Exploration Participants Engagement in Organisational Knowledge Sharing

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Abstract: The importance of knowledge sharing within most organisations is well recognised. While abundant KM systems have been matured to encourage individual engagement in knowledge sharing, practical evidences show a low success rate of KM systems. This paper reports on a qualitative exploratory multi-case study to explore level participants' engagement in knowledge sharing along the design principle for engagement of participatory systems. Results show that KM systems using a combined approach of supply- and demand side KM strongly influence participants' engagement for knowledge sharing.

1 INTRODUCTION

Knowledge has become a critical driver for business success. Many businesses are exploring the field of knowledge management (KM) to improve and sustain their competitive advantage (Bock et al., 2005). Many organisations are becoming more knowledge intensive, whilst hiring "*minds*" more than "*hands*", in their attempt to capture the value of knowledge (Wong, 2005). KM systems have been designed to support sustainable to this purpose.

A review of the KM system literature discloses two general approaches. The first approach from the first generation of KM, concentrates on supplying pre-exist knowledge to participants (Rezgui et al., 2010). The second approach of KM focuses on knowledge sharing processes as self-organized phenomena between knowledge owners and knowledge recipients. Participants' contributions to the second generation of KM systems strongly depends on their engagement in the knowledge sharing processes (van den Hooff and Huysman, 2009). Designing KM systems for participants' engagement improves individual participation and knowledge contributions (Mergel et al., 2008). Moreover, recent research on success factors of KM systems shows the importance of soft factor such as individual engagement in knowledge sharing rather than technological factors (Sedighi et al., 2015). Nevertheless, few studies evaluate individual engagement in KM systems. This paper explores how different categories of KM systems support participants' engagement in knowledge exchange, using a qualitative exploratory multi-case study. This study creates two main research contributions. First, it makes a comprehensive understanding of participants' engagement by explaining different dimensions of engagement. Second, this research advances our knowledge about the level of engagement support in different KM classifications.

This study is organized as follows: Section 2 discusses KM systems and focuses more specifically on the role of participants' engagement in KM process. Section 3 discusses the research method and procedure, based on participatory systems literature. Section 4 analyses participant's engagement for six KM systems. Sections 5 and 6 present results discussion, conclusions and future research.

2 RELATED WORK

Many KM systems have been developed to encourage knowledge sharing behaviour, but practical evidence shows that technology alone cannot guarantee the success of KM systems (Sedighi et al., 2015). KM systems are designed to acquire, create and share knowledge with a collection of employees, processes and technology with different organisational and environmental constraints (Sedighi and Zand, 2012).

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Traditionally, a principal discussion with regard to KM systems focuses on how to improve participants' engagement in the KM process. There are still no clear design recommendations. Contemporary KM systems are becoming more accessible, effective, cloud-based, connected, personalized, and integrated with other organisational technologies, shaping new knowledge exchange environments to support participants' engagement in KM process. Generally, improving employees' participation for knowledge sharing has been identified as a main motivation for designing new KM technologies.

2.1 Engagement in KM Systems

Participants' engagement indicates a level of involvement in knowledge sharing processes to share contents, information and knowledge within organisation (Chang and Chuang, 2011). Success of KM systems strongly depends on participants' willingness to engage in knowledge sharing (Wiertz and de Ruyter, 2007). All KM systems need participants' engagement in knowledge sharing to improve knowledge flows within organisations, to make sharing memorable, satisfying, enjoyable and rewarding process (Benyon et al., 2005).

Participant engagement is developed in different communication channels of KM systems (Sedighi et al., 2016). Communication channels are distinguished with the level of knowledge sharing engagement visibilities (Zhang et al., 2013). Private communication channels are developed in KM systems to transfer knowledge between two persons: a knowledge sender and a knowledge recipient. Group communication channels create a knowledge exchange platform among a group of employees with considering to few-to-few communication. Public communication technologies support employees to share knowledge with all employees within organisation. These platforms support many-to-many communication.

