Enterprise Content Management Systems-use Supports Standardized Business Processes

1 Noreen Izza Arshad, 2 Simon K. Milton, 3 Rachelle Bosua
1 Department of Computer and Information Sciences, Universiti Teknologi PETRONAS, Malaysia
2, 3 Department of Computing and Information Systems, The University of Melbourne, Australia
noreenizza@petronas.com.my, simon.milton@unimelb.edu.au, rachelle.bosua@unimelb.edu.au

Abstract-- The aim of this paper is to explore and provide guidance to practitioners on how they can possibly use Enterprise Content Management Systems (ECMS) to support their highly standardized business processes. Case studies were conducted in two types of organizations that emphasized standardized business processes namely an auto finance company and a retail chain store. It was learnt that organizations main objective in using ECMS is to support their daily businesses and work practices. However, it appears that ECMS-use is also influenced by other factors such as the workplace environment and often influenced by management decisions. Therefore, based on the data gathered, this study explored and understand how ECMS is being used from the perspective of organizational business processes, work practices, other organizational structures and the work environment (that include management, users and others). Putting all these factors into account, it was found that organizations that are highly integrated can benefit from these types of technology when using ECMS for: (1) sharing standardized information (e.g. policies), building application that support standardized processes (e.g. approval and purchasing processes) and (3) decision making that can be applied throughout the company. These findings benefits business and IT managers in such that there is a guide for organizations that are highly standardized to support employees in achieving their intended ECMS-use, to understand reasons for ECMS failures and underutilization and to exploit technologies investments.

Index Term-- Enterprise Content Management System (ECMS), content management, business processes.

1. INTRODUCTION

Previous research on technology-use highlights the distinction between ‘technology as artifact’ and technology-use as important [1-3]. Orlikowski [1, 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 [4-8] and (2) ECMS deployment aspects that include change management and implementation [9, 10]. 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 [9, p.1] point out, "[a] few sources [limited research literature] have reported research on actual ECM practices in organizations."

Furthermore, 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 [10-15]. 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 [16, 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 [13, 14, 15, p.1274, 16-18].

Considering these limitations identified in the ECMS literature, there is limited understanding and empirical evidence on how: (1) ECMS is actually used in practice, (2) business process structure influences ECMS-use, and (3) the ECMS, the organizational context and users together shape ECMS-use.

Thus, in attempt to close these limitations found in the literature, this paper addresses one primary research question: "How do organizations with standardized business processes use ECMS to support their operations?"

In an attempt to answer the research question, this paper is structured as follows. Section 2.0 describes what is known from the ECM literature and highlights the gaps found. A description and justifications of how this study addresses these gaps are also presented here. In Section 3.0, the research methodology employed by this research is explained. Following this, the case analysis results and findings are...
discussed in Section 4. Finally, a conclusion is given at the end of the paper.

2.0 RELATED STUDIES
ECMS can be considered as a convergence of technologies that supports ECM [4, 5, 19-21]. 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.

Despite the fact that ECMS technology components are useful to organizations for selecting an ECMS product and compare the functionalities offered by different vendors [8], it is found that there is a lack of systematic and rigorous studies into how organizations actually use these technology supporting work practices and business processes.

As a consequence, this study argues that business and IT managers are left without a clear guidance on how they can actually use ECMS to support their business operations and work practices. Specifically, this study intends to highlight that such explanation and understanding is necessary to assist business and IT managers to effectively use ECMS.

Tyraivenen et al. [14] also have the same perception that there is a lack of ECMS research that focus on providing guidance to practitioners on how they can use ECMS to support business operations. However, one exception is a study conducted by Paivarinta and Munkvold [10] that is found to be useful in this regard. In their paper, the authors identify a framework for ECMS implementation and has call for managerial attention. The framework of Paivarinta and Munkvold [10] shown in Figure 1, provide a basis for business and IT managers to understand and facilitate ECMS implementation in organizations.

![Fig. 1. Framework for ECMS implementation](image)

Referring to the enterprise model (see Figure 1), 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” [10, p.5]. The concept of an enterprise model is important as described by Paivarinta and Munkvold [10], 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 [10], a few other researchers also consider that an ECMS implementation has to be aligned with a company’s business process structures [12, 13, 18, 21, 22].

