Towards Understanding the Use of Enterprise Content Management Systems (ECMS) to Support Business Processes

Noreen Izza Arshad¹, Rachelle Bosua², Simon K. Milton³, Mazlina Mehat⁴

¹²³Universiti Teknologi PETRONAS (UTP), Malaysia, ¹noreenizza@petronas.com.my, ⁴mazlinamehat@petronas.com.my
²³University of Melbourne, Australia, ²rachelle.bosua@unimelb.edu.au, ³simon.milton@unimelb.edu.au

ABSTRACT

This paper revisits extant literature on Electronic Content Management Systems (ECMS) and contributions from the literature that provide insight how these technologies work. It confirms that there is a gap in the body of knowledge on the topic of ECMS-use. A few ECMS researchers point to two possible ways to understand and explore how ECMS is used in organizations, research on ECMS-use should: (1) Consider organization’s business process structure as a starting point to understand ECMS-use, and (2) Examine the interaction between technologies, the organizational context, processes, business needs and users that shape certain ways of using these technologies. In addressing the first concern, a business operating model is used as a lens to understand how ECMS is used to support business processes of different types of organizations. Additionally, practice lens theory is used as a lens to better understand and explain the interaction between ECM technologies, organizational structure, processes and users that shape the ways in which ECMS is used. Using these theories, this study has developed a model that may be used by organizations to better understand: (1) the role of business process structures to maximize ECMS-use, and (2) organizational context and users that shape ECMS-use.

Keywords: Enterprise Content Management Systems (ECMS), content management, business processes.

1 INTRODUCTION

ECMS can be considered as a convergence of technologies that supports ECM (Dilnutt, 2006a, 2006b; Mescan, 2004; Perry & Lancaster, 2002; Reimer, 2002). Dilnutt (2006b, p. 40) found that vendors generally promote ECM technologies as, “…an integrated set of content, compliance, and collaboration solutions which enable people to collaboratively create, manage, deliver, store and archive information during everyday business operations.” Specifically, Dilnutt conducted observations on the commercial ECMS marketplace and found that ECMS may include an integration of technology components that include electronic document management systems, electronic record management systems, workflow management systems, website content management, and others as illustrated in Figure 1.

Grahlmann et al. (2012) define ECM as: “Enterprise Content Management comprises the strategies, processes, methods, systems, and technologies that are necessary for capturing, creating, managing, using, publishing, storing, preserving, and disposing content within and between organizations.” (Grahlmann et al., 2012, p.5). This definition highlights that the term ECM is not limited to technologies. Despite that it is indisputable that technologies play an important role in ECM, one should however note that ECM is more than just a technology (Augustyniak, Aguero, & Finley, 2005; J Vom Brocke, Simons, & Cleven, 2010). Blair (2004, p.65) states that “ECM is more than simply technology; it is also an activity that involve people and processes” Other studies also acknowledge ECM as a strategy rather than just a solution (Augustyniak et al., 2005; Mescan, 2004; Smith & McKeen, 2003). For example, O’Callaghan and Smits (2005, p.1274) highlight that ECM is “about the interaction of business with content, people, processes and tools” and Mescan (2004, p.55) put it as “a strategy rather than a solution”.

Despite that the ECMS functionalities graphically shown in Figure 1 is useful to organizations for selecting an ECMS product and compare the functionalities offered by different vendors (Grahlmann et al., 2012), it is found that there is a lack of understanding as to which categories of functionality is important to support specific organizational goals and business needs (Benevolo and Negri (2007). Similarly, there are other papers which present and describe ECMS functionalities (Boiko, 2005; Bridges, 2007; Dilnutt, 2006a, 2006b; Kunkelmann & Brunelli, 2002; Pérez-
Figure 2. Framework for ECMS implementation (Paivarinta & Munkvold, 2005, p.2)

Referring to Figure 2, the general ECMS implementation framework proposed by Paivarinta and Munkvold (2005) suggests that:

