

UNIVERSITY OF GHANA

DIGITALIZATION OF PAPER-BASED ENTERPRISE CONTENT AND WORKFLOW IN
A PUBLIC SECTOR INSTITUTION: A DEVELOPING COUNTRY CASE STUDY

BY

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DECLARATION

I, Emmanuel Kwame Cudjoe, do hereby declare that this work is the result of my own research and has not been presented by anyone for any academic award in this or any other university. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgement of other collaborative research and discussions. I did the work under the supervision of Prof. John Effah and Prof. Richard Boateng.

I therefore bear responsibility for any shortcomings.



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CERTIFICATION

I hereby certify that this thesis was supervised in accordance with procedures laid down by the University.



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DEDICATION

I dedicate this work to the Almighty God who granted me life, strength, knowledge and wisdom to enable me carry out this research. I also dedicate it to Yawa Akorfa and my wonderful guardians and Godparents; Dr. Musah Adams, Prof. Anaba Alemna, Mr. Prince Quayson, Prophet Bernard Nelson Eshun, and Auntie Sarla for their endless love, support, encouragement and prayers.



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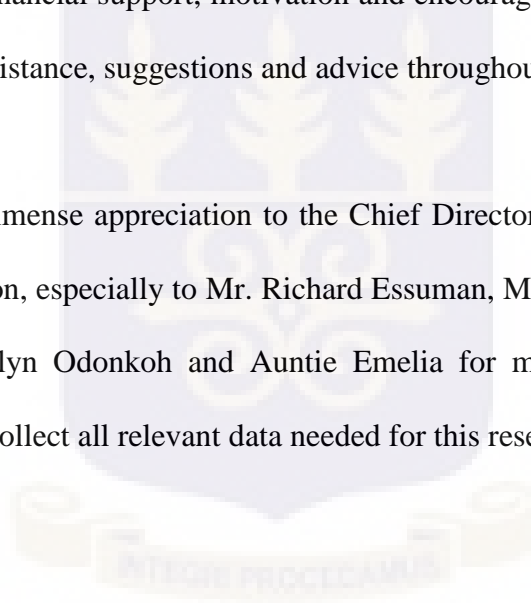


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LIST OF ACRONYMS AND ABBREVIATIONS

BDA	Big Data Analytics
CEO	Chief Executive Officer
EBS	Electronic Business Suit
ECM	Enterprise Content Management
EDMS	Electronic Document Management System
EPR	Enterprise Resource Planning
ERMS	Electronic Records Management System
EULA	End User License Agreement
HR	Human Resource
HRMS	Human Resource Management System
ICT	Information and Communication Technologies
ID	Identification
IS	Information Systems
IT	Information Technology
MIS	Management Information System
PSI	Public Sector Institution
SDLC	Systems Development Lifecycle
TAM	Technology Acceptance Model
TOE	Technology Organization and Environment
WMS	Workflow Management Systems

DEFINITION OF TERMS

Actors	Users of an IT artefact (Leonardi, 2013)
Affordance	Possibilities for goal-oriented action, emerging from the relation between an IT artefact, considered in terms of IT features and actors afforded to actors by technical objects (Markus & Silver, 2008).
Authentication	A security mechanism of verifying the identity of a user of a system.
Authorization	A security mechanism used to determine user privileges or access rights to system resources such as files, services and data.
Content	Institutional data or information. It consists of unstructured information such as videos, scanned images, word documents, PDFs or text matter of a document in any form that are stored and made accessible to the right people at the right time (Jaakonmäki <i>et al.</i> , 2018)
Digitization	The creation of digital version of a physical artefact such as paper documents, microfilm images, photographs, sounds and the like (Abu-Shanab <i>et. al.</i> , 2015).
Digitalization	The transformation of socio-technical structures that were previously mediated by non-digital artefacts or relationships into ones that are mediated by digitized artefacts and relationships (Yoo <i>et al.</i> , 2010)
Digital Innovation	The creation and putting into action appropriate technologies that digitally support aspects of an institution's operations (Demirkan, Spohrer, & Welser, 2016)
Digital Transformation	The profound transformation of business and organizational activities, processes, competencies and models to fully leverage the changes and opportunities of a mix of digital technologies and their accelerating impact in a strategic and prioritized way, with present and future shifts in mind (I-Scoop, 2017).
Electronic Document Management System	A software system for organizing and storing different kinds of documents (Grahlmann <i>et al.</i> , 2012).
End User License Agreement	A legal contract entered into between a software developer or vendor and the user of the software, often where the software has been purchased by the user from an intermediary.
Enterprise Content Management	An integrated approach to managing all of an institution's content and workflow including digitized paper documents, electronic data, reports, web pages and digital assets as well as all the strategies, tools, processes, and skills an institution needs to manage and process all its information assets (Laumer <i>et al.</i> , 2017).
Human Resource Management System	A software that combines a number of systems and processes to ensure the easy management of human resources, business processes and data.

IT Artefact	It comprises numerous technical objects, their component parts, the interface through which the actor interacts with it, and the outputs of the IS (Strong <i>et al.</i> , 2014)
Oracle E-Business Suite	It is an integrated set of business applications for automating customer relationship management (CRM), enterprise resource planning (ERP) and supply chain management (SCM) processes within organizations (Oracle Corporation, 2018)
Paper-based content	Any form of information that printed on a physical paper and used for decision making (Langner, 2018).
Paperless Office	A work environment in which the use of paper is eliminated or greatly reduced (Leyer & Hollmann, 2014)
Workflow	A workflow consists of an orchestrated and repeatable pattern of activity, enabled by the systematic organization of resources into processes that transform materials, provide services and information (Lederer <i>et al.</i> , 2017).
Workflow Management System	A software systems that help support collaboration and coordination among workers, assisting them in the completion of complex business processes (Smith <i>et al.</i> , 2013)

THESIS MATRIX

Research Purpose: To understand an ECM system implementation and use in a developing country's public sector institution.			
Research Questions	Findings	Extant Literature	Contribution
Why would a Public Sector Institution in a developing country opt for an ECM system?	<p>A Public Sector Institution opts for an ECM system to:</p> <ul style="list-style-type: none"> • Meet government directives for digital transformation. • Mitigate problems associated with the paper-based system. • Transform the institution into a digital workplace. 	<p>Private organizations consider digital technologies as an important factor in enabling a digital workplace (Lederer <i>et al.</i>, 2017; Sousa & Rocha, 2019).</p> <p>ECM system implementation and use has become critical for digital transformation (Jaakonmäki <i>et al.</i>, 2018; Alalwan <i>et al.</i>, 2014).</p> <p>Most ECM implementation in developing countries focus on the documents management aspect of the system (Bakunzibake <i>et al.</i>, 2016; Katuu, 2012)</p> <p>ECM system are implemented to control problems associated with the manual system (Laumer <i>et al.</i>, 2017; Alalwan <i>et al.</i>, 2014).</p>	<p>ECM systems are implemented in public sector institutions meet government directives for digital transformation.</p> <p>The decision to implement ECM systems in PSIs is therefore regulatory.</p> <p>In a PSI, the decision to implement a specific ECM system originates from the in-house technical team. However, management need to own the idea as if they originated it before the system can be implemented successfully.</p> <p>Once government and management of a PSI support a digital transformation project, all the necessary supports are made available so cost is not seen as a hindrance.</p>
How does a Public Sector Institution in a developing country implement an ECM system?	<ul style="list-style-type: none"> • ECM implementation planning • Training and Sensitization of the In-house Technical Team by Vendors. • Initial Installation and Integration of Existing System • Full installation of the ECM system 	<p>An observation has been made that the discourse about ECM mainly occurs in practitioners' literature (Herbst <i>et al.</i>, 2014).</p> <p>There is arguably limited or no literature on ECM system implementation procedure.</p>	<p>Government, management and staff of the PSI support the implementation of the ECM system.</p> <p>The ECM system implementation procedure is controlled by institutional policies such as data security policy of a PSI.</p>

	<ul style="list-style-type: none"> • Providing Training and Support • Use of the ECM system • Providing Maintenance, Update and Upgrade of the ECM System 	<p>Initial cost, top management support and staff readiness are seen as challenges of digital transformation (Majchrzak, 2016; Achatz, 2017; Abollado <i>et al.</i>, 2017).</p> <p>Training gives users the requisite skills to effectively use an IS. Failure to do so creates an end-user ignorance which may lead to a system failure (Ali <i>et al.</i>, 2016; Laumer <i>et al.</i>, 2017).</p>	<p>The in-house technical team needs to be trained and sensitized by the implementers to understand the system, and assist in carrying out an implementation that conforms to institutional policies, procedures and standards.</p> <p>Based on technical assessment, PSIs select ECM systems that is compatible and can integrate with already existing systems.</p> <p>This research adds to the knowledge gap in ECM research by providing a process flow implementation procedure of an ECM system in the public sector.</p>
<p>3. What are the consequences of implementing an ECM system in a Public Sector Institution?</p>	<p>Positive Consequences</p> <ul style="list-style-type: none"> • Provision of security and control over contents and workflows • Faster Access to Information for decision making • Effective monitoring of contents and workflows • Change of staff attitude towards work <p>Negative Consequences</p> <ul style="list-style-type: none"> • System and Network failure • Incomplete digital workplace 	<p>ECM systems enable automation of a paperless business process and improve the overall efficiency of the process, eliminating delays (Escalona, 2015; Zhao <i>et al.</i>, 2015).</p> <p>Further, ECM systems enhance the security of tasks and content, save institutions time and money and promote improved transparency (Alalwan <i>et al.</i>, 2014; Bakunzibake <i>et al.</i>, 2016; Laumer <i>et al.</i>, 2017; Jaakonmäki <i>et al.</i>, 2018)</p> <p>ECM system depends on networked servers and these servers can be an online cloud service or an on-premise data centre. Issues about network failure is a challenge (Jaakonmäki <i>et al.</i>, 2018).</p>	<p>One of the basis for implementing an ECM system in a PSI is to transform the institution into a digital workplace.</p> <p>However, the ECM system has still not created the paperless environment that will make the institution a complete digital workplace.</p> <p>The PSI is forced to manage some paper contents manually for litigation purpose. This is due to the difficulty in the admissibility of electronic contents as evidence in the country's legal system.</p> <p>In conclusion, the study contributes to the body of knowledge in IS and ECM research.</p>

ABSTRACT

In an attempt to go paperless, public sector institutions (PSIs) in developing countries are beginning to position themselves in a manner that drives them to implement the necessary digital technologies to achieve this aim. Enterprise Content Management (ECM) systems are one of the technologies that enhances digital transformation by managing a wide range of contents and business processes or workflows of institutions. This research sets out to understand ECM implementation and use in a developing country's PSI. The study extends the existing knowledge on ECM systems by drawing on the interpretive case study approach and a qualitative research methodology to explore the phenomenon. In order to gain a more detailed insight on the phenomenon, this empirical strategy and the affordance theory was used as a theoretical lens to understand the subjective meanings that various stakeholders in a PSI associate to why and how a PSI in a developing country implements an ECM system and the consequences encountered.

The findings revealed that the PSI implemented the ECM system to meet government directive for digital transformation, mitigate problems associated the paper-based system, and make the institution a digital workplace. The ECM system was therefore implemented to fulfil regulatory requirement and meet institutional demands and expectations. These demands and expectations originate from management, the in-house technical team and staff of the institution. In view of this, the study revealed that when there is interest especially from government and management of a PSI, cost is not seen as a hindrance in the selection of an IS so far as the system is capable of meeting stakeholders' expectations and demands. Though the idea to select the specific ECM system originated from the in-house technical team, management had to be interested and own the idea before the system was implemented. From the findings, the ECM system went through a seven stage process. During the planning stage of the implementation, factors such as

compatibility with existing systems, robustness, usefulness, user-friendliness and readily availability of support in terms of maintenance and customization were considered. Also, the system was implemented in a manner that conforms to institutional policies. As such, an on-premise data centre was opted for at the expense of the system's cloud services. The institution is keen in making sure that its sensitive contents are protected and prevented from unauthorized access in the system. As such, the findings revealed that the institution activated authentication and authorization mechanisms by assigning access control rights to specific users of the ECM system to ensure accountability, auditability and non-repudiation of activities.

Further, the findings also revealed that the usefulness and ease of use of the ECM system, vendor's timely systems support and staff interests and readiness for digital transformation influenced the effective interaction between the users and the ECM system. Though the ECM system helped the PSI to meet government directives and mitigate majority of the paper-based system problems, it did not make the institution a complete digital workplace as some contents were still managed manually. This is due to difficulty in the admissibility of electronic contents as evidence in the country's legal system. Also, network connectivity problem due to server failures is a constraint of the ECM system. The institution did not subscribe to the system's online and web-based cloud services due to data protection policy so when its data centre server is down, it leads to business discontinuity unless it relies on the manual approach. These findings contribute to the body of knowledge on the implementation and use of an ECM system in a PSI. The study is unique as it delved into the full implementation of the ECM system in a developing country's public sector perspective. This study provides an in-depth insight on ECM systems implementation in the viewpoint of a public sector institution. The study also looks at the concept of ECM systems in a digital transformation perspective.

CHAPTER ONE

INTRODUCTION

1.1 Research Background

In this present age of technology, the exponential growth of information has influenced institutions to create different types of contents, which comprise institutional records, paper-based records and other electronic documents. Irrespective of the fact that institutions rely heavily on the availability, accessibility and integrity of the content they create (Jaakonmäki, Simons, Müller, & vom Brocke, 2018), the upwelling in the amount of content to be created, managed and processed for decision making in these institutions has brought about a situation where the digital management and administration of content and workflow is needed (Simons, & Vom Brocke, 2014; Hinings, Gegenhuber, & Greenwood, 2018). As a prerequisite for operating in a cutting edge working environment to make an institution a digital workplace, there is the need for digital transformation technologies that would ensure that all institutional contents and daily routine business processes are electronically managed effectively and efficiently. One of the domain that studies these aforementioned subjects is known as Enterprise Content Management (ECM).

Enterprise Content Management can be described as an integrated approach to managing all of an institution's content and workflow including digitized paper documents, electronic data, reports, web pages and digital assets as well as all the strategies, tools, processes, and skills an institution needs to manage and process all its information assets (Hullavarad, O'Hare, & Roy, 2015; Laumer, Maier, & Weitzel, 2017). ECM systems are positioned as specialized and technical solutions for an institution's management of a wide range of content and business processes or workflows (Laumer *et al.*, 2017) to ensure a digital workplace. Content in ECM is

basically an institutional data or information. It consists of unstructured information such as videos, scanned images, word documents, PDFs or text matter of a document in any form that are stored and made accessible to the right people at the right time (Bakunzibake, Grönlund, & Klein, 2016; Jaakonmäki *et al.*, 2018). Content include the sum total of the reliability, readability, relevancy, and usefulness of the information presented, and the manner in which it is presented to intended users (Marutha & Ngulube, 2018). By eliminating dependence on paper documents and organizing unstructured information according to an institution's business need, organizations are empowered to work more efficiently with ECM systems. Institutional contents that ECM systems manage may include invoices from vendors, resumes from job applicants, contracts, correspondence and research reports (Hullavarad *et al.*, 2015; Bakunzibake *et al.*, 2016; Laumer *et al.*, 2017). These contents may be captured via using electronic forms, scanning paper documents to be filed in a digital repository, managing an "already digital" content, including Microsoft Office documents, PDFs, photos and video and automatically filing and categorizing documents from servers and other shared locations (Bakunzibake *et al.*, 2016; Laumer *et al.*, 2017).

Current ECM systems now come with process automation modules. These modules ensure that workflows and business processes are systematically managed and institutional content are communicated seamlessly to all stakeholders through the system (Escalona, 2015; Zhao *et al.*, 2015). A workflow consists of an orchestrated and repeatable pattern of activity, enabled by the systematic organization of resources into processes that transform materials, provide services and information (Lederer, Knapp, & Schott, 2017). Workflow management is therefore seen as managing the sequence of administrative processes through which a piece of work passes from initiation to completion. Aside managing content from creation to storage, ECM systems also act as workflow management systems. This is because they come with features and capabilities that ensure collaboration and coordination that help departments and workers to share and

communicate content among themselves and assisting them in the completion of complex business processes (Smith, Rahman, & Schmitt, 2013).

