the writers usage intensity underlines the intensive use of KM-Tools and KM-Practice. The writers used a fuzzy approach to evaluate the intensity of the use of KM-Tools and KM-Practice adopted by SMEs. Specifically, writers calculated usage intensity of KM-Tools and KM-Practice in 6 steps. Then an analysis of the specifications of each SME using the differentiation index and usage intensity index was carried. The differentiation index is defined as the number of KM-Tools or KM-Practices adopted by SMEs divided by the number of identified KM-Tools or KM-Practices. Then the significance correlation is calculated from the KM-Tools reciprocal relationship with the KM-Practices used. From this index, writers compiled a taxonomy of the KM strategy for SMEs as follows:

1. Guidepost is a type of SME that has invested to adopt innovative KM-Tools and KM-Practices.
2. Exploiter is a type of SME that has not yet realized the importance of investing resources from KM, this SME still uses traditional KM-Tools and KM-Practice that are not specifically dedicated to KM
3. Explorer is a type of SME that has used the innovative KM-Tools and KM-Practices specifically dedicated to KM. These SMEs explore opportunities for various KM-Tools and KM-Practices through the learning and training process.

4. Latecomer is a type of SME that still do not know the value strategy of KM and still does not have the resources needed to be competitive in the field of knowledge management.

III CRITICS

The literature by Roberto Cerchione and Emilio Esposito with the title "Using knowledge management systems: A taxonomy of SME strategies" provides insight to readers in identifying KM-Tools and KM-Practices used by SMEs in order to increase their competitive advantage. In addition, this paper also contributes to helping SMEs understand their position in the adoption of KM-Tools and KM-Practice. An understanding of the position of SMEs can support SMEs in developing strategies to adopt KM-Tools and KM-Practice so that they will be able to increase effectiveness and efficiency in their investments. Regarding this, Roberto Cerchione and Emilio Esposito's writing shows a negative correlation between the number of KM-Tools and KM-Practices used by SMEs and its usage intensity. With this taxonomy, SMEs get guidance in exploring the potential of several KM-Tools and KM-Practices.

Related to the contents of the writing, the writers divide it into seven parts, namely introduction, literature review, taxonomic identification, research methodology and investigative context, illustration of the diffusion level, and intensity of KM-Tools and KM-Practices use, proposed taxonomy of SME strategies, conclusions, and their implications. In the introduction, the writers explain briefly and the background that contains strategic issues in the implementation of KMS, research objectives and the composition of the paper. The literature review was written by the writers by explaining the way in determining the appropriate literature review, although in the end the researchers concluded the list of KM-Tools and KM-Practices that are adjusted to the KM process phase of KM-Tools and KM-Practices. This interpretation makes it easier for readers to synthesize categories from the content analysis process. In addition, to validate that the list has been made, the writers confirmed it with IT experts in the field of SMEs. This action provides validity to the list created. The taxonomic identification section clearly guides the reader in understanding the types of KM-Tools and KM-Practices that have been adopted by SMEs. Research methodologies carried out by Roberto Cerchione, and Emilio Esposito are very detailed. However, the writer did not depict in the form of diagrams that make it easy to guide the reader in understanding the steps of the study. A diagram of the steps commonly used in the method section will make it easier for the reader to examine the activities carried out by the writers in his research. Illustration of the diffusion level and intensity of KM-Tools and KM-Pratik usage depicted in diagram form makes it very easy for the reader to understand the types of KMS (KM-Tools / KM-Practice) used or frequently used by SME. However, the explanation of how to obtain the results of the diagram is not clearly revealed by the writers, especially when the writers explain the process of codification of assigned linguistic variables to fuzzy numbers. This has risen a question because the codification of linguistic variables that have been set at five qualitative levels, which are very bad, bad, moderate, significant, and very significant, there should be a domain range for each of these qualitative levels (Sunoto & Nulhakim, 2017; Primartha & Fathiyah, 2013). The writers's lack of detail in providing an explanation related to the measurement of the usage intensity in using the fuzzy approach raises the question of readers (especially for those who have never used this fuzzy method), such as what process was used to codify the qualitative variables chosen by respondents in the interview into fuzzy numbers. The

question can be answered by the writers if previously the writers gave an explanation of the domain range of numbers in the linguistic variable. As shown in the table below:

Table 1:Codification of Linguistic Variable

Variable	Range	Domain
Very Poor	0-1	0 -0,2
Poor	0-1	0,3-0,4
Medium	0-1	0,5-0,6
Significant	0-1	0,7-0,8
Very significant	0-1	0,9-1