- An organization’s ECMS implementation should support objectives driven by the organization’s enterprise model
- ECMS is realized through the design and implementation of the content model from the viewpoint of an enterprise model
- The implementation of ECMS is supported by the organization’s technological infrastructure and administrative resources in place
- Change management is needed for a successful ECMS implementation

Referring to the enterprise model (see Figure 2), Paivarinta and Munkvold (2005) found that the realization of ECMS objectives vary among cases and is seemingly dependent on the business area or domain in which the enterprise is operating. They mention that an ECMS implementation should be aligned with the enterprise model to ensure that “it can build meaningful information systems to support the operations” (Paivarinta & Munkvold, 2005, p.3). The concept of an enterprise model is important as described by Paivarinta and Munkvold (2005), because it refers to what needs to be done in an enterprise including the idea of the business, required support operations, who does what and how organizations reach their suppliers and customers.

Similar to Paivarinta and Munkvold (2005), a few other researchers also consider that an ECMS implementation has to be aligned with a company’s business process structures (Grahlmann, Hilhorst, Amerongen, Helms, & Brinkkemper, 2010; Reimer, 2002; Jan Vom Brocke, Derungs, Herbst, Novotny, & Simons, 2011; J Vom Brocke, Seidel, & Simons, 2010; J Vom Brocke, Simons et al., 2010). For example, in a study conducted by Vom Brocke et al. (2010), the authors introduce a framework that emphasizes the role of business process structure for ECMS adoption.

Specifically, this study intends to highlight that previous studies suggest that business process structures, also called enterprise model, and ECMS implementation and adoption are two strongly related areas (Paivarinta & Munkvold, 2005; Reimer, 2002; J Vom Brocke, Simons et al., 2010). Consequently, this study has reason to believe that ECMS-use will in turn be driven by an enterprise model and an organization business process structures.

Grounded in the above discussion, there is a gap in the literature that highlights the need to consider business process structure to understand ECMS-use. Therefore, in order to fill this gap in the ECMS literature, this study focuses on the area: “What is the role of business process structures for ECMS-use in organizations?”

However, Tyrvainen et al. (2006) argue that a gap exists where there is no model of business process structure identified in the ECMS literature that can fully represent all types of organizations. This argument is supported by Paivarinta and Munkvold (2005) and Vom Brocke et al.
(2010) who found that different organizations often have different ideas about the concepts needed for their business process structure. This situation occurs because different organizations support and emphasize different business processes. Thus, the challenge is to find a generic representation of organizations business process structure. Considering this challenge, this study introduces and uses Ross et al.'s (2006) generic business operating model that relates to firms’ operations, expressed in terms of business processes, and the use of IT.

Besides that ECMS-use has to be aligned with a company’s business process structure, a study conducted that Grahlmann et al. (2010) have expressed their views that there are additional factors which may be related to ECMS-use in organizations. However, the authors did not elaborate on what factors that may relate to ECMS-use but instead leave this subject for further research.

Specifically, a study conducted by Bianco and Michelino (2010) has found out that there is a mutual influence between ECMS and a few organizational dimensions that include types of firms, user knowledge, organizational culture, and user behavior. The authors recommend exploration on the interaction between ECMS and organization socio-technical context.

Based on the ECMS literature described in this section, this study has a reason to believe that there is an interaction between the technology and the organization and users. As Bianco and Michelino (2010, p.123) indicate, there are “…socio-technical context that favor the technology implementation as well as they are the main organizational parameters influenced by technology…”

Nevertheless, besides the study conducted by Bianco and Michelino (2010), existing ECMS literature provides no guidance on how a research can explore the interactions between technology, organizational context and users to understand ECMS-use in organizations. As Tyrvainen et al. (2006, p. 631) indicate, “empirical research including the enterprise perspective [processes, content, information systems, users, technology] remains rare”

This limitation identified in the literature has inspired the formulation of the following research focus: “How does an organizational context and users shape the use of ECMS in organizations?”