2.2 Supply-side Vs. Demand-side KM

McElroy (2000) is the first author to categorize KM systems with respect to the two sides of knowledge sharing: supply-side KM (push system) and demand-side KM (pull system). Further, the combination of supply and demand sides represents a new cluster of KM systems designed to this purpose. Figure 1 depicts different demand-side KM and supply-side KM technologies.

Supply-side KM systems provide pre-compiled knowledge to passive participants. Knowledge owners customize and create knowledge in response to knowledge needs and requests in Demand-Side KM approaches. The combination of the supply-side and demand-side KM promotes emergent knowledge on the demand-side and strategic knowledge on the supply-side, however conditions of KM systems to support both sides of KM has not yet been introduced.

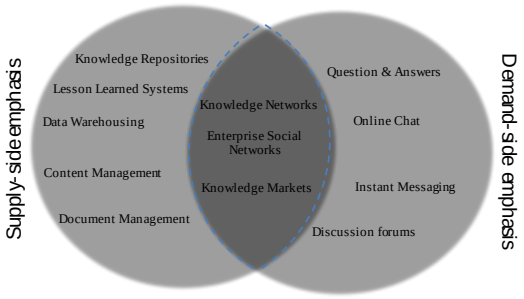

Figure 1: Supply-side & Demand-side KM tools.

3 EXPLORATORY STUDY

This section introduces the methodology of this exploratory study.

3.1 Research Model

This section presents an assessment model to measure individuals' engagement in knowledge sharing. Participatory systems are large-scale social-technical systems enabled by technology, coordinating and orchestrating self-organisation, designed to provide individuals and organisations the ability to act and take responsibility in today's networked society (Brazier and Nevejan, 2014). When designing a participatory system three major design principles are of key importance (Brazier and Nevejan, 2014). First, trust is essential to the social process facilitated by mechanisms for transparency, security, integrity, privacy, identifiability, traceability, accessibility, proportionality, reliability and robustness. Second, engagement necessitates interaction, design of presence, enactment, communication, awareness and co-creation. Third, a participation process empowers participants respecting participants' autonomy (reactivity and pro-activeness) and providing them the ability to act through interaction, communication and self-regulation (Brazier and Nevejan, 2014).

Employing the design principle for engagement in participatory KM systems, an engaging KM system needs to support a social process and provide

an infrastructure facilitating interaction, presence, enactment, communication, awareness and co-creation (Brazier and Nevejan, 2014). This paper distinguishes 6 dimensions (Figure 2) of engagement adopted by KM studies:

- **Interaction:** level of participant engagement in the knowledge exchange regarding to perceived costs and benefits (Cyr and Wei Choo, 2010).
- **Presence:** level of participants' presence in relation to time, place, actions and relations (Nevejan and Brazier, 2012; Riva et al., 2011).
- **Enactment:** level of participants' engagement in legislation and self-regulation in the governance of KM systems (Tseng and Kuo, 2014).
- **Communication:** level of participants' possibilities to communicate in different levels of knowledge sharing channels (Snyder and Eng Lee-Partridge, 2013).
- **Awareness:** level of participants' opportunities to be aware of structures, networks and governance of KM systems (Leonardi, 2014).
- **Co-creation:** level of participants' opportunities to jointly generate knowledge with other participants (Kazadi et al., 2016).

Figure 2: Participants' engagement dimensions.

3.2 Research Method and Procedure

This paper follows the qualitative exploratory multi-case study method. The purpose of this study is to evaluate support for individual engagement in knowledge exchange in different KM systems. For the first step, KM systems are selected using the winner list of Globally Most Admired Knowledge Enterprises (MAKE) reward. The MAKE award, initiated by Teleos in association with the KNOW network, focuses on the knowledge process in organisations (Pandey and Dutta, 2013).