In a developing economy like Ghana, to enjoy the benefits of digitalization in the public sector, there has been awareness and enthusiasm for various e-government projects, including the implementation of information systems in the Passport Office and the Ghana Ports (Business Ghana, 2017). The expectation is that e-government and for that matter digital transformation will rise more quickly in Ghana as government institutions are gradually embracing technological innovation recently. ECM systems have been produced and used over the years in the advanced and industrialized world and is today easily institutionalized (Hullavarad *et al.*, 2015) for digital transformation. However, the effective and efficient implementation of ECM systems in developing countries' public sector institutions (PSIs) will depend on some critical factors ranging from stakeholders' demands, institutional practices, policies and IS tools to enable these institutions manage their content and business processes that conform to culture and institutional policies. This study therefore focuses on ECM implementation and use in a developing country's public sector perspective.

1.2 Research Problem

A number of studies have been conducted in the area of ECM (Hullavarad *et al.*, 2015; Bakunzibake *et al.*, 2016; Laumer *et al.*, 2017; Svärd, 2017; Marutha & Ngulube, 2018; Jaakonmäki *et al.*, 2018). Some of these studies focused on the adoption and implementation of ECM systems in various private sector institutions while others focused on implementation readiness, implementation challenges and lessons learnt in ECM implementation. Additionally, the critical success factors towards ECM implementation in the private sector as well as small and medium scale institutions have been established in previous studies. Though these studies

provide an indication that digital transformation in institutions can be achieved through the implementation and use of ECM system, they have been silent on how institutions implement ECM systems especially in the public sector. Additionally, an observation has been made that the discourse about ECM mainly occurs in practitioners' literature. According to Herbst *et al.*, (2014), whereas practitioners are already facing challenges towards the implementation and use of ECM systems in institutions, the implementation procedure from the viewpoint of institutions have still not been adequately provided by researchers. There is therefore the need for this research to understand the implementation procedure from the angle of a PSI.

Most of the studies on ECM concentrated in the private sector environment and previous studies on ECM system in the public sector environment concentrated on the records management module of the system. In the sub-Saharan African countries, the few institutions that have implemented ECM system focus mostly on its records management module (content) with little focus on the workflow and process automation module. Though Bakunzibake *et al.*, (2016) sought to find out how the critical success factors on ECM implementation relate to the situation in the Rwanda public sector, the study concentrated on the records management and document management aspect of the ECM system. This is also evident in a study by Katuu (2012) which sought to comprehend why ECM has been implemented in South Africa. Katuu's study showed that majority of institutions are using ECM applications but the common ECM application modules installed within the institutions were records management, document management and imaging modules. This study seeks to look at the ECM system in a digital transformation perspective by focusing on electronic workflow and process automation aspect of the ECM system.

In the context of developing countries, especially in the sub-Saharan African region, the concept of ECM systems has arguably not been fairly researched into. Though most of the studies on ECM systems were conducted in the advanced countries, majority were also concentrated in the private sector (Katuu, 2012; Laumer *et al.*, 2017; Svärd, 2017; Marutha & Ngulube, 2018). An IS implementation procedure and use in the public sector may differ from that of the private sector. This is because PSIs are controlled by the government, and as such guided by institutional policies and regulatory requirements. Factors such as the organizational culture, technology adoption, user perception and institutional policies in a developing country's perspective such as Ghana differs from that of the advanced world. There is therefore the need for more studies to probe into how a PSI from a developing country's viewpoint implement an ECM system and the consequences encountered.

The gaps in this research have therefore been identified as follows:

Issues gap: Though the above studies provide an indication that digital transformation in institutions can be achieved through the implementation and use of ECM system, studies have been silent on how PSIs implement ECM systems. Moreover, previous studies on ECM system in the public sector environment in developing countries concentrated on the records management module of the system. Few institutions that have implemented it focus mostly on its document management module (content) with little focus on the workflow and process automation module. This study focuses not only on document management but also the electronic workflow and process automation aspect of the ECM system.

Context gap: Majority of studies on ECM systems conducted in the advanced countries concentrated on the private sector. An IS implementation procedure in a developing country's public sector may differ from that of the private sector or the public sector in developed country.

This is because factors such as the organizational culture, technology adoption, user perception and institutional policies in a developing country's perspective such as Ghana may differ from that of the advanced world. This calls for more studies to probe into how and why a PSI from a developing country would implement an ECM system to manage its enterprise content and workflow and the consequences encountered.

1.3 Research Purpose

Following the established research problem, and the relevant research gaps identified in previous studies, this study seeks to understand ECM system implementation and use in a developing country's public sector institution.

1.4 Research Questions

Based on the research purpose indicated, this study will address the following research questions:

- i. Why would a public sector institution in a developing country opt for an ECM system?
- ii. How can a public sector institution in a developing country implement an ECM system?
- iii. What are the consequences of implementing an ECM system in a public sector institution?

1.5 Significance of the study

PSIs in developing economies are determined to keep pace with the rest of the world in terms of digital transformation to make their environment a smart digital workplace that ensures secured documents, effective information management and speedy decision making. This study is significant in three aspects and these are policy, research and practice.

Originally, this study is timely and will serve the purpose of informing policy makers on how a PSI in a developing country implements an ECM system and the consequences encountered.

Moreover, the study will also add up to form a foundation for future studies since there is arguably limited literature on the implementation procedure of an ECM system and its consequences in developing countries. This will aid future researchers who aim to explore this phenomenon.

Finally, in terms of practitioners, this study will inform them on how and why a PSI implements an ECM system in a developing country' perspective and the consequences encountered.

1.6 Chapter outline

In order to understand the why and how a PSI would implement an ECM systems, and the consequences thereafter in a developing economy's context, it is important to examine relevant literature on the digital transformation, ECM systems and paper-based system. Moreover, it is imperative to employ appropriate theoretical lens and methodological approach that can account for a better understanding of this phenomenon. Following the above introduction, the rest of the study is structured as follows:

Chapter two: This chapter offers the literature review for the study. Literature relevant to the study is reviewed in this chapter taking into consideration relevant concepts that form the basis of the digital transformation and ECM systems in institutions, their possible linkages and study propositions.

Chapter three: This chapter explores the research theory used for the study. The theory guides the research strategy and design, data collection methods and instrumentations which serves as a benchmark for the data analysis and discussions.

Chapter four: This chapter provides the research methodological approach highlighting the research strategy and paradigm used with justification. It also includes the discussion of sampling techniques and size indicating the data collection instrumentation, the method used as well as the data processing and analysis approach.

Chapter five: This chapter presents the context for the study by providing an overview of G-PSI (Pseudonym) as a case study. The chapter provides a detailed description of the data collected for the study.

Chapter six: This chapter presents the analysis of the data from chapter five. It also gives richer insights on the findings by providing interpretation of the findings and a theoretical lens is used to explore the respective themes that are applicable in the research.

Chapter seven: This chapter presents the discussion of the findings in relation to the relevant literature. The literature reviewed in chapter two was also discussed in relation to the findings from the study.

Chapter eight: This chapter presents a summary of the key findings based on the research questions as well as implications, suggestions and recommendations to research, practice and policy. Future research directions, limitations and conclusion are also discussed in this chapter.

CHAPTER TWO

LITERATURE REVIEW

2.1 Chapter Overview

The previous chapter gave a background into digitalisation and ECM systems. It also discussed the research problem leading to the development of the research purpose which is to understand ECM implementation in a developing country's PSI. This chapter therefore tends to discuss and review relevant literature pertaining to digital transformation and ECM systems so as to discover the knowledge in this field and identify various research gaps that justify the need for this study.

2.2 Digital Transformation Explained

The world has been dubbed as the information age and technology is playing a vital role in ensuring that institutions create innovative ways to manage their content and operations. In order to cope with the rate of technological change that the world is experiencing, business institutions use IS to digitally innovate and transform their day-to-day business operations (Bianco & Covino, 2018) and this has resulted in concepts such as digital transformation and digital innovation. Digital transformation has been researched into since the concept began appearing in the 1960's (Schwertner, 2017). According to I-Scoop (2017), digital transformation is "the profound transformation of business and organizational activities, processes, competencies and models to fully leverage the changes and opportunities of a mix of digital technologies and their accelerating impact in a strategic and prioritized way, with present and future shifts in mind". From a business institution's perspective, one of the key reasons for such transformation is to give businesses competitive edge for efficient and effective management of their contents, processes and performance (Hinings *et al.*, 2018).

Researchers sometimes use digital innovation and digital transformation to mean the same thing, but the two terms are not necessarily the same. While digital innovation is about the creation and putting into action appropriate technologies that digitally support aspects of an institution's operations (Demirkan, Spohrer, & Welser, 2016), digital transformation provides the combined effects of several digital innovations leading to a change in structures, practices, values, and beliefs that replace or complement existing operational procedures within institutions (Hinings *et al.*, 2018; Solis & Littleton, 2017). This is an indication that digital transformation is beyond digital innovation and involves a complete digitalization of processes and making a working environment a digital workplace. Regardless of the fact that the two concepts are predominantly used in a private business sector context (Markovitch & Willmott, 2014), they also impact institutions in the public sector which are involved in tackling societal and public challenges by leveraging one or more of existing and emerging technologies (Bharadwaj *et al.*, 2013). In Japan, for instance, digital transformation even aims to impact all aspects of life with the country's Society 5.0 initiative, which goes far beyond the limited Industry 4.0 vision in other countries (I-Scoop 2017).

Developing new digital transformation competence revolves around an institution's capacity to be more people-oriented, innovative, agile, streamlined, and efficient to be able to leverage opportunities to change the existing state of affairs and tap into new information-driven and service-driven prospects (Kane *et al.*, 2015; Fitzgerald *et al.*, 2013). In practice, optimizing institutions' digital visions and needs, operational flexibility and innovation are key drivers and goals of digital transformation, along with the appropriate information-powered ecosystems, leading to business model transformations and a new form of digital experiences (Sarker, Wu & Hossin, 2018; Plesner, Justesen, & Glerup, 2018). For institutions to achieve the full benefits that come with digital transformation, there is the need for them to implement and use the

requisite Information System (IS) that ensures an effective paperless environment through the digitization and digitalization of enterprise contents and processes.

Digitization is subset of Digitalization. Digitization is seen as the technical process of embedding digital artefact into technological objects (Pfeiffer and Jarke 2016). At a fundamental level, digitization can also be understood as the creation of a digital version of a physical artefact such as paper documents, microfilm images, photographs, sounds and the like (Abu-Shanab, Abu-Shehab & Khairallah, 2015). Simply put, digitization is a concept used to describe the process of changing a paper document into a digital format to be stored or used in an IS.

Digitalization goes beyond digitization. Yoo *et al.*, (2010) explains digitalization as “the transformation of socio-technical structures that were previously mediated by non-digital artefacts or relationships into ones that are mediated by digitized artefacts and relationships”.

They further explained that in business, digitalization is seen to be the automation of processes, including existing manual or paper-based processes through the digitization of contents from being paper-based into a digital content. In view of this, the digitalization of a business and the elements of its value chain leads to a digital business (Markovitch & Willmott, 2014). As a result, an institution is considered as digital when it is operating by performing business activities through the use of information, resources and digital technologies that produce innovative competence designed to meet new expectations of the digital world. (Abu-Shanab, *et al.*, 2015). In order to seize the opportunities that come along with digital technologies and stay competitive in the digital world, institutions have to fundamentally rethink through the way their businesses are carried out leading them to the creation of digital business models (Heavin & Power, 2018).

2.3 Benefits of Digital Transformation

Digital transformation is of tremendous significance to institutions as it offers a wide range of benefits, both direct and indirect, quantifiable and non-quantifiable. Relevant studies have identified three levels of digital transformation benefits to institutions, indicated as; strategic benefits, tactical benefits and operational benefits (Markovitch & Willmott, 2014 Bianco & Covino, 2018). For instance, digitalization provides timely information to technical staff, non-technical staff and management of an institutions to enable them make timely decisions (Heavin & Power, 2018). Through digital transformation, workflows are easily and timely created electronically and contents are readily shared among all relevant functional units within an institution eliminating delays and duplication, offering great transparency and reducing the occurrence of data inconsistencies (Heavin & Power, 2018).

Timonen & Vuori, (2018) noted that the intention of managers for investing in an IS to digitally transform their operations is for enhanced customer service, the need to work efficiently, streamline business processes and saving cost. Organizations consider digital transformation as important tool to help make their working environment a digital workplace and achieve the needed complete advantage. This is as a result of the continuously changing, highly competitive environment, rapid development of economic globalization to support key business processes (Lederer, Betz, Kurz, & Schmidt, 2017; Sousa & Rocha, 2019). Due to the enormous benefits that come with digital transformation, it has disseminated into various domains of business such as the maritime industry, banking industry, health sector, agricultural sector and the educational sector (Jangra & Dua, 2012; Abollado, Shehab, & Bamforth, 2017). Even in the public sector, digitalization plays a significant role. For Instance, a study by Bakunzibake *et al.*, (2016) shows how digitalization plays an important role in how well government institutions are able have access to a wide range of timely information for their decision making.

Digital transformation is no more just an emerging trend, but it is changing the business models of institutions in several ways ranging from the automation of complex business processes to how business is done electronically across functional departments (Bianco & Covino, 2018; Lederer, Betz, *et al.*, 2017). Accordingly, while using an Information Technology (IT) device to create just data and information have lost momentum over the last decade, global data flows have grown forty-five times larger since 2005 (Manyika *et al.*, 2016). In this regard, as the world economy is shifting from being industrial-based towards knowledge-based, the digital transformation of business operations is now generating more economic value than the traditional management of these processes. Digital transformation platforms like ECM systems are one of the key tools that give institutions the edge to digitally transform their business processes and workflows (Alalwan *et al.*, 2014). According to them, ECM systems change the nature of business operations from the traditional manner into a digitalized environment, minimizing unnecessary delay in business processes leading to an improvement in business performance and decision making.

2.4. Drivers of Digital Transformation

Obviously, adapting to changing demands of a digital information age calls for the need for institutions to implement digital transformation projects. In a globalized economy, the ability for PSIs to remain competitive requires the implementation of digital technologies to innovate and transform their business contents and processes. I-Scoop (2017) indicated that increasing efficiency and transparency and making the working environment a digital workplace are influencers of digital transformation implementation. To take advantage of an enabling smart environment and to bridge the digital divide, institutions in developing countries are implementing digital transformation and innovations projects to meet the changing demands

and needs of the information age and stakeholders (Demirkan *et al.*, 2016; Jaakonmäki *et al.*, 2018). Therefore, one of the drivers for digital transformation is the passion for institutions to meet the needs and demands that come with the innovative way of doing business. Again, due to the benefits of digital transformation, top management of institutions and governments of some countries are implementing digital platforms to transform their content and business processes (Bakunzibake *et al.*, 2016; Reis, Amorim, Melão, & Matos, 2018). In this regard, the decision to go paperless, innovate and automate processes and digitally transform an institutions' operations may come from top management and government. When an institution needs to fulfil a business need and demand, it drives the top management of such institution to implement digital technologies that ensures the transformation of its operations (Reis *et al.*, 2018).

2.5 Challenges of Digital Transformation

Despite the fact that the emergence of potent digital technologies, digital platforms and digital infrastructures has transformed business operations in significant ways (Nambisan, Wright, & Feldman, 2019), there are challenges associated with such transformation. One of the challenges is initial cost of implementing a digital transformation project (Majchrzak, 2016; Cho, 2018; Sousa & Rocha, 2019). Aside the benefits that digital transformation brings, it comes with the cost of implementing it. The cost of implementing digital technologies include cost of acquisition, cost of training, cost of data storage and cost of maintenance of the digital platforms used for the transformation (Cho, 2018; Heavin & Power, 2018; Pelletier, 2019). Therefore, when an institution does not have enough resources to acquire, secure and maintain the requisite digital technologies that ensure digital transformation, it becomes a challenge.

Further, the attitude of users of the digital technologies for digital transformation may also cause a challenge (Achatz, 2017; Heinze, Griffiths, Fenton, & Fletcher, 2018). The world is evolving so institutions need to position themselves in a manner that will enable them be in line with the change. As a result, there is the need for management and staff in institutions and the institutions as a whole to develop themselves for an organizational change (Heinze *et al.*, 2018). Making an administrative environment a digital workplace becomes problematic when users of the digital technology show a negative attitude towards using the digital technologies (Achatz, 2017). This negative attitude may be as a result of the specific system in place. According to Abollado *et al.*, (2017), when a digital technology has a complex user interface it may negatively influence users attitude towards using the digital technology and this fails digital transformation projects. Moreover, since digital transformation depends on networked digital technologies, they are supported by network servers (Lederer, *et al.*, 2017; Loonam, Eaves, Kumar, & Parry, 2018). A technical error in a server is likely to cause a downtime in using the system which might slow or halt business processes. Nevertheless, juxtaposed to an on-premise data centre, cloud services can help reduce the severity of network failures and can help ensure the flow of operations (Vithayathil, 2018; Varghese & Buyya, 2018). In view of this, network failure is a major challenge of digital transformation.

