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Recommended Citation

Arshad, Noreen Izza; Bosua, Rachelle; Milton, Simon K.; and Mehat, Mazlina, "Exploring Modes of ECMS-use Supporting Organizational Business Processes" (2017). *PACIS 2017 Proceedings*. 70.

<http://aisel.aisnet.org/pacis2017/70>

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Exploring Modes of ECMS-use Supporting Organizational Business Processes

Completed Research Paper

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Abstract

IT and business managers are not being given a clear guidance on what ECMS can offer and how they could benefit from these technologies. This study posits that ECMS-use is related to business process aspects, the organizational context and human factors that shapes the way organizations use the technology. With these focus in mind, this research has conducted multiple case studies in seven large organizations to understand the different ways they use ECMS. Based on the collected evidences, cross case analysis has yield interesting findings to how these organizations have been utilizing their ECMS in different ways to suit their business processes need, institutional conditions, users' requirements and ECMS facilities available at hand. These outcomes make a significant contribution in guiding organizations to: plan intended ECMS-use, understand why their ECMS technology may be underutilized and design ways to exploit the use of these technologies.

Keywords: Electronic Content Management Systems, ECMS-use, Content Management business process

Introduction

Previous research on technology-use highlights the distinction between 'technology as artefact' and technology-use as important (Boudreau and Robey 2005; Bouwman et al. 2005; Orlikowski 2000). Orlikowski (2000, p.425) reinforces this point by stating that "*technology per se can't increase or decrease the productivity of workers performance, only use of it [technology] can.*" However, most research tends to emphasize technology as an artefact and neglects the study of technology-use. By not examining and understanding what actually happens during the use of a technology, how a technology is actually being used and why users choose to use a technology in certain ways, important nuances and critical aspects that describe ways in which people interact with technologies in their day-to-day activities, may be overlooked.

The recognition of the above limitation is also found in the ECMS literature. Prior ECMS research concentrates mostly on two specific areas: (1) technology aspects such as ECMS components and customizations of these components (Dilnutt 2006a; Dilnutt 2006b; Grahlmann et al. 2012; Nordheim and Paivarinta 2004; Smith and McKeen 2003) and (2) ECMS deployment aspects that include change management and implementation (Munkvold et al. 2006; Paivarinta and Munkvold 2005). Even though these areas are important, a number of authors have expressed their views that these studies provide insufficient evidence to understand practices that relate to ECMS-use in organizations (Bianco and Michelino 2010; Nordheim and Paivarinta 2006; Paivarinta and Munkvold 2005). As Paivarinta and

Munkvold (2006, p.1) point out, “[a] few sources [limited research literature] have reported research on actual ECM practices in organizations.”

Therefore, these findings provide a new perspective to be ventured by this research. Specifically, this research aims to identify novel ways in which these technologies can be used to support organizational business processes. The main research question underpinning this study is as follows: “How and to what extent do large organizations use ECMS to support their business processes?”

In finding answers to the above mentioned research question, this paper is structured as follows. In the literature review section, previous concerns research related to ECMS is explained. These concerns have guided this study in finding suitable theories to understand ECMS-use. Next, the ways evidences are collected and analysed are explained in the Methodology section. The results are then synthesized and presented in the Results and Discussion section. This paper ends with a conclusion.

Literature Review

Smith and McKeen (2003) and Grahlmann et al. (2012) define ECMS 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 et al. 2005; Vom Brocke et al. 2010b). 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 and 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”

Previous ECMS literature highlights two main concerns. Firstly, a few researchers contend that ECMS and business process structures are two strongly related fields that have not yet been related through empirical research (O’Callaghan and Smits 2005; 2005; Tyrvaiven et al. 2006; Vom Brocke et al. 2011; 2008; 2010b). These authors suggest that future research needs to study how business process structures relate to organizations’ implementation, adoption, design and use of ECMS.

Secondly, a number of researchers suggest that there is an interaction between ECM technology, the organizational context and its users that has not yet been fully explored. As Bianco and Michelino (2010, p.123) indicate, ECMS “... act as a go between the human factor and the firm structure ...” They suggest that future research needs to investigate these interactions to better understand ECMS-use in organizations (Bianco and Michelino 2010; Blair 2004; O’Callaghan and Smits 2005, p.1274; Tyrvaiven et al. 2006; Vom Brocke et al. 2010a; Vom Brocke et al. 2010b).