As a consequence, the “practice lens theory” of Orlikowski (2000) is used as a lens through which the differing ways organizational use of ECMS can be understood and explained.

Summarizing, this study selects two theories to address the two main concerns arise from the literature. In addressing the first concern, a mature model that highlights how IT underpins firms process architecture known as the business operating model of Ross et al. (2006) is employed for explaining how ECMS is used to support organizational business processes. Second, the practice lens of Orlikowski (2000) is chosen to understand the interaction between ECM technologies, organization structure, processes and users within an organization. The business operating model of Ross et al. (2006) and the practice lens of Orlikowski (2000) are explained in the following two sub-sections. A heading should not appear at the bottom of a page without at least two lines of text. Equations, figures, and tables must be sequentially numbered with no repeated numbers or gaps. Excessive white space—such as large gaps before, between, and after text and figures—should be eliminated.

A. The Business Operating Model

Recall that Tyrvainen et al. (2006) argue that a gap exists where there is no model of business process structure identified in the ECMS literature that can fully represent all types of organizations. Considering this challenge, this study introduce the business operating model of Ross et al. (2006) that relates a firm’s operation, expressed in terms of business processes and the use of IT. Two dimensions are used to classify organizations’ business operating model:

- Integration of business processes: The level of business process integration is evident from the degree of data sharing across and between business processes and between business units.
- Standardization of business processes: Organizations that are highly standardized tend to have similar key business processes across all business units.

The combination of these two dimensions represents a two-dimensional business operating model with four quadrants namely replication, coordination, unification and diversification. It is important for business and IT managers to note that a particular type of business operating model can be most useful for certain organizations but less useful for others (Bouwman, Hooff, Wijngaert, & Dijk, 2005). Therefore, the choice of an operating model is a critical decision for a company because, “A company without a clear operating model brings no automated, preexisting, low-cost capabilities to a new strategic pursuit. Instead, with each new strategic initiative the company must effectively begin anew to identify its capabilities. But selecting an operating model is a commitment to a way of doing business.” (Ross et al., 2006, p.26).

B. A Practice Lens Theory

The practice lens paradigm of Orlikowski (2000) referred to as ‘practice lens theory’, takes the view that when people use technologies they draw on their knowledge, assumptions, experiences, situations at hand, facilities available to them, norms that inform their ongoing practices and organizational structures. This is in line with many ECMS researchers who believe that there is an interaction between the ECM technology-in-use, the organization (processes, structure, practices) and the human factor (user communities, knowledge) that shape the way in which ECMS is used (Bianco & Michelino, 2010; Blair, 2004; O'Callaghan & Smits, 2005, p.1274; Tyrvainen et al., 2006; J Vom Brocke, Seidel et al., 2010; J Vom Brocke, Simons et al., 2010). Therefore, the practice lens theory is considered to be appropriate for increasing the understanding of how organizations actually use ECMS in practice.

This theory is also termed as “Technologies-in-Practice” and is based on the concept of structure originally proposed by Giddens (1984). Giddens (1979, 1984) proposed
structure (or structural properties of social systems) as a set of enacted rules and resources that mediate social action through the three dimensions or modalities namely facilities, norms, and interpretive schemes and explains the concept of structure-in-practice as,

“In social life, actors do not enact structures in a vacuum. In their recurrent social practices, they draw on their (tacit and explicit) knowledge of their prior action and the situation at hand, the facilities, available to them (e.g., land, buildings, technology), and the norms that inform their ongoing practices, and in this way, apply such knowledge, facilities, and habits of the mind and body to “structure” their current action. In doing so, they recursively instantiate and thus reconstitute the rules and resources that structure their social action.” (Orlikowski, 2000, p.409)

Following Giddens’s ‘structures-in-practice’ concept, Orlikowski (2000) asserts that technologies-in-practice is also a kind of structure. She explains the technologies-in-practice concept is about technology-use or what people do with the technological artifact in practice. When people use technologies, they draw on facilities, norms, interpretive schemes, and organizational structures. Thus, the use of technologies are structured by agency in the form of: (1) the facilities available at hand, (2) norms, and (3) users knowledge and assumptions towards the technology (interpretive schemes) and (4) organizational structures.