Although, it is difficult to position a KM system independently in either supply-side or demand-side KM, or a combination of the 2, the foundation of KM systems addresses one of the approaches. The selected KM systems are presented in Table 1.

Table 1: Selected KM systems.

Supply-side KM	Demand-side KM	Combination approach
Knowledge Repositories	Discussion Forums	Knowledge Markets
Lessons Learned Systems	Q&A Systems	Enterprise Social Networks

Such KM systems have been assessed using the six engagement dimensions shown in Fig. 2. Google scholar was used to find academic journals, and book chapters on knowledge management, business management, and information systems, published between 2010 and 2015 that referenced "*Knowledge repositories*", "*lesson learned systems*", "*discussion forums*", "*question and answer systems*", "*knowledge market*" and "*enterprise social network*". All studies consider KM system in organisational environments. Overall, 32 qualitative and quantitative studies were selected to use in the research.

3.3 Measures

The qualitative data collected from these studies is used to evaluate the engagement dimensions defined above to assess individuals' engagement. Two judges independently investigated definitions, structures, properties and technical features of the six KM systems from the selected studies regarding to the dimension definitions. They employed an open coding method. All data regarding to the engagement dimensions are listed for each KM systems. Judges discuss with each other to create a consensus. The frequency of evidences is used to evaluate dimensions. The best system is ranked in the highest level regarding to the dimensions' definitions. Then other systems are ranked with respect to the best KM system with three-point scale (low, medium, high).

4 RESULTS

4.1 Knowledge Repository System

Knowledge repository systems are designed to support saving, disseminating and retrieving knowledge with the aid of IT (van den Hooff and Huysman, 2009). Organisations and knowledge experts contribute to the system by improving and updating repository. Knowledge recipients are considered to be passive actors only receiving knowledge from the knowledge repository and not making contributions. The different dimensions of

engagement dimensions are not evaluated for knowledge repositories, because knowledge repositories do not support a social process for user engagement. They only support unidirectional communication.

4.2 Lesson Learned System

Lessons Learned systems are designed to enhance the capability of organisations to identify and capture valuable lessons learned through project activities (Burley and Pandit, 2008). The purpose of a lessons learned system is not to share failure stories, but to disseminate experiences. Like knowledge repositories and all other systems developed in the supply-side KM approach, learners are passive participants whom only obtain lessons from systems. Engagement is not supported by lesson learned systems, because they are only designed to collect experiences by experts within organisations.

4.3 Discussion Forum System

Discussion forums are computer-based knowledge systems that enable employees to exchange knowledge and ideas (Montero et al., 2007). Knowledge sharing through discussion forums is stimulated by rich social participation and communication.

Figure 3: Assessment of engagement dimensions as supported in discussion forums.

Knowledge contents in forums are publicly exposed within an organisation, and participants are aware that everyone within their organisation can read their knowledge. This creates collective reputation for knowledge creators and enhances interaction between employees. As result, their self-image is improved and they receive recognition as a knowledge worker. Although, people gain reputation from knowledge contribution, discussion forums have no opportunity to support other kinds of reputation mechanisms such as rating methods. Further, discussion forums promote reciprocity in the form of in-direct knowledge exchange. Participants exchange knowledge with other participants who they have previously seen in knowledge exchange with others. While, participants are benefited from in-direct reciprocity, participants have no possibility to use one-to-one communication channel. Therefore, discussion forum systems support participants' interaction on a medium level.

Discussion forums are designed for individual presence. They allow members to share knowledge via transparent synchronous or asynchronous communication. Thus, discussion forum systems support high-level individual presence dimension. Further, these systems are designed for participants' enactment by role acceptance in the discussion forum, but members do not have any possibility for self-regulation and intervention on the governance of system. Hence, discussion forum systems support a low-level of individual enactment. Besides, these systems are only designed for communication among group members. Knowledge exchanges on private and public levels are eliminated from the scope of discussion forums. Therefore, discussion forum systems rank low on the communication dimension. Furthermore, people can be aware about the changes in interested forum topics by following the subject, but they do not provide the opportunity to be aware on all whole changes in the forum. As result, discussion forum systems rank low on the awareness dimension. These systems also have been developed for knowledge creation on a group level. These systems have no technical opportunity to create knowledge in public-level knowledge exchange. Thus, discussion forum systems rank medium on the co-creation dimension. Figure 3 presents a summary of the engagement assessment for discussion forums.