In a nutshell, lack of management sponsorship (cost), network issues and staff resistant to change are the main challenges facing digital transformation in institutions.

2.6 Digital Transformation in the Public Sector

Across the globe, government agencies are implementing digital technologies and innovative initiatives for a myriad of reasons. Some of these reasons include satisfying citizens' needs, improving business efficiency and cost savings (I-scoop, 2017; Sarker *et al.*, 2018).

Specifically, digital transformation and innovation may happen in PSIs and areas such as the ports and harbour, national healthcare, national airport and the like. Obviously, adapting to the changing demands of such institutions in a digital information age is not just driven by internal factors (Besson & Rowe, 2012; Lederer *et al.*, 2017) but is also driven by external factors (Janowski, 2015). In the public sector of developed countries, the ability to remain competitive requires an effective implementation of digital technologies and information excellence (Ciuriak, & Ptashkina, 2018). Similarly, PSIs in developing countries have seen the need for digital transformation and have positioned themselves for its implementation.

Regardless of the challenges that is accompanied by digital transformation and innovation (Heavin & Power, 2018), it has affected the public sector positively by increasing efficiency and transparency, improving, streamlining and aligning processes, transforming government transaction services, having better access to timely information and creating a data-driven government (Besson & Rowe, 2012, Janowski, 2015; Yu, 2017). This reveals why international organizations are calling on economies to embrace digital transformation in this age of information. For instance, organizations such as the European Union (EU) and the Organization for Economic Co-operation and Development (OECD) have made a call to member states with recommendations on implementing digital strategies to bring their governments closer to citizens, streamline processes, automating processes and safeguard government and institutional data (I-scoop, 2017; Sarker, *et al.*, 2018).

Digital transformation in Europe, North America, Asian economies appear to have generated a high level of progress. However, the rate of digitalization of contents and business process in the public sector is still relatively low in developing countries in sub-Saharan Africa (von Leipzig *et al.*, 2017; Chetty *et al.*, 2018; Srinivasan, Diepeveen & Karekwaivanane, 2019).

Though there is an indication of e-government implementation in Ghana to provide institutions and citizens with a more accurate and real time information (Mensah, 2016), the concept of digital transformation has still not been adequately researched into. This is because the concept has practically not been fully implemented in PSIs in the country, hence the reason for inadequate literature. To help bridge this gap, digital platforms such as online passport application, digitalized ports and harbour project and digital platforms have been implemented even though most of these platforms are not completely paperless (Mensah, 2016). But for a developing economy like Ghana, it is good for a start as the country is aiming for its institutions to digitally transform their operations. Moving forward, if the country wants its institutions to be digitally transformed, there is the need to acquire and implement digital technologies that have the capacity to make a working environment a digital workplace (Lederer *et al.*, 2017) and also train and sensitize staff in the new digital workplace. To achieve this, ECM systems are seen as one of the digital technologies that can serve this purpose.

2.7 Enterprise Content Management (ECM) Systems

With the rapid growth of unstructured corporate contents, institutions face increasing difficulties in managing their contents and business processes (Alalwan *et al.*, 2014; Grahlmann, *et al.*, Laumer *et al.*, 2017). An ECM system is therefore designed to help institutions with effective management of their contents and workflows digitally to achieve the benefits that come with digital transformation. With the implementation of the ECM system, an established process is created that allows electronic flow of the entire document-oriented business processes and workflows from the creation of documents and tasks through to the completion of tasks and archiving of documents (Hullavarad *et al.*, 2015; Svärd, 2017). Not only will this allow for tighter control of business standardized operating procedures, but it will also allow for individual performance accountability, and the opportunity to trace and track

tasks pending their next actions and completion (Alalwan *et al.*, 2014; Hullavarad *et al.*, 2015; Katuu, 2018)

Unlike first, where ECM systems were used interchangeably for Electronic Documents/Records Management Systems (EDMS) or (ERMS) due to their concentration in managing mainly contents (Grahlmann *et al.*, 2012), the situation is different now. Currently, ECM systems are seen as a final point in a digital transformation procedure, where different concepts, like EDMS and ERMS have become predecessor concepts accommodated in the evolutionary process (Jaakonmäki *et al.*, 2018). ECM systems have evolved and developed in the course of recent years, and are substantially more extensive in scope than its starting points. As a result, Grahlmann *et al.*, (2012) proposed a steadier and far reaching explanation of ECM systems. They explained that ECM comprises the strategies, processes, methods, systems, and technologies that are necessary for capturing, creating, managing, processing, storing, preserving, and managing contents and workflows within and between departments in organizations. Further, the definition points out that ECM systems are not limited to document management technologies only, but they also include a specification of the content lifecycle and workflow management. The concept of ECM has been identified as an important and complex subfield of Information Systems (IS) research, but there is still a lack of research on ECM within the field of IS (vom Brocke, *et al.*, 2011; Grahlmann, *et al.*, 2012).

ECM systems come with various models and functionalities that can make an administrative working environment a digital workplace (Jaakonmäki *et al.*, 2018). Depending on the ECM system, the modules may include document capture and imaging, records management, electronic workflow and process automation, web forms and others (Katu, 2018). The latest ECM systems ensure the management and optimization of contents and advanced business

processes. As a result, institutions are able to maintain control by ensuring efficient and effective flow of contents and workflows. Workflow and business process automation, a key component of an ECM system is a predefined set of rules that allow users to focus on their assigned tasks preventing them from chasing paper from office to office (Laumer *et al.*, 2017). As such ECM systems can easily be used as an extension of an institution's ERP, CRM or other core systems whose contents are link to the business transactional records so that documents and processes can be retrieved with just the click of the mouse.

2.7.1 Paper-based Content Challenges and Opportunities

Content can be institutional data or information which are either electronic or paper-based. It consists of unstructured information such as physical documents, videos, scanned images, word documents, PDFs or text matter of a document in any form that are stored and made accessible to the right people at the right time (Langner, 2018). Paper-based content is therefore any form of information that printed on a physical paper and used for decision making (Langner, 2018). Juxtaposed to digital content, working with paper-based content come with some challenges. Creating, capturing and storing documents digitally eliminates many of the obstacles created by paper-based content (Langner, 2018; Leyer & Hollmann, 2014). They explained that labour-intensive, duplication, slow distribution, document deterioration, misplaced originals, storage space problems and the inconvenience of retrieving files from offsite storage were some of the problems associated with paper based system of managing contents or documents (Leyer & Hollmann, 2014; Hwang *et al.*, 2013). These challenges affect the speed of getting information for decision making which in turn affect business continuity negatively (Hwang *et al.*, 2013). Inasmuch as there are problems with the paper-based system, it however comes with some positive effects. Business continuity is one of the advantages of having a paper based system (Leikums, 2012). According to Leikums (2012), when there is power outage or system failure,

the paper-based system ensures business continuity because documents and information needed to be retrieved for decision making are not dependent on any IT system. Hence system failures do not affect the creation, storage, retrieval and dissemination of information.

ECM systems are therefore implemented to enable institutions mitigate the problems associated with the paper based system and enjoy the benefits that come with digitalization (Alalwan, 2013). With the ECM system, institutions are able to manage their contents by capturing and importing information into a secure digital repository (Leyer & Hollmann, 2014). They further indicated that, apart from an ECM system being able to keep track of the movement of documents, it also reduces the time, cost, and complexity associated with managing documents throughout their life cycle, to ensure compliance with organizational record retention policies. Retrieving contents without hassle is yet another why institutions implement and use ECM systems. ECM software helps eliminate time spent searching for information, enabling employees to answer information requests immediately without delays (Bakunzibake *et al.*, 2016). The system empower employees have instant access to the information required to make better decisions which ensure organizational and operational efficiency (Laumer *et al.*, 2017).

2.7.2 Workflow Management in ECM Systems

One of the key component of an ECM system is workflow and process automation and this is important for digital transformation. Though an ECM system is not primarily a workflow system, it has capabilities that ensure collaboration and coordination (Alalwan, 2013). Workflow Management Systems (WMS) are software systems that help support collaboration and coordination among workers, assisting them in the completion of complex business processes (Smith, Rahman, & Schmitt, 2013). WMS support the operation of digital workflows, which describe business processes in a way that allows a certain degree of automation and focus

on automating processes or parts of a process (Lederer, Knapp, & Schott, 2017). WMS represent the business process as a sequence of activities, with tasks that can be either fully automated or assigned to employees, who might carry out the tasks supported by a computer (Abollado *et al.*, 2017). Sakowska, Thomas, Connor, and Roberts, (2017) indicated that a typical workflow system controls and tracks the progress of processes by pulling and supporting all the activities, and after completion of each task, it checks that it has been correctly performed.

Since the latest ECM systems have electronic workflow technologies embedded in them, it allows for efficient process automation and streamlined processes (Alalwan et al., 2014; Laumer *et al.*, 2017). As a result, the system is capable of allowing for the creation of key metrics, helping to measure and analyse the efficiency of the business processes (Deelman *et al.*, 2015; Mapleson, Drou, & Swarbreck, 2015; Sacks, Barak, Belaciano, Gurevich, & Pikas, 2013). Similar to a typical WMS, ECM systems are often integrated with other company tools and systems, such as e-mail, databases, ERP, and other communication tools to make to make workflow smooth and give structure to business processes (Sacks *et al.*, 2013; Mapleson *et al.*, 2015). ECM systems therefore have high level of flexibility, scalability, reliability and interoperability as it allows for integration with existing systems to enhance business process automation and improve a digital workflow.

2.8 Implementation of ECM Systems

Implementation in IS refers to all the activities that are involved in working towards the adoption, management and routinization of an information system (Kornkaew, 2012). This type of activities may be as a result of a fresh implementation or a modified one where an existing or a legacy system is being upgraded (Wyrwicka, Zasada & Mrugalska, 2017). ECM systems like any other IS system are implemented through policies, procedures and standards of an

institution and as such required different implementation strategy from different institutions (Laumer *et al.*, 2017). In the process of implementing an ECM system, Saffady (2017) indicated that there is the need to implement controls such as technical, physical and administrative controls. According to him, technical controls refers to the access control and data security control mechanisms while administrative control refers to the guideline and policies of the institution such storage privileges. This is to help towards the successful implementation and use of the ECM system. Specifically, the controls are necessary to prevent manipulation of data, unauthorized access and destruction by malicious programs (Saffady, 2017) to ensure integrity in a digital transformation environment.

As indicated by Kaur & Aggrawal, (2013), there are a number of recommended practices for implementing a successful IS in institutions. One of such critical success factor is obtaining management support (Katuu, 2012; Tokosi & Naicker, 2015; Abollado *et al.*, 2017). It is important that management support is visible and available not just for IS project approval but throughout the entire implementation process. While Abollado *et al.*, (2017) indicated that a complex users interface influence the use of a system negatively, having a top management support provides a justification for end users of the system to be committed in using an IS (Bakunzibake *et al.*, 2016). This is an indication that top management support as well as having a user friendly interface is key in the implementation of an ECM system.

Moreover, the benefits that technology will give to an institution is somehow dependent on the attitude and the willingness of staffs who are going use the technology (Sakowska *et al.*, 2017; Singh & Hess, 2017; Laumer *et al.*, 2017). When top management support an IS implementation project, it does not automatically mean the users of the digital technology also support the initiative (Effah & Abbeyquaye, 2013). As such, Achatz (2017) indicated that staff readiness is

key when implementing an IS to be used in an institution because in the digital environment, the staff act as the end users of the system. In effect, when the staff are not ready, the full benefits that the technology bring will not be actualized since the interaction between the technology and the end user is what brings the needed benefits that the technology provides (Pozzi, Pigni, & Vitari, 2014; Wang, Wang, & Tang, 2018). But in order for the end users to interact with the IS easily, Abollado *et al.*, (2017) and Ardolino *et al.*, (2017) revealed that the system should come with an easy to use interface that is capable of helping them perform their functions efficiently with very little or no technical support and problems. End users of an ECM system will therefore be ready to accept an ECM system implementation when the technology is easy to use and at the same time can help them in the performance of their tasks efficiently (Laumer *et al.*, 2017). Further, Yeh & Xing (2016) indicated that staff who are yet to have a feel of digital technologies find it difficult to accept new technologies in institutions due to lack of experience. On the contrary, others are of the view that such staff are motivated to accept digital transformation in their institutions due to the growth of digital transformation strategies in most institutions across the world as they are motivated and are willing to be trained to get the needed experience to use the digital technologies (Li, 2018; Sousa & Rocha 2019).

Moreover, institutions do not want to spend money to completely migrate from systems to systems so a key factor for implementing an ECM system is its compatibility with already existing IS systems and tools. The integration of existing information systems and an ECM system enhances digital transformation, an almost paperless workplace, adding flexibility, availability and integrity to a business process (Escalona, Domínguez-Mayo, García-García, Sánchez, & Ponce, 2015). Additionally, all stakeholders must be involved in all phases of the ECM system implementation from the onset throughout the entire process (Hullavarad *et al.*, 2015; Maican & Lixandriou, 2016). Stakeholders have to be aware that the ECM systems

implementation will fail without their commitment (Alalwan, 2013; Hullavarad *et al.*, 2015) and the aim to digitally transform their institution's content and workflow will not be achieved.

Conducting a digital transformation project is challenging, especially in institutions that are new to the digital world (Bonfante, 2016; Heavin & Power, 2018). There is a massive number of factors that influence IS implementation such as an ECM system, but a proper implementation plan that takes into consideration the organizational culture, standards and policies of an institution usually to produce a successful outcome (Ilvonen, Thalmann, Manhart, & Sillaber, 2018; Ndemo & Weiss, 2017). Institutions that are new to the digital age therefore need to seek a scalable solution, so as to start small, integrating their institutional policies and culture but then be capable of growing using the chosen technical solution (Escalona *et al.*, 2015; Maican & Lixandriou, 2016) which is an ECM system. In summary, for an ECM system to be implemented, these pre-determined benchmarks will aid in having a successful implementation provided the appropriate ECM software and vendor is selected.

Once an institution identifies and makes a decision for ECM systems implementation, priority should be given to those ECM solutions which have a positive impact on an institution (Alalwan, 2013; vom Brocke, *et al.*, 2013) to help the institution achieve its digital transformation agenda. ECM systems can be expensive, requiring a variety of resources to manage. As such, cost including the purchase price of the ECM application and IT tools, development and implementation, customisation of the system, and the training of end users should be considered in order to optimise the digital transformation process. Even though the usefulness of an ECM software influences its selection (Alalwan *et al.*, 2014; Laumer *et al.*, 2017), when the cost of acquiring the software is higher than an institution's financial strength,

it becomes a challenge to obtain the software and implement it (Haug, 2012). ECM software are therefore selected not only based on the cost but also the usefulness of the software.

Institutions also select IS taking into consideration the implementation plan of the software vendor and the ability of the software to be compatible and integrate with other systems. (Sakowska *et al.*, 2017). The implementation plan may include the all forms of laid down implementation procedure such as deployment, training, maintenance and support and the like. There ECM system selected should come with support to help institutions solve technical problems in a digital transformation environment. As noted by Effah and Abbeyquaye, (2013), an IS implementation plan should enable the in-house technical teams to seek for assistance with consultants or vendors so as to solve technical issues. In order to digitally transform an institution and make it a digital workplace, an ECM software should be selected only when it has the capacity to ensure a paperless environment. This means that an electronic workflow and process automation capabilities should be embedded in the software providing support in a workflow configurations (Deelman *et al.*, 2015; Smith *et al.*, 2013). There is therefore the need for an ECM system that supports these iterations in a simple and configurable way. Another concern is the ability of the software to integrate and collaborate with the existing IS tools in an institution (Escalona *et al.*, 2015). As such, when an ECM software is capable of integrating with the already existing IS tools, it has a high chance of being selected. Without proper integration of useful IS tools and the ECM system, it would be difficult to realise the full benefits of an ECM system and a digital workplace.

2.9 Benefits of Enterprise Content Management (ECM) Systems

The introduction of digital workflows in ECM systems is an opportunity to improve, automate and streamline underlying processes in business to realise several benefits. Automation of parts of a paperless business process helps in reducing the number of unnecessary steps within a workflow, thus improving the overall efficiency of the process and eliminating delays (Escalona, 2015; Zhao *et al.*, 2015). A properly implemented ECM system with a digital workflow does the same job as an employee, but faster and without or with little human errors, leading to lower operational costs (Mapleson *et al.*, 2015). Further, similar to any workflow management system, ECM systems with digital workflow solutions provide visual tracking of the workflow status since roles are assigned for each task (Máriás *et al.*, 2013) showing clearly which tasks are required, the employee responsible for its completion and when the task should be completed.