In order to provide further understanding to the reader, the writer also needs to explain defuzzification techniques in making fuzzy averages. Defuzzification is the process of mapping the magnitude of a fuzzy set into crisp values. Defuzzification is needed because, acceptance of KM-Tools / KM-Practice is regulated by real quantities, not fuzzy quantities. An overview of the expected value collection techniques can be seen in Figure 1 below :

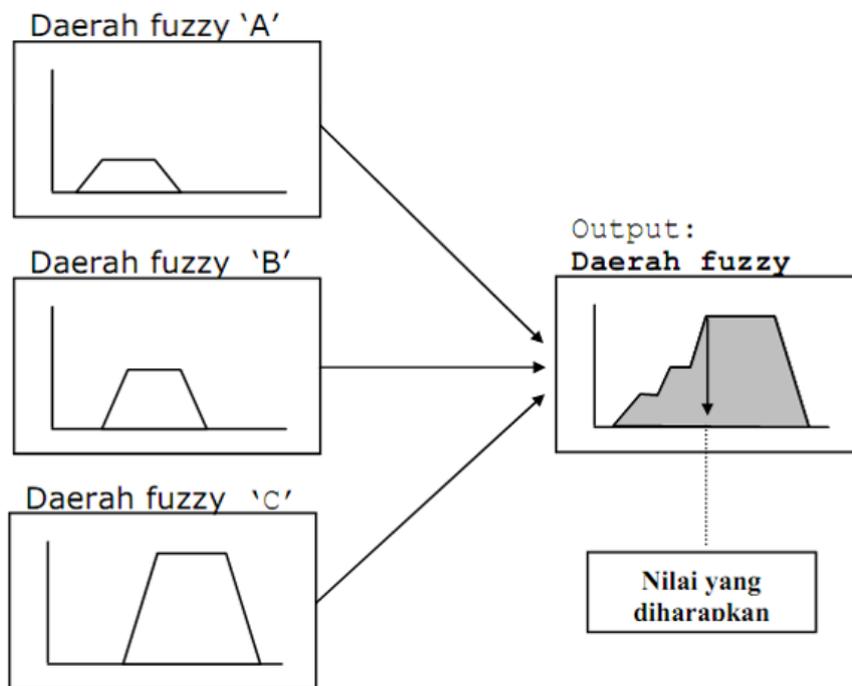


Figure 1:Defuzzification Process. Taken from Nawawi &Fakrurazi, Studi Komparasi Kendali Motor DC Dengan Logika Fuzzy Metode Mamdani dan Sugeno, 2016 pp. 35-44.

The writers use the mean-of-maxima method in the defuzzification process. For this reason, the writer also needs to explain how the mean-of-maxima method is chosen to take the average value of the domain that has the maximum membership value, as shown in Figure 2 below.

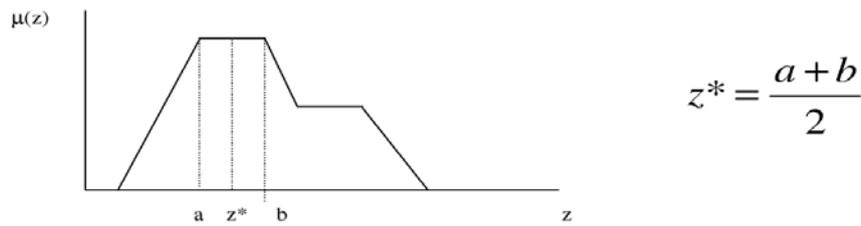


Figure 2: Mean-of-Maxima Method Taken from Nawawi & Fakrurrozi, Studi Komparasi Kendali Motor DC Dengan Logika Fuzzy Metode Mamdani dan Sugeno, 2016 pp. 35-44.

Apart from all that, the strength in this paper is that the writer provides pictures - the results of data processing so that readers can find out the results of the research.

IV CONCLUSION

This paper provides excellent insights for SMEs in understanding the context of KM-Tools and KM-Practices use in their business processes. However, in the explanation of the fuzzy approach used in measuring the intensity of the use of KM-Tools and KM-Practice, the writers lack detail. Thus it raises the question among readers, especially those who are not familiar with the fuzzy approach. This paper will be clearer if the writer includes a linguistic variable codification table that explains the domain of each variable, as well as a defuzzification method it can help readers to explore and understand the numbers in the table the writer has presented.

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