4.4 Question and Answer System

Organisational Q&A systems are developed for employees' interactions, asking questions and collecting answers within an organisation. All questions and answers are saved in a Q&A repository that can be easily assessed by participants (Iske and Boersma, 2005). Q&A systems create opportunities for participants to contribute in the social process.

Q&A systems employ a transparent environment between knowledge creators and knowledge recipients to transfer personal advice and opinions. All Q&A subjects are visible in the organisation environment, and employees perceive professional recognition as benefit. Also, knowledge reciprocities stimulate participants to answer questions because they expect to receive knowledge in the future.

Participants have no opportunity to use private communication tools to promote direct reciprocity. Therefore, Q&A systems rank medium-level on the interaction dimension.

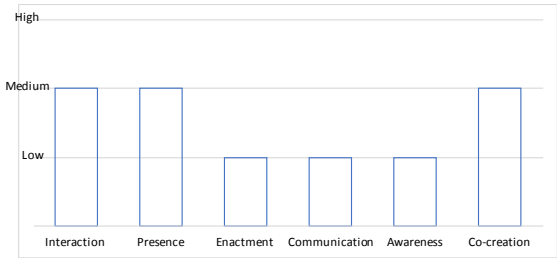

Figure 4: Assessment of engagement dimensions as supported in Q&A systems.

Q&A systems are designed for participants' presence by supporting asynchronous communication between employees. However, employees have no opportunity to use synchronous communication platforms. They can observe knowledge exchange interactions between inquirers and responders. Thus, Q&A systems have a medium-level support for individual presence. Further, participants have limited enactment capabilities to set regulations for the system. Hence, Q&A systems rank low on the enactment dimension. Besides, these systems are only designed for communication within organisation, but they have no any opportunity for private knowledge sharing. Therefore, Q&A systems rank low on the communication dimension. Also, participants do not have any opportunity to stay aware about changes in the system. Thus, Q&A systems rank low on the awareness dimension. These systems also have been developed for creation knowledge in public-level knowledge exchange. Participants share their knowledge to answer knowledge needs in a Q&A environment, but these systems have restriction to create knowledge in group-level knowledge sharing. Thus, Q&A systems support the co-creation dimension on medium-level. Figure 4 summarizes the engagement assessment for Q&A system within organisations.

4.5 Internal Knowledge Market System

Knowledge market systems are a type of knowledge networks, which use market mechanisms for knowledge exchange within organisations. Knowledge markets are defined as a space where knowledge buyers and knowledge sellers can exchange knowledge within organisations (Jeong et al., 2012). Knowledge market systems foster knowledge sharing using a dynamic price mechanism within organisations and all benefits of knowledge sharing can be captured by monetary mechanisms. Although knowledge markets are designed by virtual monetary mechanism, other extrinsic rewards like as reputation incentive are used for participant engagement (Chen et al., 2010). Internal knowledge market systems rank medium on the interaction dimension.

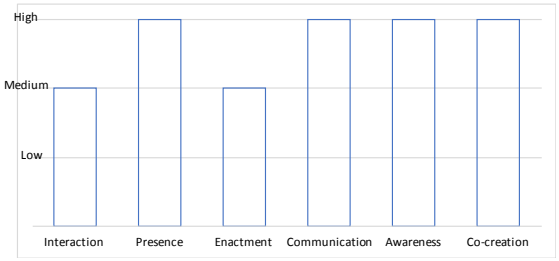

Figure 5: Assessment of engagement dimensions as supported in internal knowledge markets.