ECM system ultimately save institutions time and money, secure institutions' content and promote improved transparency (Haug, 2012; Jaakonmäki *et al.*, 2018; Laumer *et al.*, 2017). ECM system structures an institution's content by what they are instead of where they are. As such, instead of spending time searching for document, a search by keywords retrieves documents since documents from all sources are properly indexed in the ECM system (Laumer *et al.*, 2017). Moreover, ECM systems protect confidential documents from unauthorized access (Jaakonmäki *et al.*, 2018). The system uses access control mechanisms to allow users to have access to workflow and documents from a central storage location. This provides an audit trail of each activity in the system and every touch of a document provides information about the name, date and time and the action performed on the document to see who is doing what on each document (Alalwan *et al.*, 2014). In a nutshell, ECM systems provide efficiency by ensuring a seamless collaboration of documents and contents to work on processes and

workflows more efficiently. Consequently, employees from departments within an institution are able to work efficiently since collaboration occurs across functional departments. With an ECM system, institutions benefit from time and cost savings, secured documents, increased efficiency and productivity as well as improved collaboration among departments.

2.10 Challenges in Implementing ECM Systems

The benefits of ECM systems appear to be significant for large institutions. Just investing in an IS tool to digitally transform an institution's contents and processes will not solve problems related to the underlying institutional contents and processes if the underlying challenges are not mapped out and optimised prior to its implementation and post implementation (Shovlin, Ghen, Simpson, & Mehta, 2013 ; Heavin & Power, 2018). Similar to the findings of Heinze *et al.*, (2018), one of the challenges is end users' commitment and this happens due to staff willingness to accept technological change (Herbst *et al.*, 2014; Hullavarad *et al.*, 2015). In order to ensure success, it needs to be considered that a significant amount of time and resource is needed to educate the end users on the usefulness of a system and how to operate it (Sakowska *et al.*, 2017; Laumer *et al.*, 2017). The current ECM systems ensures digital transformation by ensuring process automation and in most cases, human factor issues are the main obstacle to the acceptance of such workflow applications (Abollado, *et al.*, 2017). Because employees may see electronic workflow as a way of reducing their decision-making power, as management has a greater visibility of the process (Mosweu, Bwalya, & Mutshewa, 2017), they are reluctant to use the system. Other employees might feel put off by being monitored and could feel that the system is invading their privacy. These issues need to be closely managed and balanced against the benefits ECM systems bring.

Cost and network issues is also a challenge in the implementation and use of an ECM system (Cho, 2018). Haug, (2012) indicated that cost play a vital role in the whole implementation process of an ECM system. Cost become a challenge when an institution do not have enough resources to effectively put in place the requisite tools, skills and human resource to successfully carry out a smooth ECM implementation (Hullavarad *et al.*, 2015). Also, the ECM system depends on networked servers and these servers can be an online cloud service or an on-premise data centre. Issues about network failure become a challenge especially when an institution implement an on-premise data centre (Jaakonmäki *et al.*, 2018). In effect, when there is a network or server failure leading to system downtime, it affects the use of the system causing delays in business processes.

In or order to successfully implement an ECM system, all stakeholders must play a critical role in setting up priorities and objectives (Haug, 2012; Hullavarad *et al.*, 2015; Demirkan *et al.*, 2016). They should get involved in the decision making process and be informed of every step in the implementation plan. Engaging the right stakeholders will help to attribute roles and responsibilities to different stakeholders, so that the implementation is successful with little or no conflict arising between the stakeholders and the system (Brocke, & Derungs, 2014; Bakunzibake *et al.*, 2016). Involving the right people from the beginning contributes to the development of a realistic ECM implementation scope and consistent implementation procedure that would ensure that the full benefits of the ECM system is achieved.

2.11 Studies on ECM Systems and Research gaps Identified

From the reviewed literature, it is evident that a number of studies have been conducted in the area of ECM systems (Katu, 2012; Alalwan *et al.*, 2014; Hullavarad *et al.*, 2015; Bakunzibake

et al., 2016; Laumer *et al.*, 2017; Jaakonmäki *et al.*, 2018). While some of these studies focused on ECM systems implementation readiness (Katu, 2012; Marutha & Ngulube, 2018), others also concentrated on challenges and lessons learnt in ECM systems implementation (Haug, 2012; Hullavarad *et al.*, 2015). Also in this regard, other studies have been conducted to identify and analyse the critical success factors towards ECM implementation in institutions (Alalwan, 2013; Bakunzibake *et al.*, 2016; Laumer *et al.*, 2017). They established that the success of ECM implementation is influenced by top management support, organisational readiness and the service quality of the ECM software. However, most of these studies focused on the private sector and the document and records management modules of ECM systems paying attention to factors that influences the system's adoption.

Moreover, a study of ECM implementation in South African aimed at assessing how ECM has been implemented in institutions (Katu, 2012). The study indicated that most private sector businesses in South Africa had implemented ECM systems. The findings also indicated that institutions have as much as eight years of ECM implementation experience with majority using the records and document management and imaging modules of the ECM applications. Also, Bakunzibake *et al.*, (2016) sought to find out how critical success factors on the implementation of ECM systems relate to the situation in the Rwanda public sector. However, the study concentrated on the records management and document management aspect of the ECM system. This is consistent with Katu's study which showed that majority of institutions are using ECM applications focused on records management, document management and imaging modules. Further, according to Alalwan and Weistroffer (2012), the discourse about ECM mainly occurs in practitioners' literature and is limited in the IS field. Whereas practitioners are already facing challenges towards the implementation and use of ECM systems in institutions,

understanding an ECM system implementation process from the viewpoint of institutions have still not been adequately provided by researchers in the IS field (Herbst *et al.*, 2014).

In the context of Ghana, a developing country from the sub-Saharan African region, the ECM discourse has arguably not been fairly researched into. Though these studies were conducted in the context of the sub-Saharan African region (Bakunzibake *et al.*, 2016; Horne & Hawamdeh, 2015; Katuu, 2012), they are arguably not adequate enough. It is therefore important to explore the phenomenon using available literature and findings to understand why and how a PSI implement an ECM system.

A number of theories, models and frameworks have been used extensively to study ECM systems implementation. Most of these theories are factor-based theories such as Dynamic Capabilities, Technology Acceptance Model (TAM), Technology, Organisational and Environmental (TOE) framework and Delone and McLean IS Success Model and the like. These theories have been used to study the adoption and implementation of ECM system and evaluating the performance of ECM systems in institutions (Alalwan, 2013; Herbst *et al.*, 2014; Horne & Hawamdeh, 2015; Laumer *et al.*, 2017; Bakunzibake *et al.*, 2016). These theories have gained much attention in IS research especially on ECM system adoption, development, implementation and use. Generally, factor-based theories treat the process part of an IS phenomenon as a black box and do not explain how and why the predictors and outcomes are related (Bartleby, 2014). Therefore, these theories and models offer partial understanding of the ECM system phenomenon by representing it with human-centred constructs. This study uses the affordance theory, which is an interpretive theory. The interpretive theory is useful when the research aims to gain deep insight into IS phenomena, including its development, implementation and use (Klein & Myers, 1999). The theory makes it possible to comprehend

the reasons that accounted for the choice of an ECM system. It also helps to gain more insight into the subjective interpretations of people associated with the phenomenon. Moving away from factor-based theories, this study uses the affordance theory, an interpretive theory, to explore the ECM phenomenon.

2.12 Chapter Summary

This chapter aimed at finding out the most explored issues in the field of digital transformation and ECM systems. The findings from the review suggested the need for more studies to be conducted away from the adoption of ECM systems in the private sector and in the developed countries. The review also suggested the need to move away from just the document management aspect of the ECM system, which makes up the bulk of the studies in this area, and focus on the ECM system in a digital transformation perspective. More so, indicated the need to understand ECM implementation procedure away from practitioners' viewpoint as this study contributes to literature in the field of IS. Based on the discussion of this literature review, this study identified and chose to understand why and how a PSI a developing country would implement an ECM system and the consequences encountered. The next chapter presents an overview of the affordance theory and how it applies to this study.

CHAPTER THREE

THEORETICAL FOUNDATION

3.1 Chapter Overview

The preceding chapter delved into relevant literature to identify gaps which this study is going to fill. This research is premised on the Affordance Theory, hence this chapter gives a brief history of the Affordance Theory; its basic tenets, the reason behind its application to find answers to the research questions of this study.

3.2 Empirical Grounding of the Affordance Theory

Theories and research frameworks provide the means by which concepts or variables are studied concerning a phenomenon to investigate the solution for a research problem (Boateng, 2018). Theories also enable researchers in terms of the methods to use in a quest to find answers to the main research questions of a study. As such, the Affordance Theory was selected as this informed the researcher's data collection and guided the analysis and discussions on how and why a PSI in a developing country implemented an ECM system and the consequences encountered.

3.3 Brief History and Overview of Affordance Theory

The theory of affordance as it has been used in some studies, (Volkoff & Strong, 2013; Seidel *et al.*, 2013; Schrock, 2015) was propounded by Gibson (1986) in ecological psychology. Gibson (1986) describe the theory as the interaction between an actor and the environment, which is defined by the surroundings of the actor itself. According to Gibson, actors are organisms perceiving and behaving in the environment. The conditions that enable this

interaction include both the properties of the actor and that of the environment (Gibson, 1986). Affordances are preconditions for an activity, but do not imply that the specific activity will occur. Gibson envisioned an affordance to mean an action possibility available in the environment to an actor. An affordance is independent to the actor's ability to perceive its possibility (Hartson, 2003). The first researcher to apply the original theory of affordance replaced the environment with technologies, known as IT artefacts (Hutchby, 2001). The functional and relational aspects of affordance were considered as possibilities for action and the potential of this approach for studying the complex relationship between technologies and the actors was acknowledged. IS literature has described affordances as possibilities for goal-oriented action, emerging from the relation between an IT artefact, considered in terms of IT features, and organizational systems (Zammuto *et al.*, 2007), afforded to actors by technical objects (Markus & Silver, 2008).

An increasing relevance and interest has been given to the theory of affordances in IS research (Seidel *et al.*, 2013; Volkoff & Strong, 2013; Yoo *et al.*, 2012). The affordance theory is used in IS because its application ensures new insights in explaining the consequences of IS use in institutions (Majchrzak & Markus, 2008) and the related institutional change (Volkoff & Strong, 2013). As affordances are just potentials for action, studies recognize that affordances need to be triggered or actualized (Strong *et al.*, 2014) by a goal-oriented actor to achieve an outcome. The tantamount usage of the terms actor, user, person, individual, and agent (Majchrzak & Markus, 2012; Markus & Silver, 2008; Zammuto *et al.*, 2007) is meant to point out the human decision to take advantage of an affordance. This shows there is an active role in relation to the IT artefact played by users of the technology. The choice for IT artefact should therefore be consistent with the development of the affordance theme, at the intersection of IS and technology (Savoli & Barki, 2013; Volkoff and Strong, 2013). IT artefact may comprise

numerous technical objects, their component parts, the interface through which the actor interacts with it, and the outputs of the IS (Leonardi, 2013; Strong *et al.*, 2014)

Based on the above discussion, it is clear in literature that the affordance theory is based on the concept of actors (users of IT), the artefact or object (IS itself) and the environment that the IS functions as they emerge from the entanglement between users and the technologies in use. In addition, neither the human or the technology is favoured above the other, hence when humans experience constraints from technology, they may change it, whereas a feeling of affordance triggers humans to change their routines to comprehend other features of the technology (Majchrzak & Markus, 2012).

3.4 Basic Concepts of Affordance Theory

Affordance exists as a relationship between an actor and an artefact. Affordance is relative to the action capabilities of the actor, and reflects possible actions on the artefact itself (Majchrzak & Markus, 2012; Volkoff & Strong, 2013; Zammuto *et al.*, 2007). Affordances are objective in that their existence do not depend on value meaning or interpretation, but also subjective in that an actor is needed as a frame of reference (Wang *et al.*, 2018). In this sense, Gibson's affordances introduced the idea of actor-environment mutuality, which makes the actor and the artefact an inseparable pair. Pozzi *et al.*, (2014) proposed a four steps based framework on the temporal-causal relationship between affordance existence, perception, actualization and effects. Firstly, they recognize affordance existence as a cognitive process, the product of the interaction between IT artefact and organization. Secondly, affordance needs to be perceived or recognized by the organization. Thirdly, affordance is actualized as organizations adopt a procedure to act on the perceived opportunities for action to produce effects.

3.4.1 The Cognitive and Recognition Process

The cognitive process of affordances existence indicates that affordances exist from the interaction between IT artefacts and an organization. Organizations need to perceive or recognize IT affordances and adopt the potentials for action which they perceive to actualize the affordances in support of institutional goals (Pozzi *et al.*, 2014). This behaviour will produce immediate concrete outcomes as a result of the interaction between an IT artefact and actors.

3.4.2 Affordance Perception

The perception of affordances is a process of recognition (Wang *et al.*, 2018) of the affordance existence, which is influenced by the information that actors perceive about affordances. The symbolic expression of objects, defined as “the communicative possibilities of a technical object for a specified user group” (Markus & Silver, 2008), is one of the information that actors perceive and to make sure whether the affordance exists or not. For instance, the interface of an interactive software provides “message from designers to users about how users must interact with the system in order to achieve a certain range of goals and experience” (Markus & Silver, 2008). This means that affordance perception is influenced by features of IT artefacts, which originate from intentions by designers, and by actors’ capabilities and goal. Based on different goals and needs, institutions can achieve multiple outcomes through the perception of the IS and the use of features of the IS

3.4.3 Affordance Actualization

More researchers have shown interest in affordance actualization process (Volkoff & Strong, 2013; Volkoff, 2016; Strong *et al.*, 2014). Strong *et al.*, (2014) explained actualization as “the actions taken by actors as they take advantage of one or more affordances through their use of technology to achieve immediate concrete outcomes in support of organizational goals” Volkoff

and Strong (2013) introduced IS affordances into the research perspective of generative mechanisms to understand the IT/IS-associated organizational change. They claim that affordances are actualized over time by organizational actors interacting with an IT object leading to various effects. Affordance actualization is therefore goal-oriented.

3.4.4 Affordance Effect

Through the process of affordance actualization, actors can achieve multiple effects. These effects are also called “immediate concrete outcome” (Bygstad, *et al.*, 2016; Strong *et al.*, 2014) in the short term. An immediate concrete outcome refers to the result that can help us support the primary goals of an institution. For example, if an organization wants to improve the efficient use of resources (the primary institutional goal), it will install IS like an Enterprise Resource Planning (ERP) in order to achieve this goal. Through the interaction between the actors and the IS, users of the ERP take actions to actualize the system’s affordances and achieve some immediate concrete outcomes such as coordination and collaboration which can lead to the efficient use of resources. In the example of implementing ERP, the IS affordances refer to the potential for standardization and coordination, and the immediate outcomes are standardized business process and coordinated work environment. The concrete outcomes connect IT/IS affordances with organizational goals and make the IS what it is (Strong *et al.*, 2014).

3.5 Principles of Affordance Theory

The theory of affordance is based on some principle that need to be identified and explained. First, affordance is a rational concept which does not exist on its own. Secondly, affordance is subjective, and thirdly, affordance can be an enabler or a constraint.

3.5.1 Affordance is a rational concept which does not exist on its own

Adaptations have been made to emphasize the specifications of the interlacing of object (IT artefact) and actor (user of the technology) (Pozzi *et al.*, 2014). According to Pozzi *et al.*, (2014), affordance does not exist on its own. This considers that affordance is derived relationally from the interaction of an IT artefact characterized by its features, and an actor (institution, group, department or individual) with expertise and goals. IT artefact may comprise numerous technical components, features and the interface through which the actor can interact with it (Markus & Silver, 2008). Despite all the features that an IT artefact may have, the affordance actualization depends on highly on the entanglement between the IT artefact (IS) and the actors (users of the system). Affordance therefore does not determine how people will use a technology, while at the same time the technology's potential uses are not fully open-ended due to its features and materiality (Wang *et al.*, 2018). Rather, affordance depends on how the actors interact with the features of the technology. Affordances are therefore possibilities of a goal-oriented action afforded to specific users of a system by an IS that come about as a result of the interaction between IS and users of the IS

3.5.2 Affordance is Subjective

While objective affordances address the potential possibilities of the IS that depend on the predicted and planned activity for users, subjective affordances are the unplanned affordances explored through users' creativity and skills (Wang *et al.*, 2018). Subjective affordances are formed together with users' creativity and skills to use an IS. Affordance is subjective when it is derived from an interaction between an individual's or group's subjective perception of IS and the objective qualities of the IS (Pozzi *et al.*, 2014). An IS can result in multiple action possibilities because users have interpretation in its use. In this regard, an IS becomes a platform that give meaning and structure through people's interpretations and people's behaviors

determined by the IS. Therefore, the existence of affordances is objective, it does not rely on the meaning and interpretation given by potential users whereas the users are subjective, perceiving and actualizing affordances according to their own goals to produce different effects.