Based on the first highlighted concern mentioned above, this study adopted Ross et al.’s (2006) business operating model to represent the business process structure (or the enterprise model) to guide ECMS implementation. The business operating model of Ross et al. (2006) relates a firm’s operation and expressed it in terms of business processes and the use of IT. Two dimensions are used to classify organizations’ business operating model (Ross et al. 2006):

- *Standardization of business processes:* Organizations that are highly standardized tend to have similar key business processes across all business units. The benefits of having high process standardization are efficiency and predictability across the organization. On the other hand, companies with low level process standardization have very few identical key business processes.
- *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. A high level of integration is indicated by a high degree of such sharing. This sharing of data and information between processes and between units enables end-to-end processing of business operations.

In this research, business operating model is used as a foundation to find evidence that explain how and why ECMS are used in unique ways to support the business processes employed by specific types of organizations.

Referring to the second highlighted concern, this study uses Orlikowski's (2000) practice lens theory to understand how ECMS, organizational context and users shape ECMS-use. 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 (i.e. agency elements). Specifically, this theory guides this research to understand the empirical data and provide explanations of how and why organizations tend to use ECMS differently as shaped by different 'conditions' (i.e. institutional, interpretive and structural conditions). Notably, it is believed that ECMS-use are shaped through the interactions between ECMS functionalities (i.e. technological conditions), organizational structures and norms (i.e. institutional conditions) and users' knowledge and assumptions towards the technology (i.e. interpretive conditions).

The next section explains the research design of this study that aims to find answer to the above mentioned research question.

Research Methodology

The aim of this research is to understand and explain how different types of organizations use ECMS to support their business processes. A multiple case study approach was chosen for this study as it would be extremely difficult to simulate this type of research in a laboratory environment or through surveys. The ability to conduct a cross-case analysis significantly contributed to a deeper understanding of ECMS-use.

Seven organizations were chosen to be part of the case studies as shown in Table 1. These organizations were chosen based on active usage of ECMS supporting their business. A conscious decision was made to only recruit organizations that had been using SharePoint as their ECMS of choice for more than a year. This decision was made to minimize bias that could be introduced because of differences across products introduced by various vendors (Grahmann et al. 2012; Nordheim and Paivarinta 2004).

Case Organizations	Roles Interviewed
Eng_Consulting: A consulting company providing engineering and related consultancy services including architecture, planning, and project and cost management	Project Secretary Document Controller IT Executive Architect
IT_Consulting: An IT consulting company providing deployment, optimization, systems support and system integration, and automation and introduction of new services and technologies	HR Manager HR Executive HR Clerk Chief Information Officer (CIO) Senior Engineer Engineer 2 Project Managers
Retail_Co: A chain of consumer electronics retail stores selling products that include entertainment products, computers and home appliances	Executive Assistant Manager 2 Store Manager
Auto_Finance: An automotive financing company providing financial assistance to individuals and businesses with a focus on cars, motorcycles and industrial machines	2 Bank Officers IT Manager 3 Credit Recovery Officers Collection and Recovery Officer
Mobile_Pro: A mobile network carrier providing wireless communications services, wireless network infrastructure and customer care to home users, individuals, corporate users and international subscribers	2 Engineers 2 Project Managers & Engineers

Telco: A telecommunications company that builds and supports telecommunications networks and infrastructure and markets mobile and internet-access products and services	HR Manager IT Manager 3 Senior Engineers 3 Engineers
Oil Co: An oil, gas and petroleum company. The organization has also ventured into other businesses including education, maritime, logistic, automotive engineering and property investments	Consultant IT Executive (ECMS Team) KM Manager Engineer 2 Managers Information Management Executive 2 Lecturers Senior Manager - Information Resource Centre Senior Executive - Information Resource Centre Information Resource Centre Staff IT Officer

Table 1. Background data for each case study site

In this study, a convenience/purposive sampling approach (Patton 2002) was adopted. The choice of convenience sampling was largely driven by accessibility of organizations and participants. Purposive sampling selected organizations that have clear business operating model in terms of standardization and integration of business processes as stated above (Ross et al., 2006) mentioned above.

