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A taxonomy for decision support capabilities of enterprise content management systems☆

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ABSTRACT

Enterprise content management (ECM) systems are implemented in many organizations to deal with the complexity of the structured and unstructured organizational data. The little available ECM literature shows that many organizations using ECM focus on short-term benefits while strategic decision-making benefits are rarely considered. Although the relationship between the use of ECM and decision support (DS) is investigated recently, there is scarcity in research that investigates the categories of DS capabilities that ECM systems may have. The objective of this paper is to determine whether ECM systems can have the DS capabilities of four categories of decision support systems, namely classic decision support systems (DSS), executive information systems (EIS), expert systems (ES), and group decision support systems (GDSS). The findings indicate that ECM systems can have all decision support capabilities of classic DSS, EIS, and ES. However, ECM systems can have only a portion of decision support capabilities of GDSS.
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1. Introduction

As the business environment is getting ever more complex and competitive, the requirement of good and timely decision-making is becoming increasingly evident, and the employment of decision support (DS) technology is becoming not only desirable but also essential. DS technology can reduce uncertainty and increase efficiency in the decision-making process, and much research has been published focusing on the efficiency and effectiveness of DS systems (Arnott, 2004; Arnott & Pervan, 2005). DS technology encompasses many types of systems, including decision support systems (DSS) in its classical and narrow sense (Shim et al., 2002), expert systems (ES) (Luconi, Malone, & Scott Morton, 1986), executive information systems (EIS) (Watson, Rainer, & Koh, 1991), and group decision support systems (GDSS) (DeSanctis and Gallupe, 1987). In addition, there are hybrid systems and newer types of DS technologies, often developed and designed around specific problem contexts, including systems that make use of knowledge management (KM) techniques (Anderson-Lehman, Watson, Wixom, & Hoffer, 2004; Oppong, Yen, & Merhout, 2005). For example, by using a knowledge-based approach, Zack (2007) showed how the organizational and technological DS systems are linked to solve knowledge-based problems.

Knowledge generation is highly associated with content management, and an organization's performance is significantly impacted by effective “content stewardship” using the right information technology. In other words, adopting a “content stewardship” view using the appropriate information technology can significantly influence an organizations' performance such as productivity, quality, profitability, and customers' satisfaction (Smith & McKeen, 2003). Using as a content stewardship approach, content lifecycle consists of four activities: capturing, organizing, processing, and maintaining the content. Also, the content lifecycle activities are highly associated with generating decision-making related knowledge (Alalwan, 2012). For instance, raw data can be collected by “capture” activity, then it is arranged and classified through “organize” activity to make it easily navigable. The output of this activity can be perceived as information. The information is analyzed through “process” activity, which leads to generating

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knowledge that can be useful in decision-making. "Maintain" activity serves the whole content lifecycle by keeping content up-to-date in order to meet the dynamic needs of the organization. "Maintain" activity can be considered as a feedback link that triggers a new lifecycle when necessary. Fig. 1 shows the relationship between content lifecycle activities and knowledge generation.

Enterprise content management (ECM) systems are implemented in many organizations to deal with the increasing information overload and with the complexity of the structured and unstructured organizational data. ECM has many definitions; for instance, the Association for Information and Image Management (AIIM) defines ECM as "the strategies, methods and tools used to capture, manage, store, preserve, and deliver content and documents related to organizational processes. ECM tools and strategies allow the management of an organization's unstructured information, wherever that information exists" (The Association for Information & Image Management website). ECM is also defined as "the strategies, tools, processes and skills an organization needs to manage all its information assets (regardless of type) over their lifecycle" (Smith & McKeen, 2003). ECM can be viewed as an evolutionary phase of information management that involves the management of structured and unstructured contents through the complete content lifecycle (Boiko, 2002). There appears to be a consensus in the published research that ECM is not only a practical set of technologies but also includes organizational concepts that involve many business perspectives (Blair, 2004; Munkvold, Päivärinta, Hodne, & Stangeland, 2006; Tyrväinen, Päivärinta, Salminen, & Iivari, 2006; Vom Brocke, Simons, & Cleven, 2008). Rockley (2006) reported that one of the main goals of ECM implementation is to have transparent content sharing by making different and disparate applications (i.e. web content management, records management) interoperable. Shared transparent content that facilitates cross-departmental collaboration can facilitate the capturing of knowledge and content (Jenkins, 2004).