3.5.3 Affordance can be an enabler or a constrain

According to some researchers, an affordance can be an enabler or constraint of an action and should include both the properties of enabling and constraining affordances (Leonardi, 2013 Volkoff & Strong, 2013). In the field of IS research, this makes sense because in the use of an IT artefact, there will certainly be enabling and constraining possibilities that act simultaneously. For example, an IS security technology can afford institutions security by providing the enabling affordance of confidentiality and integrity while at the same time providing constraining affordance of limiting availability. In effect, when affordances become a constraint, the institution or actors might not accept it because they produce undesirable effects. Again, when an institution chooses to implement an ERP system to unify its business processes, individual departments can be constrained in their ability to adapt to the business process when their existing systems cannot be integrated. This shows that the efficiency of individual departments will decrease to improve the efficiency of the entire organization. So it is necessary for institutions to implement IS in an enabled environment to correctly understand the enablers and constraints of affordances.

3.6 Application of Affordance Theory in IS

The studies that have adopted this theory have taken a variety of forms. For instance, Zammuto (2007) used affordance theory in his study and came out with a contribution that IT/IS has become a factor that cannot be ignored in organizational change. He indicated that IS affordances can affect the form and function of institutions and the evolving relationship

between IT and the institutions. Also, Strong, *et al.*, (2014) extended the theory of affordances to develop a mid-range theory for Electronic Health Records associated organizational change in a healthcare organization. In doing so, it offers a template for other mid-range affordance-actualization theories and a more general affordance actualization lens which considers the materiality of an IT artefact and the process by which IT leads to organizational change. Further, Dremel, Herterich, Wulf, and vom Brocke, (2018) used the theory to probe the actualization of four big data analytics (BDA) affordances at an automotive manufacturing company. They introduced a theoretical perspective to BDA research which describes how organizational actions contribute to actualizing BDA affordances. Finally, Pan, Sandeep, Hu, Lu, & Liu, (2018) used the theory of affordance to explore the perspective of manufacturing Enterprise Innovation Ecosystem based on describing two important transformation stages through the modes of technological innovation and internet innovation.

3.7 Application of Affordance Theory in this Study

Since this study intends to understand why and how a PSI in a developing country implement an ECM and the consequences encountered, the affordance theory will help to comprehend the affordance perception that led the PSI to implement an ECM system. Based on the goals and needs of the PSI, the institution can choose an implementation procedure or approach for the affordances to be actualized to achieve multiple outcomes through the use of features of the ECM system by actors. Affordances can be actualized over time by the institutional actors interacting with the ECM system leading to various effects. Therefore, the theory of affordances in this interpretive study will help in understanding the why and how a PSI in a developing country implements an ECM system and the consequences encountered.

3.6 Chapter Summary

This chapter discussed the affordance theory as the analytical lens for this study. It began by giving a brief history and overview of the affordance theory and further discussed the basic tenets and principles of the theory. The chapter ended by discussing the application of the affordance theory in IS as well as the application of the theory in this study. The next chapter discusses the method used to collect data that answers the research questions of this study.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Chapter Overview

This chapter focuses on the methodology used in conducting this study. It starts by outlining the paradigm used for this study and then goes on to choose the interpretive paradigm and justifies why it is suitable for this study. Furthermore, the research methodology, research method, case selection and the field work of this study are also outlined. In addition, the chapter provides the methods of data collection and analysis used.

4.2 Research Paradigms in Information Systems

Paradigms are “integrated set of assumptions, beliefs, models of doing research and techniques for gathering and analysing data” (Neuman & Robson, 2004). Research paradigms direct the researchers in identifying and clarifying their beliefs in terms of reality, methodology, knowledge and ethics (Mertens, 2010). Ontology, Epistemology and Methodology constitute the main perspectives of a paradigm. The ontological viewpoint focuses on the objectivity or subjectivity of reality and its features (Creswell, 2013). The epistemological perspective explains the nature of knowledge and how it can be applied to define whether it is objective or subjective (Ritchie *et al.*, 2013). The methodological perspective deals with the methods and tools used in data collection, analysis and making conclusions when conducting a study. This next sub-section gives an overview of the three main paradigms that exist in the field of IS research, as classified by Orlikowski and Baroudi (1991).

4.2.1 The Positivist Paradigm

The positivistic researchers' aim is to explain and ultimately enable the prediction and control of a phenomena by conducting a study in a deductive manner to reveal causal relationships that form the foundation of generalization (Dubé & Paré, 2003). The ontological perspective of positivism says that reality exists and is objective due to some form of a general cause-and-effect principle. This implies that there is an objective truth of the reality that researchers can accurately measure and use statistics to test, irrespective of the researcher, and the phenomenon being researched, (Neuman & Robson, 2004). In terms of epistemology of the positivist, knowledge can be replicated, as such, when different researchers at different times conduct different studies, the same results will be documented (Sahay & Robey, 1996). It also maintains that researchers play passive neutral roles in the phenomenon of interest, so as not to influence the validity of the findings of a study (Orlikowski & Baroudi, 1991; Sahay & Robey, 1996). Usually, the use of laboratory experiments, field experiments and surveys is adopted by positivists in a study. They collect large data which is statistically analysed to validate or falsify research questions and hypotheses to identify underlying regularities, (Weber, 2004).

4.2.2 The Critical Realism Paradigm

According to this paradigm, researchers identify oppositions, inconsistencies and conflicts that exist in societies and institutions as a result of structural problems, so that the causes of these variations can be accounted for and possibly eliminated (Orlikowski & Baroudi, 1991; Wynn Jr & Williams, 2012). Research conducted from the critical realist view is used to develop in-depth explanations and descriptions of the outcomes of specific social phenomena by taking into account factors which may have played a causal role in their occurrence (Wynn Jr & Williams, 2012). This paradigm allows researchers to conduct studies and propose theories and frameworks and effect changes in the phenomena under study. Ontologically, the critical

paradigm recognizes the existence of an independent reality and assumes that social reality is constituted and constructed by people. However, despite the deliberate effort to change their social and economic conditions, they are usually limited by social, cultural and political powers (Wynn Jr & Williams, 2012). Epistemologically, the paradigm postulates that knowledge is grounded in social and historical practices, thus a whole phenomenon cannot be studied in isolation of its society and setting within which it operates, because of the potentials of influences of historical, economic, social and political conditions on the phenomenon (Orlikowski & Baroudi, 2001). Critical researchers in this area tend to adopt long-term historical studies, and ethnographic studies of institutional processes and structures (Orlikowski & Baroudi, 2001). This offers researchers new opportunities to investigate complex organizational phenomena in a holistic manner by providing a comprehensive causal explanations of the phenomena (Wynn Jr & Williams, 2012).

4.2.3 The Interpretive Paradigm

This Interpretive paradigm advances that truth about a phenomenon depends on the environment in which the phenomenon is being observed. Researchers in this field try to comprehend the way other researchers interpret, view and understand events, partially because they assume that these events influence the behaviours of individuals (Kaplan & Duchon, 1988). Ontologically, the interpretive paradigm embraces multiple realities and explains to the social world from the viewpoint of organizational actors that are directly involved in the construction of reality (Creswell, 2012; Goldkuhl, 2012). The paradigm supports that the researcher cannot be separated from a phenomenon since it involves the researcher's subjective understanding of the phenomenon. The perception people have about the real world is dependent on their experiences so the real world cannot be disconnected from the observer. Epistemologically, the interpretive paradigm postulates that knowledge of reality is based on social construction by

human factors. As such, people allocate meanings and values to their distinctive context to explore a phenomena of interest in its natural settings, without imposing any previous understanding on it (Kroeze, 2011; Orlikowski & Baroudi, 1991). Interpretivists intends to work with the subjective meanings that already exists in the social world in order to reconstruct them, understand them, avoiding distorting them, and use them as a building block for theorizing (Goldkuhl, 2012). The interpretations of realities in interpretive study are likely to shift when its constituents and circumstances change as a result of the transformation, transfer and usage of the meanings. Interpretivists employ qualitative methods in finding answers to their research questions making the use of case studies, ethnographic studies and phenomenology as its preferred research methods (Weber, 2004).

4.3 Choice of interpretive Paradigm

Interpretive research is useful when the research aims to gain deep insight into IS phenomena, including its development and implementation (Klein & Myers, 1999). Since this study aims to understand why and how a PSI in a developing country implements an ECM system and the consequences encountered, employing an interpretive research helps to gain more insight into the subjective interpretations of people associated with this phenomenon. Interpretive research requires the understanding of how practices and meanings are formed in order to understand social reality, making it possible to comprehend the reasons that accounted for the choice of an ECM system.

4.4 Research Methodology

Research methodology is an indispensable tool in research. This is because it empowers a researcher to analytically solve the research questions that have been defined in phenomenon

(Boateng, 2018). Robson (2011) explains methodology as “the theoretical, political and philosophical backgrounds to social research and their implications for research practice and the use of particular research methods.” There are three types of research methodologies that are used in contemporary research namely, quantitative, qualitative and the mixed-method approach (Creswell, 2013).

4.4.1 Quantitative Research Methodology

The quantitative approach is a highly structured research methodology that is used for testing objective theories by examining how variables of a phenomenon relate (Creswell, 2013). In order to ensure reliability, generalizability and replication of research findings, quantitative researchers strictly follow, throughout the research, the deductive procedures of the methodology (Chen, 2011). It is characterized by positivism, objectivity, scientific methods and experiments and data is collected in the form of numbers using predetermined instruments (Creswell, 2013). Quantitative research collects data with the use of questionnaires and mainly focusses on deducing, confirming, testing of hypothesis and theories by explaining, predicting and analysing statistics. With this approach, researchers employ experiments and surveys, and do not bring their own personal interests and values into the research (Chen, 2011).

4.4.2 Qualitative Research Methodology

Qualitative research is employed to find answers to research questions without the use of any statistical procedures (Corbin & Strauss, 2008). In this regard, the qualitative approach is suitable for exploring and understanding the meanings that individuals or groups give to a phenomenon. This will help to obtain details such as thoughts, feelings and emotions that partakers of a research attribute to a phenomenon which otherwise may be difficult to obtain by the other research approaches (Corbin & Strauss, 2008; Creswell, 2013). The researcher

conducts his research in a natural setting and collects textual data through interviews, observation, and document analysis using strategies of inquiry such as grounded theory, ethnography action research and case study (Creswell, 2012). Qualitative research is subjective, and this implies that the findings of a study is influenced by the interpretations of the researcher. The major features of qualitative approach include exploration, discovery, induction and theory generation, with the researcher being the primary tool for data collection and the analysis.

4.4.3 Mixed Method

According to Johnson and Onwuegbuzie (2004), mixed method research is a class of research where the researcher employs the combination of qualitative and quantitative research strategies, approaches, techniques and methods into a single study. They explained that it helps researchers to gain a deep understanding of a phenomenon since the strengths of both the qualitative and quantitative approaches are employed so as to override their weaknesses. This approach is targeted at obtaining findings that are more trustworthy (Cronholm & Hjalmarsson, 2011) and provide an acknowledgement that the combination of qualitative and quantitative approaches provides a more holistic understanding of a phenomenon than either of the two. The inquiry assumption behind this mixed method approach is based on the fact that collecting both numeric and textual data best provides an understanding to the research problem (Creswell, 2013).

4.5 Choice of Qualitative Research Methodology

As indicated already, the choice of a research methodology is guided by the paradigm adopted for this study and since qualitative strategies emphasize on the subjective meanings, perceptions, norms and beliefs that people associate with a phenomenon to find answers to research questions (Creswell, 2013), it is appropriate to use it in the study. Since this study

seeks to use the theory of affordance as a theoretical lens to understand ECM implementation and use in a developing country's PSI, the qualitative approach is helpful as it provides an interpretive in-depth understanding of the social groups that exist within the case institution.

4.6 Research Method

Research methods refer to “the techniques used to acquire and analyse data to create knowledge” (Petty, Thomson & Stew, 2012). Since this study is based on a qualitative approach, it is only natural for the study to adopt a qualitative research design. The basic research designs in qualitative research include grounded theory, ethnography, phenomenology and case study.

Phenomenology is a method used to uncover and understand “the constructs that people use in everyday life to make sense of their world” (Ritchie *et al.*, 2013). It is based on the assumption that there is an essence to shared experience and therefore seeks to understand the phenomenon of a life. The approach focuses on understanding the distinctive lived experience of individuals by exploring the meaning of a phenomenon (Petty *et al.*, 2012). The experiences of the individuals are studied to comprehend the thoughts of how people live their lives (Ritchie, *et al.*, 2003).

Ethnography seeks to understand the social world of people being investigated by allowing the researcher to live with them in their community in order to produce a comprehensive description of the people, their culture and beliefs (Ritchie *et al.*, 2013). Participant observation, unstructured interviews and document analysis are usually used to collect data in ethnographic research.

Grounded theory provides the researcher with the opportunity to theorize from evidence that exists in data. A grounded theory suggests that the data collection and analysis stages of a study should be conducted simultaneously as it is useful for developing context-based, process oriented explanations of a phenomena (Myers & Avison, 2002).

A case study is used to study complex phenomena within their context using a diversity of data collected from different sources to irradiate the case (Baxter & Jack, 2008). The case study allows the researcher to study socio-cultural phenomena, capture reality in a more detailed manner to understand people and the context in which they operate (Ritchie *et al.*, 2013). A Case study is mostly helpful in gaining holistic, contextualized and comprehensive understanding where a full account of the phenomenon under study can be achieved. Case study is an appropriate method when the research tries to find answers to ‘why’ and ‘how’ questions that the researcher has little control over (Yin, 1994).

This study employed the use of the interpretive qualitative case study. This is on the basis that the study seeks to achieve an in-depth understanding on why and how a PSI implements an ECM system and the consequences encountered. Additionally, this research method helps the researcher to be directly involved with the data collection and analysis of the research, making it possible to present the researcher’s own interpretation as well as participants’ opinions and perspectives (Andrade, 2009). A case study from an interpretive paradigm perspective may be a single case or multiple cases within a single study. Multiple cases are used when the researcher seeks to understand more than one bounded system to find the uniqueness of each bounded system. On the contrary, this study employed a holistic single case study approach because the study sought to understand a unique case.

4.7 Fieldwork and Case Selection

The fieldworks concerning this study were conducted in Ghana. The selection of case and gathering of data occurred within the period of November 2018 to March 2019. A Public Sector Institution (G-PSI) in Ghana was selected purposively because the G-PSI (Pseudonym) is the only PSI that has fully implemented and used an ECM system. The researcher then decided to select the G-PSI based on extensive and comprehensive implementation and usage of the ECM system by the institution. The researcher's lead supervisor was then consulted to discuss the selection decision. Further, the researcher through the help of the in-house technical team of G-PSI got access to the vendors and implementers of the ECM system, G-Consult (Pseudonym). The G-PSI and G-Consult were both consulted to gain a holistic understanding of the phenomenon.

Signed formal letters from the researcher's department in the University of Ghana introducing him as a student researcher were sent to the office of the Chief Director and the HR department of the case institution to enable him gain access to the needed data to answer the research questions of the study. The researcher was then contacted via an official email and this guided the researcher to place a follow up call. The researcher physically met with the HR department to schedule dates and times for the data gathering. The snowballing sampling method was employed so as to enable the first known respondents to direct the researcher to get access to the other people who could give information related to the study. The next section provides the data collection methods used by the researcher.

4.8 Data Collection Method

Data collection helps the researcher to find answers to the research questions in order to establish the purpose of the study. Participants of the data gathering included individuals with

diverse roles within G-PSI and G-Consult. Data can either originate from a primary or secondary source (Creswell, 2013) and this research employed both sources of data. Data was collected from these sources through observations, interviews and data from documents.