For each case organization, between four and thirteen participants were interviewed. Participants' roles included Chief Information Officer, IT managers, business unit managers, IT officers, document controllers and ECMS users, as detailed in Table 1. This combination of different roles allowed the gathering of rich data that represented opinions from different perspectives. Each interview lasted approximately 60 to 75 minute. Most interviews were conducted face-to-face requiring the interviewer to visit each case organization.

Semi-structured and open-ended interviews formed the major data collection instruments for this study. Interviews were conducted with, and concentrated on, participants who actively used ECMS in their daily work. Participants were asked to describe how they used ECMS to perform particular work processes. Specific questions were also asked about the role of the ECMS in users' work and how it was embedded in the organizational business process flows.

Interview questions focused on understanding how organizational structures (e.g. authoritative leadership style, information-sharing culture and integrated process structure) influenced ECMS-use. Furthermore, questions also concentrated on understanding how the interaction between ECMS elements (i.e. ECMS functionalities, organizational norms and users' interpretive schemes) shaped the particular ways of using ECMS.

Data analysis was conducted in parallel with data collection. New results from each individual case analysis prompted a re-examination of earlier case data seeking similar findings and this process was continued until theoretical saturation was reached. Once analysis of each individual case was completed, cross-case analysis was conducted which led to the overall research outcomes that provides explanation to how different organizations use ECMS to support various business processes. The literature informed all of the research design steps from the initial data collecting through to final analysis towards achieving the overall research outcome.

The next step involved two phases: (1) an analysis of cases based on their operating model and (2) a cross-case comparison across all cases. During this analysis, comparisons were made across similar and different patterns of 'ECMS-use' as shaped by different 'conditions' (i.e. institutional, interpretive and structural conditions). These findings resulted in the identification of various ways of using ECMS to support organizational business processes.

Most of the data coding and analysis activities were supported using the Atlas.ti software tool (Version 6.2.25). This tool provides functionalities to analyze and present qualitative data. All data including the transcribed interviews, field notes, memos and analytical materials were managed and stored using this

software. In addition to this software, some memos, figures and summarized case reports written in Microsoft Word files were kept in separate folders.

Result & Discussions

Based on the evaluation of the interview data of the seven cases, it was found that ECMS has been used in various ways and for different purposes as shown in Table 2. For example as shown in row 6 of Table 2, it was found that Retail_Co has been utilizing ECMS for decision making. From the interviews, it was learnt that Retail_Co believes that ECMS are powerful technologies that could speed up their routine tasks and assist in making faster decisions. On the other hand, in the case of Mobile_Pro, the company is using ECMS for collaborative activities (refer to row 8 of Table 2). Employees in Mobile_Pro consider ECMS as a single point of reference for project collaboration. It was also learnt that many companies use ECMS for more than one purpose. For example, as shown in Table 2, besides using ECMS for collaborative work, Mobile_Pro also utilize ECMS for information sharing and to automate their approval and monitoring processes.

Furthermore, based on in-depth analysis of the collected interview data, evidences collected from the cases studies (summarized in Table 2) have shown two important results supporting previous literature, which are: (1) ECMS-use is influenced by organizational structures, and (2) ECMS-use is shaped by agency elements, as described below:

1. ECMS-use is influenced by organizational structures

Of the fifteen modes of ECMS-use shown in Table 2, thirteen were found to be influenced by business process structures (see column 'Institutional Conditions'): standardized and integrated process structures. This provides evidence that ECMS-use is influenced by business process structures in three ways:

Firstly, referring to Table 2 (see column 'Institutional Conditions' and 'Modes of ECMS-use'), it is evident that when organizations employed an integrated process structure, ECMS were used to support their integrated process needs. For example, as seen in row 1 of Table 2, IT_Consulting and Eng_Consulting used ECMS basic document management facilities to support the sharing of information among specialized business units. In the second row of Table 2, it appears that Eng_Consulting built custom workflows that facilitated its integrated processes. This illustrates that when the organization employed an integrated process structure, ECMS were inclined to be used to satisfy the integrated process needs.