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 [10, 13, 21]. Consequently, this study has reason to believe that besides ECMS implementation and adoption, ECMS-use will in turn be driven by an enterprise model and an organization business process structures. 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.

Considering the challenge, this study introduces and uses Ross et al.’s [23] generic business operating model that relates to firms’ operations, expressed in terms of business processes. Two dimensions are used to classify organizations’ business operating model:

- **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.

Besides that ECMS-use has to be aligned with a company’s business process structure, a study conducted that Grahlmann et al. [22] 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. In search for the answer, this study has found that there are ECM researchers who believe that there is an interaction between the technology (ECMS), the organization (processes, structure, practices) and the users (knowledge and behavior towards the technology) [14, 15, p.1274, 16, 17]. In these papers, the authors agree that ECMS adoption, implementation and use may be intertwined with aspects such as organizational purposes, processes, tools and user communities. This is in agreement with Tyrvainen et al. [14] who acknowledge that ECMS is a complex field and involve a rich research phenomenon involving four perspectives:
enterprise, processes, content and technology. In this paper, the authors indicate that research on ECMS should “...considers organizational, social and business issues ... [it] is often tightly intertwined with the process perspective ...”

Nevertheless, 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. [14, p. 631] indicate, “empirical research including the enterprise perspective [processes, content, information systems, users, technology] remains rare” Pullman and Gu [24] also share the same perception, and suggest that future research should investigate how organizations actually use ECMS, understand why organizations use these technologies in practice and examine the environmental elements that surround these technologies including users, work settings, business environment and norms.

As a consequence, the ‘practice lens theory’ of Orlikowski [1] is used as a lens through which the differing ways organizational use of ECMS can be understood and explained. The practice lens paradigm of Orlikowski [1] referred to as ‘practice lens theory’ throughout this paper, 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 theory is also termed as “Technologies-in-Practice”. Orlikowski [1] asserts that 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.

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. [23] is employed for explaining how ECMS is used to support organizational business processes. Second, the practice lens of Orlikowski [1] is chosen to understand the interaction between ECM technologies, organization structure, processes and users within an organization.

3.0 Research Methodology

Instead of a single case study approach, multiple case studies were chosen since this study intended to clarify how highly standardized organizations use ECMS to support their business processes. A single case approach may have limited generalizability and can be prone to potential bias, such as misjudging the way in which events are represented and exaggerating the salience of data due to its availability [25, 26].

The aim of this study was to identify ECMS-use, and the target population was highly standardized business organizations that actively using ECMS. At the beginning of the study, 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 [7, 8].

In this study, a convenience/purposive sampling approach [27] was adopted. The choice of convenience sampling was largely driven by accessibility of organizations and participants. Purposive sampling selected organizations that satisfied the criteria mentioned above in which organizations must emphasize business process standardization and has been using ECMS (i.e. SharePoint) for more than a year. Two organizations were recruited:

(1) Retail_Co - A chain of consumer electronics retail stores selling products that includes entertainment products, computers and home appliances

(2) Auto_Finance- An automotive financing company providing financial assistance to individuals and businesses with a focus on cars, motorcycles and industrial machines

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.

For each case organization, between four and seven participants were interviewed. The snowballing strategy helped the researcher to recruit participants in each case study site. In total, 11 participants were interviewed. Participants’ roles included IT managers, store managers, bank officers, and others. This combination of different roles allowed the gathering of rich data that represented opinions from different perspectives. Most interviews were conducted face-to-face requiring the interviewer to visit each case organization. A few interviews were conducted in locations other than the organization, which were more convenient to participants.

Data analysis was conducted using the three types of coding suggested by Strauss and Corbin [28]: open, axial and selective coding. The step involved two phases: (1) an analysis of each case organization, which was followed by (2) a cross-case comparison across the two. As this research had been framed as interpretive case study research, the data mainly reflected interpretations that organizational members had formed about the ECMS and their work in relation to ECMS-use.
4.0 RESULTS AND FINDINGS

In this section, ways the two organizations (i.e. Retail_Co and Auto_Finance) used ECMS to support their highly standardized processes are presented. The Retail_Co case is presented first in sub-section 4.1 and is followed by the Auto_Finance case in sub-section 4.2.