4.8.1 Interviews and Discussions

The qualitative stance of the study makes it relevant to employ an in-depth semi structured interview and this was to get in-depth insights about the phenomenon being researched. Stakeholders who were actively involved in the implementation and use; from the decision to the buying of the ECM system, the requirements gathering, the installation and training processes were interviewed to better understand how the ECM was implemented and used. The interview with these stakeholders were done using an interview guide which guided the researcher in conducting the interviews. Generally, questions were asked on the decision for ECM system, ECM system planning, requirements analysis, training, testing and maintenance of the ECM system. Questions were also asked on the consequences of using the ECM system. As earlier stated, the stakeholders from G-PSI (the case institution) and the ECM system implementer (G-consultant) were interviewed respectively to ensure the authenticity of the data in order to gain a richer understanding of the phenomenon. Notes were also made to give the researcher direction on the follow-up questions for the respondents.

Table 4.1 gives a numerical summary of respondents who took part in the interview.

Table 4.1: Summary of Interviews Conducted

G-PSI	Number of Interviewees
MIS Department	4
Top Level Management	2
Administrator	1
Human Resource Department	2
Account and Finance Department	2
Registry Document Management Unit	2
Engineering Services Department	1
Thermal & Hydro Generation Department	1
Technical Services Department	1
Audit Department	1
General Services Department	1
Procurement Department	1
Corporate Risk Management Department	1
<i>Sub-total</i>	<i>20</i>
G-Consult	Number of Interviewees
Software Implementers	3
<i>Sub-total</i>	<i>3</i>
Total Interviewees	23

A total number of twenty-three (23) staff were interviewed for the study, consisting of 20 from G-PSI and 3 from G-Consult. These included the heads of the various departments, units and branches, the top management who made the final decision to implement an ECM system, administrators and various staff of the institution who used the system at different level based

on their needs as well as the vendor who implemented the system. The researcher sought participants' consent and recorded the interviews which lasted between thirty (30) and sixty (60) minutes. Because the interviews were recorded, the interviewees were assured of the confidentiality and security of the tape recordings by protecting it from unauthorized access. The interviews were then transcribed simultaneously with the data analysis. Moreover, during the data collection process, the researcher had a discussion with some staff and notes were made to enable the researcher provide an accurate report on every information that was discovered during the data collection process.

4.8.2 Documentation and Physical Artefacts

The institution previously used a manual systems and standalone systems. The institution is currently using an ERP in some departments before the implementation of the ECM system. Data was collected to trace all attempts made by the institution to transform their content and operations electronically. This enabled the researcher to obtain evidence of the former and current systems, the consequences involved and their role in the institution's digital transformation journey.

4.9 Data Analysis

The data collection and analysis were done simultaneously (Myers, 2013). The data analysis was inductively done to develop themes. The inductive feature of the analysis enabled the researcher to identify the themes from the data gathered through interviews, observation and documents. These themes were developed using the theory of affordance as the theoretical lens. The interviews were recorded thoroughly and carefully read by the researcher to get an in-depth insight to develop the themes in relation to the affordance theory.

4.10 Ethical Considerations

Researchers need to protect their study respondents, gain their trust, promote the integrity of the study and guard against misconduct when conducting research. This study complied with various ethical codes and conducts so as to move away from the unacceptable ways. In view of this, the case institution was duly informed about the original intent of the study. The confidentiality, anonymity and the right for respondents to withdraw from taking part in this study were considered. Throughout the study, ethical considerations were kept in mind at every stage of the study. All academic works used in the study have been dully acknowledged to prevent plagiarism. Finally, the researcher strictly adhered to the University of Ghana code of conduct governing research work.

4.11 Chapter Summary

This chapter discussed the methodology used for this study. The chapter started by discussing the research paradigms in IS and moved on to explain why the interpretive research paradigm and the case study research design was the ideal choice for this study. The chapter further went on to discuss the criteria used for selecting the case for this study. Finally, the data collection methods and how the data was analysed in this study were also discussed. The next chapter presents the case description of this study based on the research questions.

CHAPTER FIVE

CASE DESCRIPTION

5.1 Chapter Overview

The previous chapter presented the interpretive research paradigm, justified why it is applicable in this study and also justified the application of a single case study as the research strategy employed. The chapter ended by stating the data collection methods used in the study. Moving forward, this chapter begins by giving an overview and history of the case institution, its mission, functions and functional departments. The chapter also provides a description of the IS used by some key departments before the ECM was implemented. It therefore presents a comprehensive explanation of why and how the institution implemented the ECM system.

5.2 Case Study Organization

The case institution, G-PSI, is one of Ghana's public sector institution. It was established in 1961 with the mandate to generate, transmit and distribute electricity in a reliable, safe and environmentally friendly manner to raise the living standard of the people of Ghana and West Africa. In order to strategically carry out its mandate effectively, the G-PSI has four major branches of which the functional departments are grouped. These include the Office of the Chief Executive (with two deputies; one from the Finance branch and the other from Engineering and Operations branch), the Engineering and Operations, the Services and the Finance branches.

The office of the Chief Executive is serves as the highest office superseding all other departments and units. It has a Corporate Communications Unit, Board Secretariat and an Audit Department. The core function of the Chief Executive is to design and build appropriate, sustained communication strategies for both internal and external stakeholders with the required

mechanism to create institutional advantage and strengthens reputation by collaborating and providing long term strategy for the case institution using an interactive information platform. The office is also responsible for providing legal and administrative support for effective running of the institution as well as providing financial audits, IS security, management audits, monitoring and investigations.

The Engineering and Operations Branch comprises the Hydro and Thermal Generation, Engineering Services, Environment & Sustainable Development and Technical Services departments. The core responsibilities of this branch is to generate and provide a reliable cost effective hydro and thermal power, to enforce sound and sustainable environmental management practices in the institution by providing knowledge sharing and constant learning while preserving and recording appropriate information.

The Finance Branch consist of the Procurement, Finance, MIS, and Planning & Power Business departments. The branch sets out to coordinate the development of procurement policies and guidelines, facilitates procurement processes and undertake competitive sourcing and effective inventory management. The branch also accurately coordinate, direct all financial transactions and report the financial position of the institution, its departments and business activities to all stakeholders. Again, MIS department at the finance branch provide customer-focused ICT services

Finally, the Legal Services, Corporate Risk Management, General Services, G-PSI Academy and Human Resource Departments form the Service Branch of the institution. The function of the Legal Services Department is to provide legal advice and services to the institution and its subsidiaries and manages insurance portfolio. The Corporate Risk Management department

exist to study the corporate policy and strategy to identify and assess potential risk that may hinder the institution's reputation by managing processes and procedures of potential risks to achieve corporate objectives. The Academy exist to provide quality training in Engineering and leadership development and equip the workforce competency gaps. The General Services department provide services in air-conditioning, fleet management and maintenance as well as air ticketing and bookings. Lastly, the HR department provide quality human resource services to attract, develop, motivate and retained workforces with a supportive work environment.

5.3 Information Systems and Technologies Used

Before the implementation of the ECM system, the institution had previously used ISs, of which some of them were standalone systems that were being upgraded from time to time before 2012. Additionally, the packages in the Microsoft Office Suite such as word, excel and access were and is still is one of the main tools used for operations. However, based on the constraints of the standalone systems, in 2012, the institution went in for an Oracle Electronic Business Suite (EBS) with the account and payroll module, HR module and procurement & requisition management module activated. The decision to secure an Oracle EBS was to provide efficiency and security when conducting the institution's day to day activities in the finance, procurement and HR departments. A technical staff from the MIS department indicated that:

the institution needed to get a more robust IS which ensures efficiency because there were some limitations in the old standalone systems.

The limited security, interactivity and efficiency of the standalone made the management of the institution to opt for the Oracle EBS. Though the institution opted to face out their standalone systems and implement a real-time IS to provide efficiency, interactivity and security for a better institutional performance and efficiency, the system was limited to just a few departments

which did not make the entire institution a digital workplace. An administrator in the institution noted that:

even with the Oracle EBS system in place, we still had lots printed papers and still dealt with papers; the Oracle EBS was used mainly in the Finance and HR departments so there were still lots of paper work in other departments.

In terms of communicating information, the staff used the institutional mail to send information and documents across. The Oracle EBS ensured the creation of electronic data and collaboration between the three departments but documents that needs official approval needed to be printed out. Even though the modules of the Oracle EBS were integrated, it did not provide a nearly paperless environment. However, it was comprehensively used to manage the overall activities of the HR, the account and the procurement and requisition departments electronically.

5.3.1 The Era Before Oracle E-Business Suite

The manual and standalone systems that were used for administrative work presented many challenges to the users, staff, managers and top management and the entire institution. Operating manually brought about delays, and regular cases of misplaced and missing files as well as storage space problems.

With regard to the standalone systems, the account and payroll application for instance was no longer robust and could not fit the requirements of the institution's regulators which is the Controller and Accountant General's Department and the Ghana Audit Service. These regulatory institutions require the case institution to keep all financial data safe and secured and make them available in real time for accountability and probity purposes. Due to increased volume of information over the years, the standalone systems had difficulty in managing and

securing the data and could no longer manage it effectively. In an interaction with one accounting staff from the finance branch, he indicated that:

with the previous standalone system, it took a whole lot of time to work with it; it had little modern accounting software features. This made it is very problematic use it.

According to the technical unit of the MIS department, the standalone software was not robust and the institution needed a robust system to work with to ensure efficiency, effectiveness as well as security. The institution needed to make available real time report of the financial and other administrative reports to the Audit Service and Controller and Accountant General's Department (CAGD) periodically for coordination and control of the institution's finance. In order to achieve this, there was the need to get a system that would meet the requirements of these regulators. The accounting and payroll application was however, unable to meet these specifications since it was a standalone system operating separately and therefore lacked coordination and collaboration. One of the key stakeholders explained that:

the institution wanted to align with the requirements of some key regulatory institutions so we had to get a standardized robust software that would enable us meet their demand.

Moreover, the management of the accounting processes and procedure, payments and receivables was manual and aided with the use of Microsoft Excel since its inception till 2009. The management of accounts of the departments, hospital, guest houses, schools etc. and all the various units of the case institution were all either manual or supported by the Microsoft Excel. With time, the institution's manual system and use of Microsoft Excel even became more tedious because of the complex and increased activities carried out. A staff noted that:

as the amount of information to be managed increased, it resulted in duplication of documents which brought lack of storage space.

Another issue has to do with flexibility and collaboration. Before the Oracle EBS was introduced, there was difficulty in terms of collaboration, communicating and sending of data electronically from one department to another. The Database Administrator indicated that:

staff data needed to be sent from the Human Resource department and be processed by payroll, then finally sent to the account section. Since the system available was not collaborative, it took time to process an activity. The institution needed a system that would ensure that account is prepared in a timely manner and the whole process becomes efficient.

Collectively, it was observed that the first accounting software used could not meet the specifications of the regulatory institution that they are accountable to. Again, there was some limitations in the previous accounting system in terms of interconnectivity, communication and performance of some key accounting tasks. Hence, the challenges illustrated triggered the institution to acquire a more robust system, the Oracle EBS.

The case institution, just like any other PSI has employees who play a vital role in the institution as indicated by the staff. According to the HR manager, the institution collected, stored, retrieved and performed updates manually and these were done using hard copies of employee files kept in folders. These folders of records were arranged, described and store on shelves and in cabinets, at offices hosting semi-current records. Initially, the records generated was less and there was enough physical storage space so it was easy to manage the basic functions of the human resource department and store their data manually. However, when the number of records and information increased over the years, the manual process of managing employees'

data became a challenge. This is because the number of data to be managed had increased and it was difficult to manually search, retrieve and update personnel data. In, an interview conducted with one of the HR staff, she indicated that:

it was becoming hectic to search and retrieve files of employees to update an employee's data; for instance, requesting for a leave. It was taking a lot of time to retrieve such file and go ahead to work on a request from an employee.

Even though the staff files were arranged in some predefined order, the security of the records was a concern to the HR department. A staff of the HR department noted that:

when it comes to security, the HR files were not adequately secured; confidentiality is key when it comes to managing data but inasmuch as we tried to control who got access to what file, it posed a security problem since we were using only paper records and it could be accessed by unauthorized staff'.

During a discussion with a staff from the MIS department, she explicitly explained that data is a vital commodity in this age of information. As such, she noted that data should be managed effectively in terms of security and privacy to ensure that the confidentiality, integrity and availability of data are established. She added that they needed a system that would secure documents from its creation to its storage of and dissemination. In view of this, it called for the need to secure an Oracle EBS. In a discussion with an HR staff, it was indicated that:

The HR department needed a system that will allow electronic data entry so that we can create, edit, update, delete and generate report digitally for decision making while having a backup on-site plan.

Apart from the HR and accounting departments, documents indicate that all the other departments performed their functions manually before 2012. For instance, a staff explained

that, in the requisition unit, once a need was identified, a formal request is initiated, typically using a purchase or requisition form. The purchase or requisition request is then validated by the initiator's immediate supervisor and the procurement and requisition management unit control the process to prevent potential frauds and irregularities. He indicated that the paper work revolving a simple requisition created some delays. Sometimes, there are cases of misplaced files and this also bring about delays in the whole process. The staff noted that:

Requests were manually received from other departments which contained the time and the date the requests were made; it became difficult to retrieve items as the number of records kept growing coupled with the limited storage space.

The Oracle EBS was therefore the best system to help improve the activities of the requisition department. A staff noted that:

The implementation of the Oracle EBS was the first software to help in the institution's requisition activities and we are happy to be using it. It eliminates delays.

5.3.2 Oracle E-Business Suite Era

As indicated above, the first module of the Oracle EBS was implemented to replace the already existing standalone legacy software and the manual system so as adhere regulatory standards and mitigate some challenges in the manual system. Similar to other ERP products, documents indicate that this system contains a number of product modules which the institution implemented in the various departments. Specific modules selected to suit their business processes were each licensed separately. The implementation of the Oracle EBS started with the Oracle HRMS. The HR department was therefore the first department to experience the Oracle EBS and it served as a pilot study in 2012 towards the full activation in 2013. Later in

2014, the Finance and the Procurement departments were signed up to the other modules. One of the users noted that:

this institution has been working with the Oracle HRMS for some time now since January 2012 but in November 2013, the HRMS went into full activation. Starting from January 2014, the two other phases and modules came into being.

As at now, the case institution is using three modules of the Oracle EBS. These modules are Oracle Procurement and Requisition Management, Oracle Financials (for accounting and payroll) and Oracle Human Resource Management System. The Financial application include Cash Management, General Ledger, Account Payables, Account Receivables, Fixed Assets, Treasury, Property Management and Financial Analyser. The HRMS application helps the institution to manage their recruitment-to-retirement process. The application gives users a real-time view of all HR activities, including recruiting, time management, training, compensation, benefits, and payroll. The HRMS module supplies the institution with an analytics package that allows the extraction of HR data with ease. According to a staff from the procurement and requisition department, the module has reduced paperwork and has helped the institution streamline its purchasing processes. Because the three modules are integrated and collaborated, the business processes within the three departments are efficient. In an interview with one of the MIS staff, he also added that:

the Finance, HR and Procurement and Requisition departments controls the resources of the institution; that is why this institution focused on these three main modules of the Oracle EBS. Ever since the full activation was done, there has been proper coordination and collaboration between these departments.

One of the purposes for this software implementation was to provide an electronic facility for the departments in the case institution to communicate and interact with information. A staff from the HR department noted that:

the HR module allows us to collaborate and send staff information to the Accounting and Payroll module in the finance branch. This saves time because we do not physically have send the information.

In terms of meeting regulatory requirements, another staff indicated that:

with the Oracle EBS, the institution is able to send accurate real time reports to the regulators in a timely manner.

The IT team explained that the Oracle EBS is an internet-enabled software that can be managed from a single site. The feature made it possible for the institution to operate a single data centre with a single database that contains contents from all modules of the application so the institution moved away from the oracle's cloud services. The decision to reject the cloud service was due to the data protection policy of the institution. A staff from the MIS indicated that:

the institution is keen on the privacy and confidentiality of its data so we built a data centre that stores all the information generated by the system.

Though the modules of the Oracle EBS are integrated, the system did not make the institution a complete digital workplace. However, the Oracle EBS was comprehensively used to manage the overall activities of the HR, the account and the procurement and requisition departments electronically. The other departments and units still operated manually and still experienced the challenges of the manual system. There was therefore the need for a system that would reduce the challenges of the manual system and also allows for collaboration in all the departments.