Secondly, when organizations employed a standardized process structure, ECMS were used to ensure that consistency and process standardization was achieved organization-wide. For example, as seen in row 4 of 2, Retail_Co and Auto_Finance used their ECMS to access and distribute standard operating procedures, manuals and guidelines. In another case (see row 5 of Table 2), Auto_Finance built custom workflows that facilitated their billing and approval processes to ensure that all business units adhered to the standard process procedures and to minimize process variations. This illustrated that when an organization employed a highly-standardized process structure, the ECMS was inclined to be used to support standardized process needs. Thirdly, when organizations chose not to use ECMS to support any of their business process structure, this may cause the ECMS-use to be poor or limited. This is evident in two of the cases as shown in row 13 of Table 2, their ECMS was indeed poorly used for sharing general information. This could be attributed to the fact that the sharing of information was not tied to any business processes and that led employees to assume that it was not important to share information as this would not contribute to any of their work. In another case presented in row 7 of Table 2, it appeared that Telco's ECMS was being used perfunctorily because it was never meant to be used to support any business process, but was used as a gateway to access legacy and enterprise systems. Telco employees viewed using the ECMS as not important and of limited use due to the fact that it was not contributing to their work processes in any way. Based on this evidence, this study has reason to believe that ECMS-use is better off supporting business process structures to ensure that the technology is being effectively used in the organization.

Furthermore, besides supporting organizational business process structures, it was also found that thirteen modes of ECMS-use were influenced by other organizational structures including an authoritative leadership style, information-sharing culture and bureaucratic structures. For example, as seen in row 10 of Table 2, as the organization emphasized an hierarchical approval structure, custom workflows were built to facilitate the movements of documents from one approver to another following the sequence of approvers. The custom workflows also captured electronic signatures, approvers' comments and ensured that rejected documents were not processed. This illustrates that when

organizations emphasized a particular organizational structure (e.g. hierarchical approval and bureaucratic structures), ECMS were inclined to be used to support those needs.

2. ECMS-use is shaped by agency elements (i.e. ECMS functionalities, norms, user assumptions and user knowledge)

All of the cases illustrate that when using ECMS, users drew on the elements of agency (i.e. ECMS functionalities, their knowledge, experience and skills, and the assumptions they have about the technology), as elaborated further in the following paragraphs.

Firstly, as shown in Table 2, when users use the ECMS, they utilized the functionalities shown in the column 'Technological Conditions'. For example, as shown in row 11 of Table 2, Oil_Co employees managed to have discussions among business units and to post questions to internal consultants immediately after the discussion forums and instant messenger facilities were provided to them. Before these communication facilities were provided, employees reported that they were unable to communicate via the ECMS. They had to hold face-to-face meetings, send emails and made phone calls. However, consultants were unable to capture the good discussions and useful ideas being discussed through these media (e.g. emails and phone calls). Therefore, using these media for communication did not help the organization to achieve its intended goal which was to: (1) have a single and unified platform for employees to collaborate among units, (2) allow employees to easily access and retrieve the right information at the right time, and (3) gather individuals' and units' information making it available to everyone in the organization. As a consequence, consultants relied on ECMS communication functionalities that allowed them to view communication threads, capture useful discussions and then preserved them for future reference. This evidence illustrates that when sufficient facilities are provided, users may be able to use it to achieve their intended goals. This is in agreement with Grahlmann et al. (2012) and Benevolo and Negri (2007) who assert that organizations need to consider what ECMS functionalities are required, indicate missing functionalities and decide where investments are needed to ensure that the tools support organizational practices.

Secondly, as presented in the column 'User Knowledge' in Table 2, even though users draw on the sets of functionalities that are made available to them, the knowledge, experience and skills they have about the technology will also determine the ways in which they use the technology. Users' knowledge about and skills in using the functionalities and the experience they have had with previous or similar applications will determine whether users will use the functionalities for the intended purpose, or adjust the technology to suit their needs or abandon it when they have limited knowledge about how to use it. For example, as seen in row 6 of Table 2, Retail_Co ECMS users had the knowledge and skills to use the business intelligence features to manipulate and process data to produce strategic and operational reports. They also had the capabilities to find creative ways to use the ECMS to improve ways of making decisions. Due to the users' advanced skills and knowledge, they were able to leverage on available data and used the ECMS beyond its basic capabilities for decision making. This illustrates that users' knowledge, experience and skills shaped the ways in which they used the ECM technology.

