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CREATION OF QUESTIONNAIRE KEYWORDS WITH THE CISE METHOD FOR KMS USER SATISFACTION EVALUATION

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ABSTRACT

This study aims to obtain user satisfaction factors for a knowledge management system so that a questionnaire can be made for evaluation or measurement. The SECI method is used with the CISE sequence which consists of four knowledge creation steps, namely C-combination, I-nternalization, S-socialization, and ending E-externalization. The stage begins with literature studies and then modifications are made with the selection, addition, and incorporation of existing models. From understanding and analyzing several models, discussions or brainstorming with colleagues were then carried out so that a final model was obtained to compile a list of keywords and statements as a questionnaire based on indicators related to knowledge management and the satisfaction of knowledge management system users. The results obtained there are eight user satisfaction factors divided into technical aspects (knowledge quality, knowledge sharing, system quality, service quality) and social aspects (management support, system use, perceived usefulness, user attribute). Five attributes were obtained from each of these factors as keywords resulting in 40 questionnaire statements. It can be concluded that the factors of user satisfaction knowledge management system can be built from the satisfaction of information system users in general by adding distinctive factors including the creation, transfer, and documentation of knowledge.

Keyword: KM, KMS, SECI, Knowledge-Sharing, Knowledge-Transfer.

INTRODUCTION

Questionnaires used as an evaluation tool in the development and implementation of an information system application are often an additional burden for researchers or lack the type or purpose of the system. The Knowledge Management System (KMS) application is a type of information system with a distinctive purpose developed based on certain methods, so it is raised in this article.

Several studies with the evaluation of KMS have been carried out, including the evaluation of KMS in the South Tangerang city government using the SUMI (Software Usability Measurement Inventory) method (T & Muharram, 2020), measuring the success of KMS implementation based on the information systems success model at the Ministry of Finance of the Republic of Indonesia (Kristian Ibrahim et al., 2019), the KMS application at BPPT (Agency for the Assessment and Application of Technology) is carried out using the SECI (Socialization, Externalization, Combination, and Internalization) (Ariani & Rahmawati, 2020). The performance of Knowledge Management (KM) in the public sector in Greece is measured by CAF (Common Assessment Framework) (Xanthopoulou et al., 2021). Based on the systematic literature review conducted by Riswanto (Riswanto & Sensuse, 2021), the SECI method is most often used with a combination of traditional information system development techniques in the implementation and development of KMS.

Making a questionnaire requires special research related to the model of an information system to be used. Based on this exposure, it is necessary to discuss the creation of a questionnaire aimed at measuring the level of user satisfaction of a KMS application comprehensively covering aspects of KM and information systems.

RESEARCH METHOD

The SECI model resulting from the theory developed by Nonaka and Takeuchi (1995) (Nonaka & Takeuchi, 1995) was used as the basis for conducting this stage of research. As shown in Figure 1, the process of knowledge creation usually begins with S-socialization and then there is a cycle that progressively forms more complex knowledge (Bandera et al., 2017).

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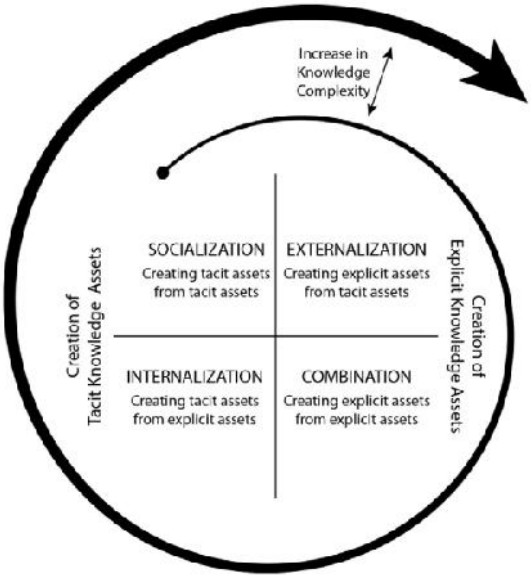

Figure 1. SECI Model (Bandera et al., 2017)

The stages in this study consist of 4 (four) steps of knowledge creation starting from the C-combination to form a CISE cycle that ends with E-externalization, as shown in Figure 2. SECI is a repetitive cycle that allows the CISE stage to be used because the previous stage has been carried out by the previous researcher and the next stage can be continued by the next researcher.

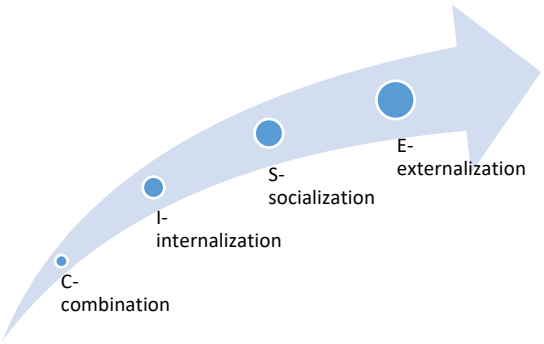

Figure 2. Stages of Research

C-combination Stage

The research began with a literature study of several articles related to KMS development methods and the theory of user satisfaction. From the existing models, modifications are then made by selection, addition, and merging.