As a consequence, this study uses the business operating model (Ross et al., 2006) and the practice lens theory (Orlikowski, 2000) to develop a model for organizations to better understand ECMS-use in supporting their businesses. This is in agreement with Klein and Myers (1999, p.75) who indicate that, “ ... theory plays a crucial role in interpretive research, and clearly distinguishes it from just anecdotes.” The model is introduced and explained in the next section.

III TOWARDS A MODEL TO UNDERSTAND ECMS-USE IN ORGANIZATIONS IN SUPPORTING BUSINESS PROCESSES

The business operating model (Ross et al., 2006) and the Orlikowski’s (2000) practice lens theory are adapted in this study to explore ECMS-use as depicted in Figure 3 and discussed below, to:

- Explore and understand how organizational structures including business process structures and other structures (e.g. hierarchical authority structure and corporative structure) influence ways employees use ECMS to support organizational needs.
- Investigate ways in which employees use ECMS in their daily work practices and to understand how such use is structured (or shaped) by organizational norms, facilities, user assumptions and user knowledge (i.e. interpretive schemes).

For the purpose of this study, the researcher has adapted Orlikowski’s (2000) practice lens theory into the model depicted in Figure 3. The model was built to better fit this study on ECMS-use (refer to Figure 3), as explained below:

1. ‘ECMS functionalities’ represents ECMS specific functions (e.g. Access, Process, Service)
2. ‘ECMS-use’ focuses on ECM technologies and its situated use in organizations. ECMS-use in this study refers to the use of ECMS and the interaction that takes place between the user, the technology, organizational context (processes, norms, practices, structure) and other systems. In agreement with Orlikowski (2000), this study takes the view that the use of ECMS is always located within a broader context that include people (e.g. management), other systems and interactions within which that use is situated.
3. The arrows illustrate that ECMS-use is: (1) influenced by organizational structures, (2) shaped by the interactions between the elements of agency, and (3) depends on how the technology is actually being used in practice (i.e. ECMS-in-Practice).
4. A few examples of ‘organizational structures’ including integrated process structures and standardized process structures were added to Figure 3 to illustrates that this study constitutes business process structures as organizational structures apart from those proposed by Orlikowski (e.g. participative culture and competitive culture).

IV CONCLUSION

This paper provides a review of the ECMS literature that point to a need for more research that provide a deeper understanding on ways in which organizations may use ECMS to support its business processes. The shortcomings arise from the literature has called for this research to focus on two particular characteristics: (1) Consider the organization’s business process structure as a starting point to understand ECMS-use, and (2) Examine the interaction between technologies (ECMS), the organizational context, processes, business needs and users that shape certain ways of using these technologies.
In addressing the first concern, the business operating model of Ross et al. (2006) is used as a lens to understand how ECMS is used to support business processes of different types of organizations. Additionally, the practice lens theory of Orlikowski (2000) is used as a lens to better understand and explain the interaction between ECM technologies, organizational structure, processes and users that shape the ways in which ECMS is used.

With these two theories in mind, this study has been designed to close the research gaps in ECMS literature. What learnt from previous studies has also inspired the formulation of a model for organizations to better understand ECMS-use in supporting their business processes. This model provides insights to practitioners on how to better understand ECMS-use to support the way their organizations operates. In addition, the model may guide business managers to better understand ways in which they can gain more organizational and business benefits from these types of technologies. However, ways this model has been used in real cases is not presented here, but is published elsewhere.

REFERENCES