Thirdly, having users with positive attitudes, assumptions and high respect towards the technology contributed to the technology being effectively used for its intended purpose, while having users with negative attitudes and assumptions about the ECMS may lead towards poor technology-use or result in the technology not being used at all. For example, as shown in row 10 of Table 2 (refer to column 'User Assumptions'), having users with positive assumptions about the technology and who regarded the custom workflows as capable of handling end-to-end processes contributed to the technology being actively used to support integrated and standardized processes whereas having users with negative assumptions towards the technology contributed to poor ECMS-use. As shown in row 13 of Table 2, academic staff in the Oil_Co University regarded sharing information using the ECMS as not useful and they were sceptical as to whether it could benefit their work in any way. This could be attributed to the fact that users perceived sharing information as countercultural and incompatible with their individual advancement and their department's success. They also considered it cumbersome to use ECMS and claimed that the technology was not tailored to the way they worked. These negative assumptions held by users about the technology led to the technology being poorly used. Some preferred to use other applications and therefore abandoned the ECM technology. This illustrates that the assumptions that users have towards the technology is one of the key elements that determine the ways in which ECMS will be used in organizations.

Based on the results and findings discussed above, it is indeed evident that the way organizations use their ECMS is indeed being influenced by the organizational structures and agency elements.

It is interesting to see the emerging patterns of use that ECMS could offer to organizations. Depending on the organizations' business process structure and agency elements (i.e. ECMS functionalities, their knowledge, experience and skills, and the assumptions they have about the technology), organizations may choose to use the technology to support the way they operate that suits their business environment.

Future research could look deeper into how the emerging modes of ECMS-use could specifically benefit certain type of organizations. It would also be interesting if future research could suggest to how organizations may choose to upgrade their usage of ECMS to maximize the potential benefit out of the technology. Future research could also look upon how organizations that fail to utilize their ECM technology may improve the usage of the ECMS to ensure that their investment is worth it. This may have triggered future study to recognize that there are elements including ECMS functionalities, users' knowledge and skills, user training and a few others, that practitioners should consider to effectively use ECMS.

Conclusion

This study has synthesized the various modes of ECMS-use identified in different types of organizations. These modes of ECMS-use are brought together and compared based on 'conditions' (i.e. technological, institutional and interpretive conditions). This leads to the possibility of exploring ways organizations can improve and maximize the usage of their ECM technology to support business processes.

Based on the findings, this paper has also provided an explanation to how this study has strengthened previous ECM studies in terms of how ECMS-use is associated with business process structures. This explanation supports previous studies that call for the consideration of organizations' business processes as a starting point for understanding ECMS-use (Grahmann et al. 2010; Paivarinta and Munkvold 2005; Tyrvaïnen et al. 2006; Vom Brocke et al. 2011; Vom Brocke et al. 2010a; Vom Brocke et al. 2010b). Furthermore, also based on the findings, this paper has provided a deeper understanding and explanations to how the interactions between ECM technologies (i.e. technological conditions), the organizational context (i.e. institutional conditions) and users (interpretive conditions) shape ECMS-use. This explanation supports previous studies that predicted there was an interaction between ECM technology, organizational context (process, structure and practices) and users (Bianco and Michelino 2010; Blair 2004; O'Callaghan and Smits 2005, p.1274; Tyrvaïnen et al. 2006). In conclusion, this study has managed to establish clear evidence on ways that business and IT managers should take into consideration to better understand how ECMS can effectively be used to support business processes.

Table 2. Various types of ECMS-use employed by large organizations to support their business processes