I-internalization Stage

At this stage, understanding and analysis of several existing models are carried out to produce candidates for the KMS relationship model and user satisfaction.

S-socialization stage

The next stage is to discuss or brainstorm with colleagues on model candidates, as well as look for supporting articles and theories so that the final model is obtained.

E-externalization Stage

From the final model, keywords and a list of statements are made as a questionnaire based on indicators related to KM and KMS user satisfaction.

RESULT AND DISCUSSION

The results of the selection of several previous studies related to KMS and user satisfaction have been carried out and presented in Table 1. Cham, et al. (Cham et al., 2016) offer a model with determinants of user satisfaction and KMS success in banking. Syahrizal, et al. (Syahrizal et al., 2018) used a model with factors affecting the implementation of KMS in the provincial government of South Sumatra. Uday, et al. (Kulkarni et al., 2006) conducted testing of an organization's KMS success model. Kalankesh, et al. (Kalankesh et al., 2020) in their systematic review, there are seven dimensions of factors that affect the satisfaction of users of information systems.

Maintaining the technical aspects and social aspects built a model of KMS user satisfaction factors as shown in Figure 3. The technical aspect is related to information technology, both hardware, and software, while the social aspect is related to the role of humans which is a part that cannot be ignored from the KMS system. The management support factor on KMS was chosen because it is more focused than the organization management whose scope is too broad. The knowledge quality factor is used as well as representing the content and information quality factors because KMS is a form of application that is typical of part of the information system. The perceived usefulness at the same time represents user trust because users who believe in KMS will find the system useful.

Table 1. The Results of the Literature Study

Researcher/Author	User Satisfaction Factor
Tat Huei Cham, Yet Mee Lim, Boon Liat Cheng, Teck Heang Lee. (Cham et al., 2016)	Technical aspects: - knowledge quality - system quality - service quality Social aspects: - user trust - management support
Andy Syahrizal, Dana Indra Sensuse, Gilang B.K. Ashshidhiqi,	- system quality - knowledge quality - service quality

Kuncoro W.A. Baroto, Muhammad F.D. Rizki, Roby Eko Primadi. (Syahrizal et al., 2018)	- system use
Uday R. Kulkarni, Sury Ravindran, Ronald Freeze. (Kulkarni et al., 2006)	- knowledge sharing - content quality - system quality
Leila R. Kalankesh, Zahra Nasiry, Rebecca A. Fein, Shahla Damanabi. (Kalankesh et al., 2020)	- organization management - user attribute - system use - perceived usefulness - service quality - system quality - information quality

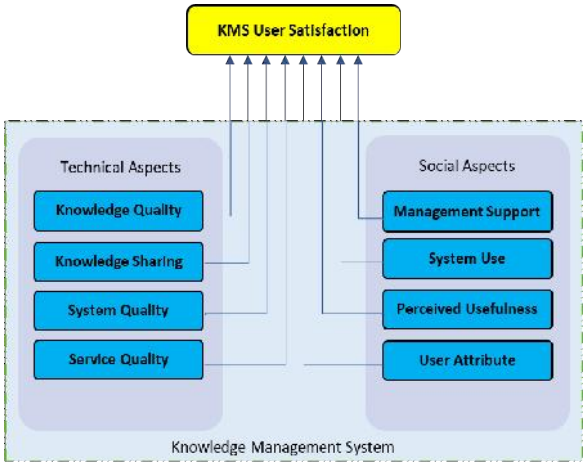

Figure 3. KMS User Satisfaction Factors

Knowledge Quality

The knowledge quality is the quality of the information in KMS. The essential elements inherent in knowledge quality are accurate, complete, consistent, current, and relevant information (Chakrabarti et al., 2018; Gilang et al., 2017). The element is used as a questionnaire keyword and is described in Table 2.

Table 2. Keywords Knowledge Quality Factor

Knowledge Quality	Questionnaire Statement
- Accurate	The information is true and there are no typos.
- Complete	Information is provided thoroughly with comprehensive content.
- Consistent	Information on an ongoing basis can meet requirements and expectations.
- Current	The information needed is timely and up-to-date to support the work.
- Relevant	Information is useful and in line with the goals and needs of the organization.

Knowledge Sharing

Knowledge sharing is an inseparable part of KM, which is a method of social interaction to exchange knowledge, expertise, and skill in an organization (Rohman et al., 2020). From the technical aspects of KMS, the keywords for knowledge sharing are interactive (Ou et al., 2016), collaboration (Wulf & Butel, 2017), notification (Kleanthous Loizou & Dimitrova, 2013), language (Lauring & Selmer, 2011), and discussion (Kumi & Sabherwal, 2019). Table 3 shows keywords and knowledge sharing factor questionnaire statements.