5.4 The Era of Enterprise Content Management (ECM) System

The institution's decision to implement the ECM system was triggered by several reasons. According to the head of MIS department, in February 2017, a final decision was made by management to implement an ECM system known as Laserfiche. This decision was based on recommendations the in-house technical team spearheaded by the top management managers of the various departments in the institution. According to the Chief Director, government had given directives for its key institutions to be digitally transformed and this institution was part. The decision to implement the ECM was taken to fulfil the directive, demands and expectations of government to digitally transform its institutions. In an interview with a member of the top management, he noted that one of government plans is to make its key institutions a digital workplace so the ECM system was selected because it had the possibility to digitally transform the institution into a nearly paperless workplace. He noted that:

the plan of government is to make its institutions paperless; this is a key government institution so government definitely influenced the decision for digital transformation; but as to the specific system to use, it came from the institution.

He added that the institution had its demands and needs that the ECM system was also expected to cater for. First, the institution wanted to transform into a digital workplace to enjoy the benefits of digital transformation. Secondly, the institution needed a system that can minimize the problems associated with the paper-based or manual system. The Chief Director noted that:

though we wanted our institution to be a digital workplace, we also needed the digital technology in place to mitigate the problems of duplication, slow retrieval, regular cases of misplaced files, inadequate storage facility, insecure documents and ineffective monitoring.

The MIS director explained that the idea to select the Laserfiche ECM system originated from the technical team based on requirement specifications. However, they had to communicate it to top management for them to accept and own the idea so as to inform the government about the type of system to implement for institution's digital transformation. One of the technical team noted that:

we evaluated a lot of systems and selected one that can help in digital transformation but then the idea had to be owned by top management before it became a reality.

For a successful digital transformation project, one IT staff indicated that there was the need for collaboration and integration of all the systems used in the institution. He explained that once the staff and management were ready for a digital transformation project, obtaining a system that would ensure an effective integration and seamless collaboration was of priority. He indicated that:

our expectation was to get a system that would be compatible with the Oracle EBS so as to ensure seamless collaboration and reduce the number of paper records drastically.

The management, staff and the entire institution needed to benefit from digital transformation as explained the administrator. The institution for instance, wanted a system can would not only ensure document management but also ensure records management and at the same time enhancing the security of institutional contents and workflow across all departments and units. One of the executive secretary also explained that her responsibility is to make timely information available to the Office of the Chief Director so she wanted a system that would

make her responsibility efficient by reducing the retrieval response time. Management also explained they needed a system that would help them in the supervisory and monitoring roles and obtain timely information for speedy decision making. The ECM system was therefore expected to fulfil all these expectations, needs and demands. A staff indicated that:

to ensure digital transformation, the institution needed a system that can secure contents and collaborate with the other systems to make electronic workflow, searching and retrieval easy and prevent documents from being exposed to unauthorized persons in the institution.

The technical team together with top management had two seminars with the software implementers and other private institutions' technical team to get a comprehensive understanding of the system before the selection and implementation began. Based on some recommendations, together with evaluations from the technical team, the institution was able to know the benefits and features of the ECM system and were able to evaluate the outcomes of implementing and using the ECM system. One of the MIS staff indicated that:

we attended a digital transformation conference where some key members of various institutions were present. There were Laserfiche representatives from Canada, Hong Kong and the United Kingdom. Representatives from the institutions using Laserfiche gave comprehensive reports on the ECM system. Since some private institutions had implemented the system, they served as a reference point to seek for more information about the system.

It was revealed that since the top management were ready for digital transformation, it was not too difficult for management to be convinced in acquiring the ECM software. The technical team explained that the implementation decision was fast and quick because the CEO believes in digital transformation and innovations. They indicated that:

since the Chief Director wants to monitor every activity and tasks to be performed from all departments in the institution, he was and is the number one influencer and beneficiary of the Laserfiche software implementation.

In this respect, it was noted that the case institution made a final decision to buy the Laserfiche ECM software because of influence from the internal and external stakeholders which include government, top management, in-house technical team and staff of the institution. In an interview with one of the technical team members from the MIS department, he elaborated that there was a ten-member implementation team which consisted of six technical people from the software vendors and four technical people from the case institution. This implementation team were tasked to ensure that the whole digital transformation process is carried out successfully.

5.4.1 ECM Software Selection and Implementation

Laserfiche ECM software is proprietary software for content management, workflow management, business process automation, and productivity-boosting data analytics. It is a privately owned software developed in the United States that creates and manages enterprise contents, business process automation, workflow, records management, document imaging and web form software. Documents reveal that the software license is renewable periodically based on the End User License Agreement (EULA). Laserfiche ECM solutions digitally transform enterprises by making organizations digitally smarter, more collaborative, more efficient and more effective. Laserfiche sells its software through value-added resellers distributed throughout the world. In Ghana, G-Consult is the vendor that sells and implement Laserfiche ECM software on behalf of its parent company in the United States. Since the implementation team comprised of people from both G-Consult and G-PSI, collaboration was done in terms of customization, conforming to policies and other technical aspects that requires the system to

work perfectly to suit the case institution's needs. According to the deputy MIS Director, the institution needed a system that could transform the institution into an efficient digital workplace. He explained that one of the specifications they wanted the ECM system to have was to integrate and interconnect with the Oracle EBS used in the institution. Also they wanted a system that users will find easy to use and operate with little training. In addition, the technical team noted that the institution needed a system that is robust and can help meet management and staff demands to monitor and help employees in the efficient performance of their task. The team added that another unique feature of the system taken into consideration was the readily availability of support in terms of customization, updates, upgrades and maintenance by the software vendor or implementer. One of the members noted that:

we needed a flexible system that could help in easy customization, updates and maintenance.

Further, in a discussion with some of the staff of the Executive Registry, they explained that their responsibility is to receive, store and make available information and documents to the Office of the Chief Executive. As such, they needed a system that has an electronic archival facility to help them easily retrieve documents in order to meet the demands of the Office of the Chief Executive. One senior staff from the registry noted that:

our job is to provide and receive information to and from the Chief Executive Office so they can make informed decisions for the institution; sometimes, they urgently need a document to use but retrieving it may take time. When we heard the new system to be implemented had an electronic archive facility to make retrieval easy, we were very excited.

The Laserfiche ECM system was selected based on the concerns from government, senior management, department heads, in-house technical team and staff of the institution; hence the software had to meet the aforementioned concerns for its selection and implementation.

According to the vendors of the Laserfiche ECM system, the team explained that the system has compatibility capacity to run on a network platform that interconnects with the modules of the Oracle EBS. As indicated above, the institution has been working with three main modules at three different departments and so far, usage has been successful. The vendors stated that the ECM software provides an integration with the account module which include the general ledger & cash management and payroll, the Human Resource (HR) and the Procurement and Requisition modules. This is to prevent the Oracle EBS from working in a separate environment away from the ECM system. The MIS department head stated that:

the Laserfiche ECM software is a network-based system and it interconnects with all the modules of our Oracle EBS used in the departments. Outstation departments and units of the institution can use the system through the institution's network since the application is a web based application.

The vendors explained that they first implemented the document imaging and records management modules of the Laserfiche ECM system in the Engineering, Finance, HR, Procurement & Requisition and the Information & Document Management departments of the institution. This was to serve as a pilot study to see the implementation readiness of the institution. It was also to test the system in to see its operational abilities in the case institution. According to the MIS team, various types of testing were conducted during the piloting stage. This included usability testing, load testing, recovery testing, functional testing and hardware testing. One member indicated that:

we had to implement the system in phases so that we can conduct some tests to see the institution's readiness and the system's operational abilities.

The implementation process from the decision to implement the software continued after the institution have acquired the ECM system. According to the MIS technical team, it was explained that they prepared their servers and data centre as well as all the technological infrastructure required to carry the project. Five weeks was therefore used for the installation, implementation and testing of the ECM system in the five departments. During the implementation period, the MIS technical team were trained by the Laserfiche ECM system vendors on the effective use of the system. The parallel and incremental methods were the implementation approach used for the digital transformation since the system was not yet fully implemented in the institution. Sensitive information and workflows were therefore managed and controlled both electronically and manually. The five departments were choosing because these departments have the most workflows and access to information within the institution. At the same time, they prepared the requisite technological platforms to integrate the ECM system with the Oracle EBS and test for its compatibility. A staff from the MIS department noted that:

it was ideal to use these departments for the pilot study since they have the capacity to give a clear picture of what to expect when the ECM system is implemented fully across all departments.

These departments used both the manual system and new systems for close to seven months to ensure that everything about the system works perfectly well before they extended the implementation to the rest of the departments in the institution. Based on the functionality and reliability of the system, after close to seven months, the institution made a decision for the system to be fully implemented in all departments, units and branches. As such, the

implementers had to widen the system's scope and usage by installing and creating the remaining departmental accounts in the systems. A member from the G-Consult indicated that:

the Laserfiche system is flexible so when the institution was ready for the full implementation, we did not have any difficulties. Expansion and integration was successfully done.

In both implementation processes, the institution opted for an on-premise data centre to store their information as explained by a technical member. This was in conformity with the institution and government policies on data protection. One of the staff noted that:

as an institution, we have sensitive documents and since we do not know where and how our data will be store in the cloud, we decided to store data on our own on-premise servers.

Additionally, to enhance documents and systems security, the implementers noted that authentication and authorization techniques were used. They explained that accounts were created for every user of the system. Users are required to have user IDs and passwords to grant them access to the system. Also, the implementers together with the in-house technical team agreed on implementing role-based access control mechanism to control which user have access to what workflow, resource or information in the system. The MIS head noted that:

the system has been designed such that only authorized users have access to the system through authentication means; and also the system gives access rights to users in the system. You can be a user but it's not every resource you can access.

Again, in both implementation processes, users of the system were trained on how to use the ECM system effectively. The Laserfiche software vendors explained that based on the results of the training, the users were ready to use the ECM system as they saw and experienced the

system as easier to use and to work with. According to the ECM software vendors, the technical team of the MIS department assisted them in training the users for the three weeks on the respective sections of the implementation. A member from the technical team noted that:

together with the vendors, when we did the pilot study, users were trained; and when the full implementation was done, the new users were also trained. The training took us three weeks in each case.

Although the ECM software was not developed by the vendors in Ghana, the team made sure they followed the required software development lifecycle (SDLC) in its installation, customization and setup. The vendor support team explained that:

though the technical team was not directly involved in the customization, installation and setup of the system, they supported to implement the system that conforms to institutional policies. The entire project was planned and all the necessary systems requirements were properly analysed.

During the installation and testing of the system, according to the vendors, one of the initial challenges encountered were network issues and this made the process a bit slow. In a discussion with one of the staff from the MIS department, he stated that:

sometimes, there are network issues and this slows down the system; when the system goes down, the users become idle as they would have to wait for the network to respond.

5.4.2 ECM Software Use and Maintenance

According to the users, there are some benefits that come with the implementation of the ECM system despite some pitfalls that accompanied the initial implementation. The users explained

that one of the main reasons for the use of the software was to enhance the efficiency of managing content and workflow to boost performance. An Engineering Services staff noted that:

the ECM system has made work easier and faster. I no longer spend too time trying to perform a task; I always have notifications informing me on tasks I need to perform and I do it right on my desktop with any paper work.

Based on the documented EULA agreement, customization of the software was an advantage since it allowed the institution to implement the software in a way that responds to the key demands of the institution. In an interview with one of the staff, she noted that:

since we have been working with the Oracle EBS, training and using the ECM system became easy for us because we have had digital innovation experience with the Oracle EBS system already.

Another user added that:

before the introduction of this ECM system, we had been communicating electronically via the institutional emailing system. Even though workflow was not automated, we used the emailing system to communicate and collaborate. This made it a little bit easier for us to accept the new ECM system.

The ECM system is updated periodically and the security features ensure that the security of the institution's contents and workflow is safeguarded. The technical team explained that since the ECM software was developed by a third party company and not in-house, when they experienced some challenges, they first try solving it themselves if the issue is minor and is in their control. But when the situation is beyond their control, as it has happened a few times, they consult the vendors of the system who act on behalf of the developers to rectify such

errors. Another challenge is that sometimes a few staff make a few mistakes that sometimes affect the efficiency the system is supposed to provide. This is attributed to the fact that some staff from other departments were still working using the manual approach even after the introduction of the Oracle EBS and the initial implementation of the ECM system. Inasmuch as these users have been trained on how to use the ECM system, a few users have still not got used to the system in its entirety. The MIS director explained that:

since the manual system has been used by other departments for long, for quite some time, changing to this digital transformation environment has been a little challenging for some staff that are now practically experiencing digitalization for the first time in the institution.

When it comes to maintenance of the software, the technical team explained that when the issue is minor, as it is most of the time, they usually attend to the users' needs, but they sometimes bring on board the vendors technical team to respond to some major issues either electronically, online or they come physically. This is because of the EULA agreement signed between the two parties and the nature of the system as explained by the vendors. One of the staff from the MIS department indicated that:

support and maintenance of the ECM system has been great so far; we solve minor issues that comes out when using the system. Vendor support has also been great. Any time we call the head of solutions from the G-Consult to solve some major issues, he punctually comes with his team to rectify the situation.

5.4.3 Benefits of the ECM System in the Institution.

The institution's Oracle EBS had an integration with the Laserfiche ECM system to ensure a seamless collaboration. The Laserfiche ECM software was introduced to meet government

directive for digitalisation and to make the institution a digital workplace. The system was also introduced because of the challenges that emerged from the document security, information storage and retrieval causing delays in the decision making as stated by the users. In order to help solve this issue, each module of the Oracle EBS was connected to the ECM system to enable easy workflow, communication and dissemination of information without having to print documents from the Oracle EBS and digitize them into the ECM system. The MIS manager noted that:

these features of the ECM system allow for digital transformation and at the same time secure all our data that comes out from all the business transactions processed with the system.

As explained by the Database Administrator, the ECM system ensures that data is created by capturing it electronically or scanning it from paper into softcopy, workflow is carried out electronically and data is stored and updated with ease by users regardless of the department. A staff from the Information and Document unit explained that, with the ECM system, the institution has transform most of its workflows digitally and the need for paper work which consequently result in lack of storage space for the records is gradually been eliminated despite the fact that institution have decided to manually store certain vital documents like land titles, contract documents and huge receipts. According to the Deputy Chief Director:

law courts in Ghana have challenges accepting digital evidence so the institution by policy manually keep such vital documents for litigation purposes.

The Laserfiche ECM system has a log interface that give authorized users the opportunity to access the system as indicated a technical team member. Each user of the system in the institution is given log in credentials and assigned rights in order to access the system and its

resources. The purpose for this according to one staff from the Finance department is to make sure everyone using the system is held accountable for his or her actions. So it was observed that, before a file is created or a business process initiated electronically, users ought to log in with their credentials and any modifications made on a file can be traced.

After logging in, it was observed that the ECM system gives users the chance to digitize contents, organize documents and automate daily business processes. In an interview with a manager from the Technical Services department, he noted that:

when we need to undertake a project in our department, unlike first, now, all we need to do is to either scan an already existing document or we use the system to create a new one and send the document to the respective departments and consequently to the CEO for approval. This is very fast and efficient.

Another staff from the Registry indicated that:

when our external partners bring correspondence that do not need to be returned, we digitize it and send it to the respective departments for consideration. Even when you brought your data collection letter from your University, it needed to be approved by the HR and the office of the CEO so we digitized it and sent it to these department using the system. It was easy and fast.

It was also observed that tasks are initiated and assigned to staffs in an electronic workflow in the ECM system. Previously, documents to be approved had to be sent physically to offices for signature and approval but now the ECM system ensures that this same task is performed via the system as explained by the head of General Service's department. According to management of the institution, the system has brought about a reduction in paper and printing cost. The Deputy Chief Director noted that:

documents do not need to be printed in order to be signed; the system has an electronic signature and a stamp that allows managers to approve a document digitally.

But in ensuring that staff desist from printing from the system, sensitization is always given to them to allow for a paperless system. The head of MIS department noted that:

after we have agreed as an institution to implement a certain system, we create the awareness, we train and sensitize people towards the use of the system. When this system came into being, we decided to give the staff an electronic view of their leave request approval letter. This was to reduce paper and toner costs.

According to the HR manager, authorized staff can create and initiate workflows using the system and this carries the task and assign it to authorized users to work on the task. She added that the ECM system has made work so easy since she can sit in her office to perform tasks on the desktop without any difficulty due to systems integration. She indicated that due to the system's user friendly nature, it is easy to perform every task in the system without the need for any advanced technical skills. She indicated that:

I do not have to print a file from the Oracle EBS to perform my basic task which sometimes delay my schedules for other activities. Look at this workflow, newly recruits need to be oriented in a manner that will make them sociable in the organisation; these staff will be in the Engineering department so the Directors of the Engineering, Finance and the Chief Director need to know and approve it. The process was initiated here; it has to go to all these directors, and a feedback needs to be sent here. My daily activities have been streamlined with this system.