No	Case Organization	Modes of ECMS-use	Interpretive Conditions		Technological Conditions	Institutional Conditions
			User Assumptions	User Knowledge		
1	IT_Consulting Eng_Consulting	Information sharing that supports process integration: <i>sharing project documents among units</i>	ECMS are useful technologies that can manage the sharing, distribution, update and revision of documents among units	Specific understanding of ECMS functionalities Understanding of ECMS use policies	Document management facilities	Integrated process structure Collaborative structure Authoritative leadership style Information-sharing culture
2	Eng_Consulting	Custom workflows that support integrated processes: (1) <i>internal review process</i> (2) <i>approval process</i>	ECMS workflows are supportive in facilitating integrated processes between business units	Extensive understanding of ECMS workflows and overall process procedure	Workflows customized by experts and process owners	Standardized process structure Integrated process structure Hierarchical approval structure Collaborative structure
3	Eng_Consulting	Custom workflows that support external processes: <i>client review process</i>	ECMS workflows are supportive in facilitating end-to-end approval processes	Extensive understanding of ECMS workflows and overall process procedure	Workflows customized by experts and process owners	Client management Consultancy-based structure
4	Retail_Co Auto_Finance	Information sharing supports process standardization: (1) <i>access to standardized process information</i> and (2) <i>to standardized document-keeping</i>	ECMS are useful for information sharing and document keeping	Specific understanding of ECMS functionalities Understanding of ECMS-use policies	Document management facilities	Standardized process structure Centralized decision structure
5	Auto_Finance	Custom workflows that support standardized processes: <i>billing and approval process</i>	ECMS custom workflows are supportive in facilitating standardized processes	Extensive understanding of ECMS workflows and overall processes procedure	Workflows customized by experts and process owners	Standardized process structure Hierarchical approval structure External service management
6	Retail_Co	Decision making	ECMS are powerful technologies that can speed up routine tasks and facilitate decision making	Extensive understanding of ECMS functionalities for processing data and making decisions	Business intelligence features Experts process data into insights	Standardized process structure Centralized decision structure
7	Telco	Providing access/links to information systems	Limited use Not important	Poor knowledge about ECMS functionalities	Uses limited functionalities	Unification Bureaucratic structure Centralized mandated IT structure
8	Mobile_Pro	Collaboration	ECMS are useful as a single point of reference for project collaboration	Specific understanding of ECMS functionalities Understanding of collaboration through ECMS policies	Document management facilities	Unification Collaborative structure Integrated process structure

Table 2. Various types of ECMS-use employed by large organizations to support their business processes (cont.)

No	Case Organization	Modes of ECMS-use	Interpretive Conditions		Technological Conditions	Institutional Conditions
			User Assumptions	User Knowledge		
9	Mobile_Pro	Information sharing supports process standardization: <i>access to standard procedures</i>	ECMS are useful as a single point of reference for sharing standard operating procedures	Specific understanding of ECMS functionalities	Document management facilities	Standardized process structure
10	Mobile_Pro	Custom workflows that support integrated and standardized processes: <i>approval and monitoring processes</i>	ECMS custom workflows are highly supportive in facilitating integrated and standardized processes ECMS are useful for project monitoring	Extensive understanding of ECMS workflows and overall process procedure	Workflows customized by experts and process owners	Integrated and standardized process structure Hierarchical approval structure Collaborative structure
11	Oil_Co	Communication	ECMS communication tools are useful for communicating and capturing ideas and solutions	Specific understanding of communication tools and ECMS use policies	Communication tools	In-house consultancy structure
12	Oil_Co	Information sharing supports process standardization: <i>sharing and updating standard procedures</i>	ECMS are useful for updating, managing and distributing standard procedures	Specific understanding of ECMS functionalities Understanding of policies for the governing of standard procedures	Document management facilities	In-house consultancy structure Standardized process structure
13	Oil_Co	General information sharing (not supporting any process)	Sceptical on how ECMS can facilitate information sharing Sharing information in ECMS is regarded as not useful	Poor understanding of ECMS functionalities and what should be shared (absence of policy)	Poor document management facilities	Poor centralized information-sharing culture Diversified units structure Redundant information systems structure Poor information-sharing culture
14	Oil_Co	Custom workflows that support standardized processes: <i>user requests for technical services process</i>	ECMS custom workflows are supportive in facilitating standardized processes	Extensive understanding of ECMS workflows and overall process procedure	Workflows customized by experts and process owners	In-house consultancy structure Paperless culture Standardized process structure
15	Oil_Co	Custom workflows that support integrated and standardized processes	ECMS custom workflows are supportive in facilitating integrated and standardized processes	Extensive understanding of ECMS workflows and overall process procedure	Workflows customized by experts and process owners	Integrated process structure Standardized process structure