Table 3. Keywords Knowledge Sharing Factor

Knowledge Sharing	Questionnaire Statement
- Interactive	Interaction between users to transfer knowledge can be done through the KMS application.
- Collaboration	Cooperation to complete a job or project can be done through the KMS application.
- Notification	The presence of reminder messages, communications from other users, or other up-to-date information from the KMS application.
- Language	The language, words, and phrasing are common and easy for KMS application users to understand.
- Discussion	Exchange ideas with others at the same time online in the KMS application.

System Quality

The quality of the system is identical to the ease of use (Masoner et al., 2011) supported by accessibility (Ali et al., 2020; Kulkarni et al., 2006), speed, reliability, and integration (Gilang et al., 2017; Kalankesh et al., 2020). Thus, presented in Table 4 the questionnaire statement with the keywords of the system quality factor is ease, access, speed, reliability, and integration.

Table 4. Keywords System Quality Factor

System Quality	Questionnaire Statement
- Ease	The KMS application is easy to use.
- Access	The KMS application can be accessed with various types of devices and platforms.

- Speed	The KMS application provides short response times.
- Reliability	The KMS application can be used at any time and anywhere.
- Integration	The KMS application is integrated with other systems.

Service Quality

Quality of service is the role of KMS providers (Kalankesh et al., 2020) which consists of guidance, training, assistance, response, and maintenance (Yoon & Suh, 2004). These keywords are shown in Table 5.

Table 5. Keywords Service Quality Factor

Service Quality	Questionnaire Statement
- Guidance	Instructions for how to use the KMS application are available.
- Training	Learning and socialization are provided regularly.
- Assistance	Technical assistance with hardware and software constraints.
- Response	Fast and precise support response time.
- Maintenance	System repair in a preventive, effective, and efficient manner.

Management Support

Management support is an activity carried out by top management so that the goals and vision of KMS reach users and are directly involved with the system (Muhammed & Zaim, 2020). The keywords management support includes culture, support, procedure, process, and reward (Lo et al., 2021; Meddour et al., 2019), outlined in Table 6.

Table 6. Keywords Management Support Factor

Management Support	Questionnaire Statement
- Culture	Users are used to being involved in the development of application systems.
- Support	The management is directly involved in the development and operation of KMS.
- Procedure	There are standard rules in the set of works that are attributed to the KMS.
- Process	Management becomes part of the workflow process in the KMS application.
- Reward	Awards or credits for users with certain criteria.

System Use

System usage is the quantity of the large level of need for the use of KMS applications by users as measured by the parameters of addiction, time, frequency, volume, and routine (He et al., 2009; Iyengar et al., 2021). The keywords for system usage factors are described in Table 7.

Table 7. Keywords System Use Factor

System Use	Questionnaire Statement
- Addiction	Users depend on KMS to complete work.
- Time	The user is quite long in the KMS application for his work.
- Frequency	Users often use KMS applications.
- Volume	Users access large amounts of information or documents.
- Routine	Users use the KMS application at a certain schedule or time.

Perceived Usefulness

The feeling of benefit is the justification of the user to oneself after using the KMS application which is related to the improvement of performance, productivity, effectiveness, efficiency, and trust (Gilang et al., 2017; He et al., 2009), as stated in Table 8.

Table 8. Keywords Perceived Usefulness Factor

Perceived Usefulness	Questionnaire Statement
- Performance	The performance or achievements of KMS application users are increasing.
- Productivity	KMS application users are able to produce something more optimal.
- Effectiveness	KMS application users can work precisely according to the purpose
- Efficiency	Users earn better with lighter effort.
- Trust	User trust that the KMS application will continue to be useful.

User Attribute

User attributes are individual conditions that can be managed so that satisfaction increases. Table 9 is the questionnaire's statement of the keywords of user attribute factors namely expertise, expectation, experience, understanding, and sharing (Agnihotri & Troutt, 2009; Kalankesh et al., 2020; Song et al., 2019).

Table 9. Keywords User Attribute Factor

User Attribute	Questionnaire Statement
- Expertise	Everyone has a distinctive ability that is worthy of being shared with others.
- Expectation	There is hope that KMS will succeed in the common interest.
- Experience	Users get a new impression or impression with the existence of KMS.
- Understanding	Understand the benefits, purpose and can use the KMS application.
- Sharing	Believe that knowledge transfer is beneficial for all parties.

From Table 2 to Table 9, 40 questionnaire statements are composed or can be adjusted as questions to measure KMS user satisfaction.

CONCLUSION

KMS user satisfaction factors are factors of satisfaction of information system users in general by adding or adjusting the typical objectives of the KMS, including the creation, transfer, and documentation of knowledge. From the 40 lists of questionnaire statements, it can then be adjusted to the measurement techniques that will be carried out to measure customer satisfaction both qualitatively and quantitatively.

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