4.1 The Retail_Co Case

Retail_Co is a large Malaysian-based retailer of electrical home appliances, entertainment products and computer goods. The company was established in 1989 and has its headquarters in Kuala Lumpur. At the time of conducting the interview, Retail_Co had more than 100 outlets throughout Malaysia. Retail_Co had more than 7,000 employees with various positions and roles including managerial staff, executives, and administration and IT staff at headquarters, and sales assistants, cashiers, store managers, sales consultants and merchandise planners in each of the outlets.

Every Retail_Co outlet sells a wide range of electrical home appliances, entertainment products and computer goods of different types and brands. These brands include Hitachi, Samsung and Toshiba. They also produce and sell their own brand known as ‘SHQuality’ (a pseudonym). Retail_Co provides other services that include delivering goods to offices and homes, and ‘service and repair’ that involves maintenance and repair of products.

Before the ECMS was implemented, Retail_Co had centralized systems such as the supply chain management and central delivery management systems to ensure that processes such as the ordering of products from suppliers and the delivery of products were standardized across outlets. In addition to having these centralized systems, Retail_Co management staff wanted to have systems that could simultaneously handle the distribution of information to all outlets. For example, management staff wanted to simultaneously announce an increase or decrease of product prices to all outlets to prevent miscommunication, conflict and confusion. Realizing that the current systems (e.g. the supply chain management system) could not be used for the aforementioned purpose, they went searching for another solution.

Consequently, Retail_Co decided to invest in the ECMS to distribute (i.e. share) standardized process information and to preserve its information asset. Several solutions were evaluated and eventually Microsoft SharePoint was selected. One of the managers mentioned that SharePoint was chosen because: “it [SharePoint] has the capability to connect people, information, processes and systems” within the organization. He also indicated that SharePoint’s features and functionalities met their requirements: “this [the functionalities] is just what we wanted to have” and the total cost of its ownership was lower than the other products that they had evaluated. Retail_Co also chose SharePoint because it could be easily integrated with other Microsoft applications, as the executive indicate: “one of the reasons we chose SharePoint is because it can be easily integrated with our current applications like Microsoft Office which our staff are familiar with.”

Based on the interviews conducted, it was learnt that Retail_Co uses ECMS to support their standardized business processes in two ways:

1. ECMS-use for analysis and decision making - ECMS was used by Retail_Co executive officers, business intelligence unit staff and management staff (e.g. CEO, Vice President of Finance) at headquarters to analyze outlets’ sales reports, they then created business strategies. The assistant manager confirmed this by stating that ECMS was used: “... to look at outlets’ sales report and to view top selling products too ... and SmartZip[ECMS] is used to analyze every outlets’ sales performance; that includes their gross profit, sales, stock terms, old models in store and more ... By analyzing outlets’ sales performances, management then come out with plans and future business strategies.”

2. ECMS-use for information sharing - Retail_Co outlet managers used ECMS to access the standardized information (i.e. change of item prices, promotion strategies) distributed by management staff at headquarters. One of the outlet managers explained ECMS use for this purpose: “... if management decided to lower the price of let’s say, those LG conventional microwave ovens, model X25, then all outlets have to change the price of that oven according to what they’ve decided ... the prices are listed in SmartZip [ECMS]...”

4.2 The Auto_Finance Case

Auto_Finance is a Malaysian automotive finance organization and focuses on the financing of cars, motorcycles and industrial machines. The organization has its headquarters located in Kuala Lumpur and, at the time of conducting the interviews, there was an extensive network of 27 Auto_Finance centres throughout Malaysia. Auto_Finance has about 9,000 employees working at the headquarters and across all centres.

Auto_Finance offers different financial products allowing customers to acquire a car, motorcycle or industrial machine with the preferred financial arrangements being other than a single lump payment. The organization provides financial assistance allowing customers to raise funds to compensate the initial owner, dealer or manufacturer. Auto_Finance provides these types of financing because the price of automotive vehicles and machines would be out of reach for most purchasers if they were unable to borrow the money.