Internal knowledge markets support the presence of participants by presenting their contributions, locations and knowledge relations. Thereby, knowledge markets rank high on the presence dimension. Although participants have opportunities to contribute in knowledge markets environments, market designers regulate the markets' environments. This approach restricts participants' enactment by reducing employees' autonomy to pass legislation and regulation for markets. Hence, internal knowledge markets rank medium-level on the enactment dimension. Besides, internal knowledge markets are developed to exchange knowledge in different communication channels. Therefore, internal knowledge market rank high on the communication dimension. Additionally, participants get notifications about the changes such as new knowledge on the market in their profiles pages. Thus, knowledge markets rank high on the awareness dimension. Market systems also have been designed for co-creation knowledge in different levels of knowledge exchange. Knowledge exchanges in different communication channels make an environment for creation knowledge among employees. Thus, internal knowledge market can support high-level employees' co-creation dimension. Figure 5 summarizes the engagement assessment for internal knowledge market.

4.6 Enterprise Social Network System

Enterprise social networks (ESN) have become contemporary KM systems that combine knowledge exchange with social relations. They provide a

distributed communication system among participants to promote knowledge exchange unconstrained by the limitations of time and space (Leonardi et al., 2013).

ESN improve experts' recognition and reciprocity in firms, because they make participants' behaviours and knowledge contents visible. Both intrinsic and extrinsic perceived benefits are promoted by ESN. Therefore, ESN systems rank high on the interaction dimension. ESN users are enabled to make their opinions, perceptions and knowledge public within organisations or use communities, which have limited visibility in organisations. Thus, ESN rank high on the presence dimension. Further, ESN are designed for enactment by offering opportunities for participants to involve in legislation processes. But some procedures of the regulatory process such as incentive programs are designed by network designers. Thus, ESN rank medium on the enactment dimension.

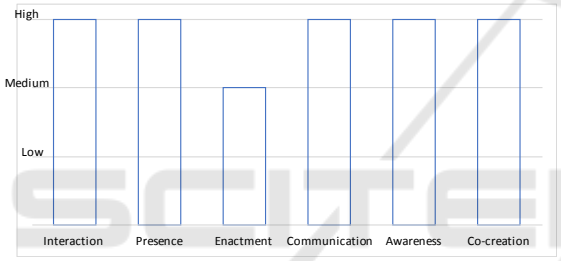

Figure 6: Assessment of engagement dimensions as supported in ESN.

Network members are enabled to share their knowledge in a spectrum of knowledge exchange channels from invisible to visible communication levels. This opportunity supports users' engagement in the knowledge sharing process by designing communication mechanisms among network members. Therefore, ESN rank high on the communication dimension. Participant's awareness is stimulated by triggered attending feature (Majchrzak et al., 2013). Triggered attending feature reduces participants' search time by a trigger mechanism which helps them to remain uninvolved until a timely alert informs a change to the participant's interested knowledge list. Hence, ESN rank high on the awareness dimension. Besides, knowledge exchange in different communication channels supports individual engagement with supporting knowledge co-creation in private, group and organisational knowledge sharing. Thus, ESN can support high-level employees' co-creation dimension. Figure 6 summarizes the engagement assessment for ESN.

5 ANALYSIS SUMMARY

This section represents a summary of the analysis. Knowledge repository and lesson learned systems offer no opportunity for social interaction. Therefore, they cannot support employees to engage in the knowledge exchange process. On the other hand, open discussion forums, Q&A systems, knowledge market and ESN offer communications channels to support engagement and participation. These systems support a process for employees' engagement. As can be seen in summary of assessment columns in Table 2, the level of engagement' dimensions were used to signify level of participants' engagement in KM systems.

Comparing the different engagement dimensions in **Error! Reference source not found.**Figure 7 shows the need to more strongly consider individual enactment in different KM systems' categories. Participants lack the opportunity to engage in the regulatory process, as all considered KM systems use a centralized process for systems regulation.