The little available ECM literature shows that many organizations using ECM focus on short-term benefits while strategic decision-making benefits are rarely considered (Vom Brocke, Seidel, & Simons, 2010). For instance, Smith and McKeen (2003) write that 'very few' firms utilize ECM to analyze the content to provide decision-making information to be used to make informed decision, and thus to help in generating business value. As potential long-term benefits of ECM, the capacity for decision-making support is not utilized to any great extent, and there appears to be strong need to investigate the relationship between DS and ECM systems. More recently, the relationship between decision support and ECM has captured the attention of scholars. For example, Zardini, Mola, vom Brocke, and Rossignoli (2010) and Alalwan (2012) conclude that ECM systems can have the capabilities of decision support systems.

Although the relationship between the use of ECM and DS is investigated recently, there is scarcity in research that investigates the types of decision support capabilities that ECM systems can have. Proposing a taxonomy to highlight the types of decision support capabilities of ECM systems is important for three reasons. First, the taxonomy emphasizes the multifaceted nature of ECM systems and their abilities to support decisions. Second, the taxonomy can serve as a common ground for further learning for those who are interested in this field. Finally, the taxonomy provides several implications to practice and scholarship.

For practitioners, classifying the DS capabilities of ECM systems can be important at the managerial and the organizational level. At the managerial level, the findings can provide the practitioners with an overview of the level of the DS capabilities of ECM systems. This overview can provide practitioners with more knowledge about the type of DS capabilities of ECM systems that managers deal daily with. For example, if a manager is convinced that ECM system, which is already implemented in his organization, has the DS capabilities of executive information systems, he may attempt to utilize these capabilities instead of purchasing a specialized EIS. At the organizational level, organizations' performance such as productivity, quality, profitability, and customers' satisfaction, can be significantly influenced by the categorized DS capabilities of ECM systems because of the potential enhancement of managerial decision-making.

For researchers, the research idea of this paper integrates two information systems (IS) domains, namely ECM and DS. This paper highlights the importance of this research area. To be more specific, this paper integrates the DS capabilities of ECM with four categories of decision support systems: classic DSS, EIS, ES, and GDSS. To the best of the authors' knowledge, this research idea is a novel addition to the body of knowledge that has never been discussed before. By suggesting ten prepositions that can be investigated in future empirical research, this paper opens new research directions and opportunities to deeply understand the integration between the DS capabilities of ECM systems and the categories of decision support systems.

By focusing on four categories of decision support systems, namely classic DSS, EIS, ES, and GDSS, the objective of this paper is to determine whether ECM systems can (or cannot) have the DS capabilities of these four categories of decision support systems. Therefore, the research question of this paper is:

Can ECM systems have the decision support capabilities of classic DS, EIS, ES, or GDSS?

This paper is organized in six sections. After the Introduction, related literature is reviewed in Section 2. In Section 3, the theoretical basis of this paper is discussed. The research methodology is presented in Section 4. In Section 5, ECM systems and the

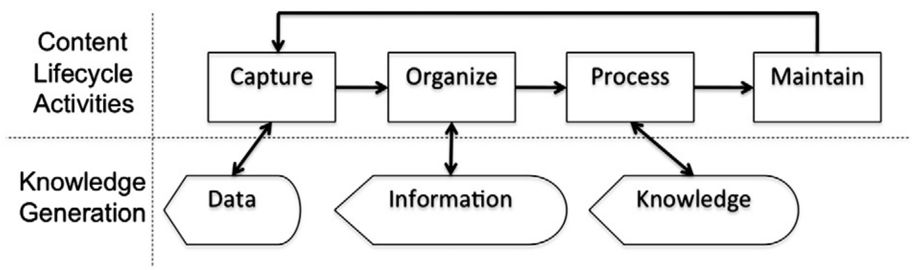

Fig. 1. ECM activities and knowledge generation.

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