Auto_Finance initially did not have an ECMS but the idea of investing in this technology was raised by top management who wanted to have a system that could handle their billing and approval processes. One of the IT managers mentioned that Auto_Finance used to have in-house lawyers but, when
management decided to outsource and liaise with preferred legal firms, they realized that they had to start paying for lawyers’ services. That was also when management realized that there was a need to have standardized billing and approval processes in order to verify lawyers’ bills and charges.

Initially, they started handling the billing and approval processes manually. Lawyers handed in invoices to recovery officers. Recovery officers keyed invoice details, including the completed services, amount to be paid and invoice number, into Microsoft Access spreadsheets. Access spreadsheets were then printed, invoices were attached and they were passed to supervisors. Once supervisors approved these invoices, they were passed to other management staff for a few more rounds of reviews.

However, the manual billing and approval process was reported to be ineffective. For example, when an approver was on leave, the overall process was prolonged. On top of that, the chances of invoices and Access spreadsheets getting lost in transit were extremely high. These issues were the triggers for management to invest in the ECMS.

Consequently, management decided to use the ECMS for the purpose of handling billing and approval processes. At that point of time, Auto_Finance needed an ECMS with the following criteria: (1) it could be quickly installed and used; (2) it could be easily integrated with Microsoft Access data (i.e. data migration), (3) it was at a reasonable price, and (4) it could be easily maintained by any internal IT staff.

From the interviews, it was learnt that Auto_Finance used ECMS in two ways:

1. ECMS-use for billing and approval processes - The IT manager indicated that, at the end of 2007, all Auto_Finance centers started using the ECMS to standardize their billing and approval processes: “I still remember the time we [all centres] started to fully use the ECMS to handle our bills and approving bills. We stopped all manual processes. We no longer accepted papers and hard copies and that was somewhere in 2007 and before the end of the financial year ...

2. ECMS-use for information sharing - The IT manager indicated that, when all Auto_Finance centers were using the ECMS to facilitate billing and approval processes, the organization expanded the use of the ECMS: “[a]fter the billing and approving system stabilized ... the ECMS was then used to standardize all Auto_Finance’s centres’ document-keeping processes according to the standard procedures; we call it the ‘e-filing system.’” The e-filing system forced all officers to keep customers’ documents including correspondence letters, letters from lawyers, copies of identity cards and signed agreements in accordance with the standard document-keeping procedure.

From these two cases (i.e. Retail_Co and Auto_Finance), it was evident that these organizations used their ECMS to support standardized process structure and other organizational structures including centralized decision-making and hierarchical approval structures. However, there was no evidence to indicate that the ECMS was used to support an integrated process structure. This could be attributed to the fact that these organizations have low integration of business processes [23]. Therefore, using the ECMS to support an integrated process structure may not be necessary or may be seen as providing limited value.

Based on the comparisons of these two cases (i.e. Retail_Co and Auto_Finance), this study has reason to believe that organizations that emphasize high standardization might use ECMS in the following three ways: (1) information sharing that supports a standardized process structure, (2) building custom workflows that support standardized processes, and (3) analysis and decision making, as explained below:

1. ECMS-use for information sharing that supports a standardized process structure

It is evident that highly standardized organizations may use ECMS for information sharing that supports organizations’ standardized process structure. Organizations could use ECMS as a single source of reference to store, manage, revise and distribute standard operating procedures (SOPs) and standardized business strategies, decisions and plans. On the other hand, organizations could also use ECMS to ensure that all business units keep documents in accordance with standard guidelines. This illustrates that this type of ECMS-use supports organizations’ standardized process structure as well as their centralized decision-making structure.

It is worth mentioning that using the ECMS for this purpose does not require the ECMS undergo any major customization. IT managers should expect only minimal adjustments to be required which could include creating folders, taxonomy and metadata to ensure fast and accurate information searching and retrieval.

From this type of ECMS-use, organizations could expect to have a better way of managing, sharing, preserving and distributing standard operating procedures and standardized decisions, business strategies and plans. Therefore, this type of ECMS-use to some extent contributes to reinforcing organizations’ standardized process and centralized decision-making structures.

2. ECMS-use for building custom workflows that support standardized processes

Highly standardized organizations may also use ECMS to facilitate standardized processes and to ensure that process standardization is achieved throughout all business units. In addition to supporting standardized processes (i.e. standardized process structure), ECMS may also be used to
support other organizational structures such as a hierarchical approval structure. This was seen in the Auto_Finance case where the organization required invoices to be approved by a sequence of approvers and required that all Auto_Finance centres conducted approval processes in accordance with the standard procedures. In this case, the ECMS was used to facilitate the approval processes and to ensure that all Auto_Finance centres conformed to the standard approval procedures.