Table 2: Assessment summary.

KM systems	Social process	Summary of assessment		
		Low	Medium	High
Knowledge repository	No	-	-	-
Lessons Learned	No	-	-	-
Discussion Forum	Yes	3	2	1
Questions and answers	Yes	3	3	0
Internal Knowledge market	Yes	0	2	4
Enterprise social network	Yes	0	1	5

Discussion forums as a kind of knowledge sharing system among group members have been developed. Although, they employ collaborative mechanisms, they have limited capabilities to support employees' enactment, communication and awareness.

Q&A Systems aim to solve organisational problems that are asked by employees. Web 2.0 offers more interactive and collaborative technologies that support engagement for collective knowledge. Nevertheless, these systems need more mechanisms to support co-creation and awareness and communication dimensions. Additionally, although Q&A users have opportunities to ask questions, they have no opportunity to participate in the regulatory process of the Q&A environments.

Knowledge markets are designed by a social process to improve knowledge exchange between knowledge owners and knowledge recipients. Though transparent market regulations support the enactment, designing the regulatory process by users is not

considered in knowledge markets. Wisdom of crowds is a common method, which used in different parts of the knowledge market to use participants' insights. Lacks of self-governing and intrinsic incentives reduce the capacity of knowledge markets to support individual engagement. Thus, knowledge markets support engagement on a medium level.

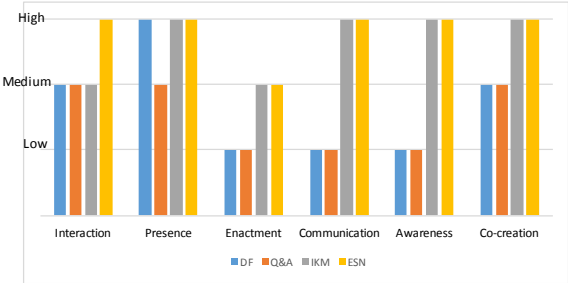

Figure 7: Assessment of engagement dimensions in KM systems.

ESN as a contemporary system combine knowledge exchange with social interactions. These communication technologies support individual engagement in knowledge exchange which are not designed only based on principles of delegating, but are structured on the principle of participation (Brazier and Nevejan, 2014). Informality and visibility natures of ESN reduce knowledge exchange costs and promote individual perceived benefits for knowledge sharing not only in mutual communications, but also in collective knowledge exchange. These transparent environments support employees' awareness about the changes. Moreover, ESN offer different possible roles for participants to contribute in the networks, structure and governance, however members need to be enabled by self-regulation processes. Therefore, ESN are designed regarding towards participants' engagement.

6 CONCLUSIONS

The role of individual engagement in developing KM systems has been an issue of considerable interest by KM studies, yet little research has been done to explore how KM systems promote engagement. This paper uses a KM system's classification to select KM systems. Six KM systems are mapped with the supply-side KM, the demand-side KM and combination approach. Following a qualitative research strategy method, different engagement dimensions in six KM systems were explored. According to the results, the lack of a social process for knowledge exchange in supply-side KM systems' results in no support for engagement. Although demand-side KM system supports a social process by using Web 2.0 technologies, the engagement's dimensions are not supported appropriately. Finally, KM systems that follow the combination approach of demand- and supply-side have the highest capacity to support individual's engagement.

Several opportunities for future research have been identified. First, the current study was exploratory in nature and focused on six main KM systems. Extending the research scope will help to generalized results. Also, a future study needs to systematically examine points of improvement for KM systems by further analysing the different engagement dimensions. Improving engagement in KM systems remains largely claimed rather than empirically confirmed. Future research therefore needs to consider this issue. Further, finding the right mechanisms for participants' engagement is a valuable area for future research, which can support sustained participations for knowledge exchange. Studies need to explore the impact of dynamic KM technologies with various forms of KM participation beyond the traditional KM systems.

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