References

- Benbasat, I., Goldstein, D.K., and Mead, M. 1987. "The Case Research Strategy in Studies of Information Systems," *MIS Quarterly* (11:3), pp 369-386.
- Benevolo, C., and Negri, S. 2007. "Evaluation of Content Management Systems (CMS): A Supply Analysis," *Electronic Journal of Information Systems Evaluation* (10:1), pp 9-21.
- Bianco, F., and Michelino, F. 2010. "The Role of Content Management Systems in Publishing Firms," *International Journal of Information Management* (30:2), April, pp 117-124.
- Blair, B.T. 2004. "An Enterprise Content Management Primer," *Information Management Journal* (38:5), October, pp 64-66.
- Boudreau, M.-C., and Robey, D. 2005. "Enacting Integrated Information Technology: A Human Agency Perspective," *Organization Science* (16:1), pp 3-18.
- Dilnutt, R. 2006a. "Enterprise Content Management: Supporting Knowledge Management Capability," *International Journal of Knowledge, Culture and Change Management* (5:8), pp 73-84.
- Dilnutt, R. 2006b. "Surviving the Information Explosion " *IEE Engineering Management* (16:1), March, pp 39-41.
- Eisenhardt, K.M. 1989. "Building Theories from Case Study Research," *Academy of Management Review* (14:4), pp 532-550.
- Grahlmann, K.R., Helms, R.W., Hilhorst, C., Brinkkemper, S., and Amerongen, S.V. 2012. "Reviewing Enterprise Content Management: A Functional Framework," *European Journal of Information Systems* (21:3), pp 268-286.
- Grahlmann, K.R., Hilhorst, C., Amerongen, S.V., Helms, R., and Brinkkemper, S. 2010. "Impacts of Implementing Enterprise Content Management Systems," *18th European Conference on Information Systems South Africa*
- Munkvold, B.E., Paivarinta, T., Hodne, A.K., and Stangeland, E. 2006. "Contemporary Issues of Enterprise Content Management," *Scandinavian Journal of Information Systems* (18:No. 2), pp 69-100.
- Nordheim, S., and Paivarinta, T. 2004. "Customization of Enterprise Content Management Systems: An Exploratory Case Study," *37th Annual Hawaii International Conference on System Sciences* Waikoloa, Hawaii: IEEE Computer Society.
- Nordheim, S., and Paivarinta, T. 2006. "Implementing Enterprise Content Management: From Evolution through Strategy to Contradictions Out-of-the-Box," *European Journal of Information System* (15:6), October, pp 648-662.
- O'Callaghan, R., and Smits, M. 2005. "A Strategy Development Process for Enterprise Content Management," *13th European Conference on Information Systems*, Regensburg, Germany.
- Orlikowski, W.J. 2000. "Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations," *Organization Science* (11:4), pp 404-428.
- Paivarinta, T., and Munkvold, B.E. 2005. "Enterprise Content Management: An Integrated Perspective on Information Management," *38th Annual Hawaii International Conference on System Sciences*, Waikoloa, Hawaii: IEEE Computer Society.
- Ross, J.W., Weill, P., and Robertson, D.C. 2006. *Enterprise Architecture as Strategy: Creating a Foundation for Business Execution*. Boston: Harvard Business School Press.
- Smith, H.A., and McKeen, J.D. 2003. "Developments in Practice VIII: Enterprise Content Management," *The Communications of the Association for Information Systems* (11:1), pp 647-659.
- Tyrvaïnen, P., Paivarinta, T., Salminen, A., and Iivari, J. 2006. "Characterizing the Evolving Research on Enterprise Content Management," *European Journal of Information Systems* (15:6), December, pp 627-634.
- Vom Brocke, J., Derungs, R., Herbst, A., Novotny, S., and Simons, A. 2011. "The Drivers Behind Enterprise Content Management: A Process-Oriented Perspective," *19th European Conference on Information Systems* Helsinki, Finland.

- Vom Brocke, J., Seidel, S., and Simons, A. 2010a. "Bridging the Gap between Enterprise Content Management and Creativity: A Research Framework," *43rd Hawaii International Conference on System Sciences* Honolulu, Hawaii, USA: United States, IEEE, pp. 229-238.
- Vom Brocke, J., and Simons, A. 2008. "Towards a Process Model for Digital Content Analysis - the Case of Hilti," *21st Bled eConference* Bled, Clovenia.
- Vom Brocke, J., Simons, A., and Clevn, A. 2010b. "Towards a Business Process-Oriented Approach to Enterprise Content Management (ECM): The ECM-Blueprinting Framework," *Information Systems and E-Business Management* (9:4), pp 475-498.