To achieve this type of ECMS-use, IT managers should note that ECMS workflows need to be tailored in accordance with the existing process procedures. Having process owners who understand the overall business process rules and procedures is crucial. Process owners should work with competent programmers to tailor the workflows in accordance with the existing process procedure.

ECMS-use to facilitate standardized processes may result in organizations enjoying better and more efficient ways of handling standardized processes, and ultimately lead to the achievement of process standardization throughout the organization. For example, using the ECMS to facilitate hierarchical approval processes, as seen in the Auto_Finance case, forced all business units to adhere to the standard approval process procedure. Therefore, the organization was able to ensure that the standardized approval process was achieved throughout all Auto_Finance centres, and approval could be given at any time and from anywhere thus improving the process turnaround time. Auto_Finance also managed to prevent negligence issues thus increasing their stakeholders’ satisfaction. This provided evidence that ECMS-use for this purpose may reinforce and enhance organizations’ standardized processes, hierarchical approval structure and external service management.

3. ECMS-use for analysis and decision making

It is interesting to discover that highly standardized organizations may also use ECMS for analysis and decision making. From the data, it appears that this mode of ECMS-use would benefit organizations that require leveraging their existing data to produce and then distribute centralized decisions and standardized business strategies. As seen in the Retail_Co case, the organization used the ECMS to analyze outlets’ sales reports to determine sales performance and to create business strategies and plans to improve sales.

Business and IT managers should acknowledge that, in order to use ECMS for analysis and decision making, there may be a need to conduct system integration and to use ECMS functionalities such as the business intelligence features. ECMS may need to be integrated with other databases and enterprise systems such as the finance and sales systems. Users such as decision makers should then have extensive skills and the understanding of how to manipulate and process data from these enterprise systems using the business intelligence features. Using the business intelligence features, users may lean towards the creation of strategic and operational reports to arrive at better business strategies and plans. These standardized business strategies and centralized decisions can be distributed to business units using the memo facilities.

Using ECMS for this purpose allows organizations to increase their existing data’s visibility, providing the ability to use data for making valuable decisions and developing business strategies. This has provided evidence for how ECMS-use could advance organizations’ status quo.

5.0 CONCLUSION

The main objective of this study is to understand and explain how organizations that are highly standardized in terms of its business processes use ECMS to support their operations. Consequently, empirical investigations using a qualitative research design were conducted in two organizations. Empirical evidence of the two cases were brought together, thus proposes three types ECMS-use to highly standardized businesses, ECMS-use for: (1) information sharing that supports a standardized process structure, (2) building custom workflows that support standardized processes, and (3) analysis and decision making. This research fills the gap in the literature on the topic of ECMS-use and extends prior studies by reporting on organizations’ experiences in using ECMS and focusing on how ECMS-use can support standardized business processes.

This research also provides a deeper understanding of why ECMS implementations may fail, or why they are underutilized, or why these types of systems may not yield the benefits that organizations intended to achieve. This study demonstrates that IS researchers should consider the organizational context, the ECMS technology and ECMS-use goals as these elements influence the way that technology is used. This confirms that merely considering the technology and its functionalities or customization alone is not sufficient to achieve intended technology-use or to understand why a specific technology fails in organizations. This idea is in agreement with a few other studies [3, 29, 30] that examine the use of other types of technologies such as ERP in organizations.

There are a few limitations associated with this study that may give opportunities for follow-up research. First, the main limitation is that the ECMS-use given here are not applicable in contexts where organizations emphasize on integrated business processes. Second, the two cases used in this study involved only large organizations. Therefore, the ECMS-use suggested in this paper needs to be tested to assess its applicability to small and medium enterprises. Third, this study was limited to the use of SharePoint, and examining other kinds of ECM technologies may yield different outcomes and generate different insights. Fourth, only private enterprises were included in the case studies. Therefore, exploring different types of industries including government sectors, non-profit organizations, and healthcare may afford outcomes different from those studied.