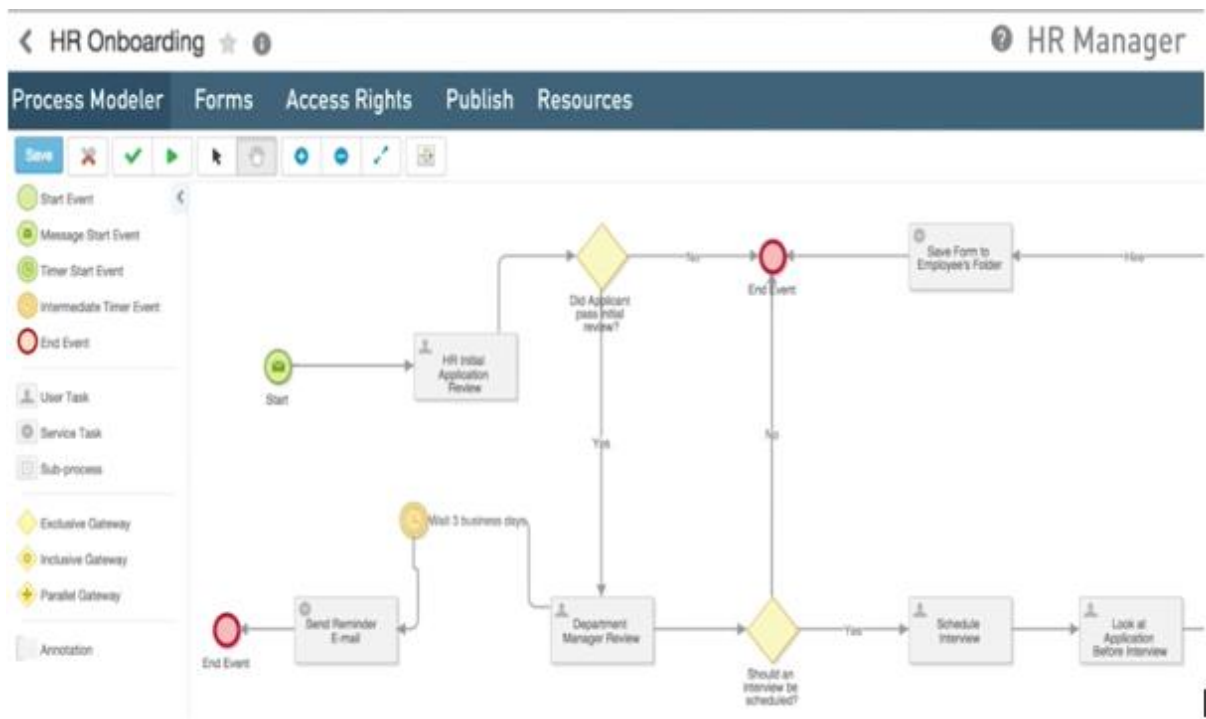
Figure 5.1: The HR Workflow Interface of the ECM System

Figure 5.1 shows an electronic workflow of an activity in the HR department. According to the HR manager, the ECM system is enabling automation in almost all the stages of on-boarding and training as well as updating and working on staff records such as reviewing staff leave requests. With the ECM system, the HR manager indicated that she can create one view for all new hire documents and tasks which makes retrieval easy. The system also help route hiring decisions to the HR department to enable the on-boarding process as explained by the HR.

According to the HR manager, the Laserfiche ECM has really streamline her personnel responsibilities; it has eliminated the paper processes for most of her personnel actions. It has hosted web forms on the institution's intranet sites that are created for employees to submit travel and various types of leave requests. She noted that:

the Oracle EBS automatically tracks when employees' eligibility for work benefits is due and when the HR department wants to get the information across,

reminder emails are schedule for employees and distributed using the ECM system.

Figure 5.2: The Digital Form Creation Interface of the ECM System

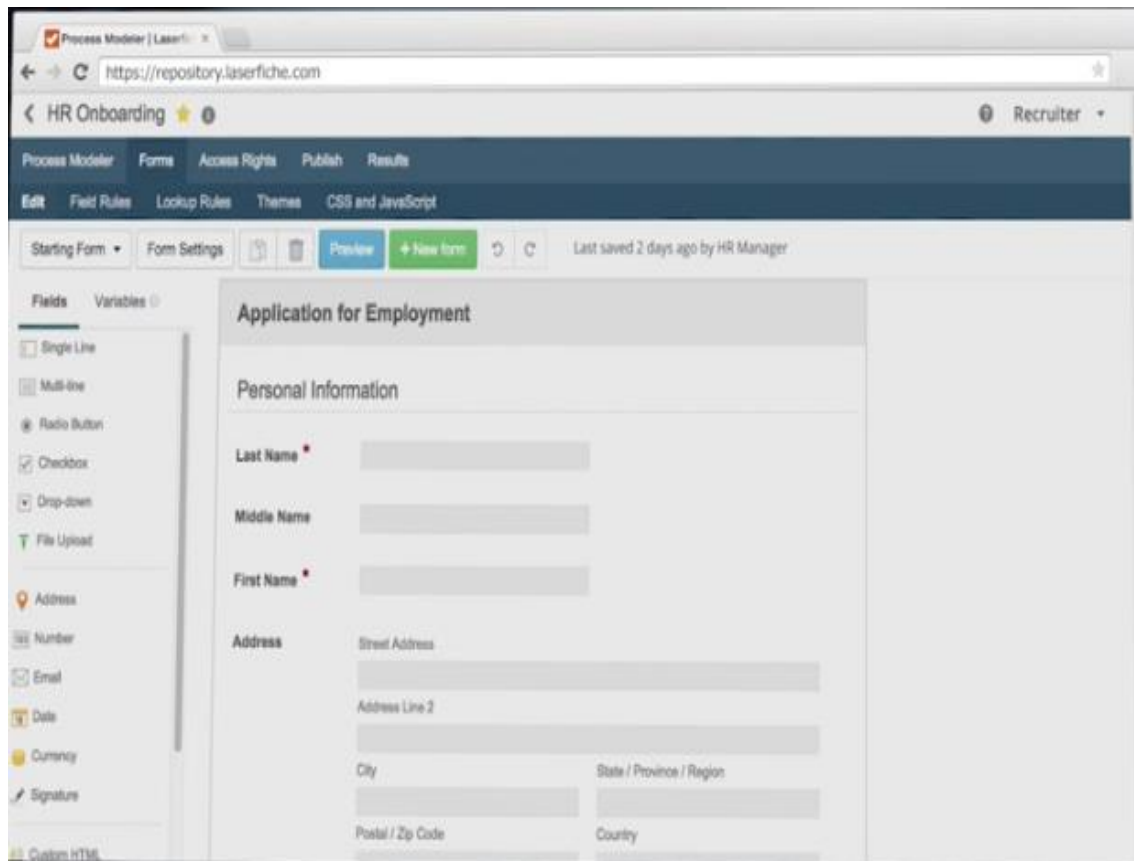


Figure 5.2 shows an electronic interface for a job application. New applications are obtained via this platform limiting of paper-based application processes.

One of the key factor for the selection of the ECM system was its ability to integrate with the Oracle EBS. The integration makes it possible to instantly access employee documents in the HR module of the Oracle EBS. The integration provides a single access point that allow access to all employee information from the HR module as explained by the technical team. According to the MIS Director, the integration has made it possible to automate processes that triggers personnel workflows from the Oracle EBS. This has created easy access to supporting documents from HR applications directly in the ECM system. The HR manager noted that:

almost every single time, I get a request from one of our directors for record from an employee's personnel file. Even though the record may be in the Oracle EBS, Laserfiche makes it easy to satisfy their requests by quickly sending exactly what they need through the system.

Figure 5.3: The Account Workflow Interface of the ECM System

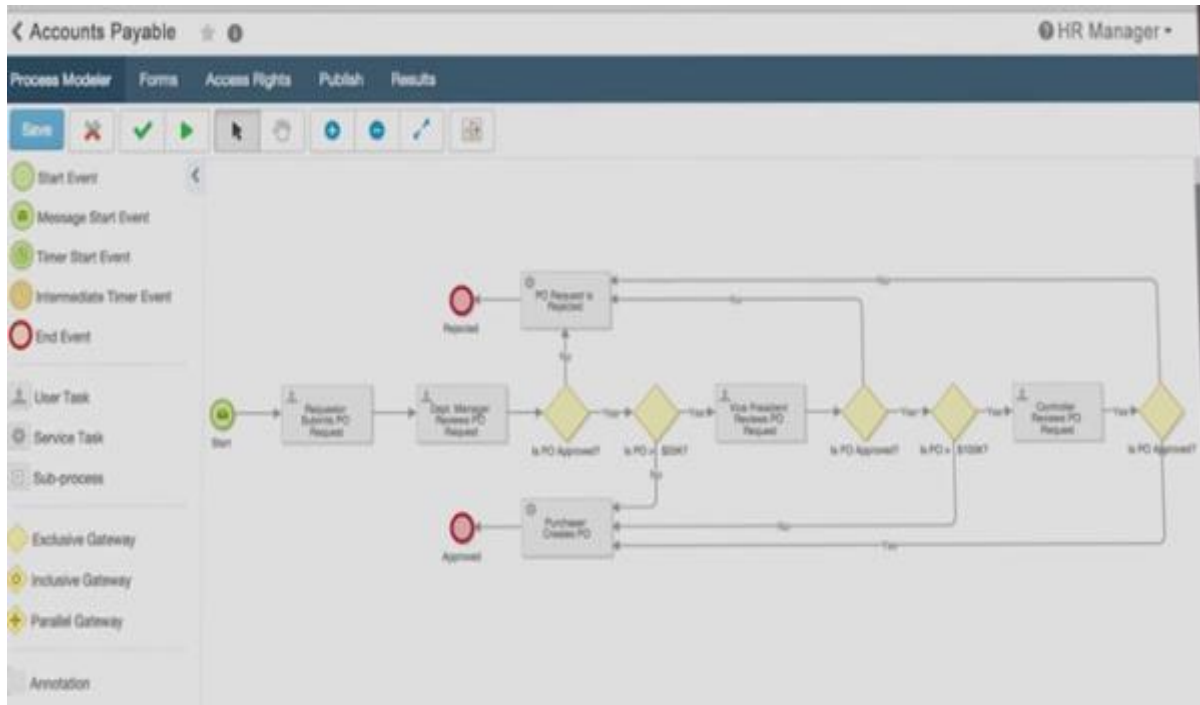


Figure 5.3 shows an electronic workflow of a collaborative activity between the HR and account departments regarding receipts and payments. According to Deputy Finance Director, the implemented system has enable more timely payments and receipt of transactions. With the ECM system, information from the Oracle EBS and multiple invoices can be scanned and capture at once and invoices to multiple employees for review, approval and cheque processing are being route by the system automatically. One of the finance staff explained that the nature of the system makes auditing easy. He noted that:

audit activity throughout the process maximizes productivity because the system securely stores invoices and related financial records for easy retrieval; this ensures accountability.

Similar to the HR department, the integrated ECM system makes it possible for the system to facilitate information transfer between the ECM system and the Oracle EBS. As explained by one of the staff from the Finance branch, the ECM system has answered most of their needs in the institution. She explained that there is a reduction in data entry and this is due to automatic lookups for vendor or invoice numbers coupled with the scanning of invoices directly into the system. The technical team explained that, this is possible because the system has an inbuilt scan, electronic import and flexible uploads. The invoices are stored in an orderly manner in the system so retrieval and access to the invoices stored in Laserfiche directly from the Oracle EBS becomes easy and files can be transfer from the network directories. With this ECM system, accounting processes are automated and invoicing review and approval from the institution's Oracle EBS is triggered. A senior staff noted that:

since July 2018, invoices have to be stored in the Laserfiche repository. Once the document is scanned and indexed, data is entered into the relevant template fields and some other relevant metadata based on what has been stored in the database. Other information, such as invoice number, invoice date and invoice total is entered manually because we are dealing with financial matters.

Another senior staff indicated that:

staff used to move around different departments to verify invoice amounts; now all those documents have been link so just a click of a link opens up the documents for verification. The system has allowed this department to move from a paper-driven account payable department to a nearly paperless department.

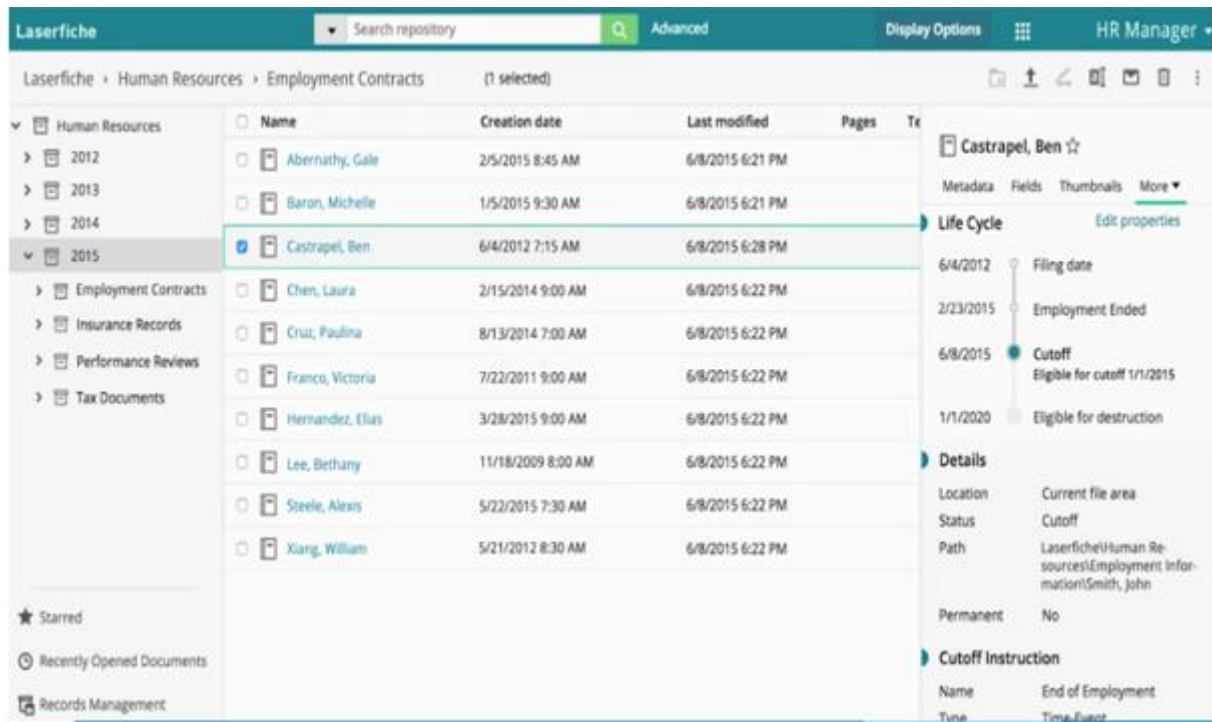
The Documents and Information Management department need to make information readily available for management when the need be. In order to facilitate their function, the institution has archival facilities in Tema, Akosombo and Aboadzi. According to one of the archivists, they were faced with some challenges. He indicated that:

retrieval response time, storage space and getting a requested material to the main head office for management came with some challenges; this created delays in decision making. The ECM system has catered for these challenges.

The introduction of the ECM system has therefore brought some relieve to staff working in the Information and Document Management unit of the institution. First, they do not need to worry too much about storage space because the ECM system comes with an electronic archival facility that accepts semi-current and non-current documents with an institutional retention policy. Whether current, semi-current or non-current records, the ECM system ensures a better the day-to-day storage, modification, retrieval and dissemination of digital files within the institution as indicated by the unit head. According to the Senior Archivist who also doubles as an Administrative Assistance to the Office of the CEO, the ECM system has helped her to perform tasks with ease. She indicated that:

I am happy this system is in place; the system has help to curb the situation of lost, misplaced and misfiled documents and slow retrieval.

Figure 5.4 shows the records management interface of the ECM system. The records are grouped according to year and subject. The life cycle for each record is also specified to determine the which record should be kept or deleted.

Figure 5.4: The Records Management Interface of the ECM System

In a discussion with the Procurement & Requisition, Technical Services, Thermal & Hydro Generation, Engineering Services, Audit, Corporate Risk Management and Environmental & Sustainable Development departments, the findings are not different from the other departments' findings on the use and benefits of the ECM system. Unanimously, they explained that the ECM system helps them to recapture lost hours, improve transparency, improve collaboration, optimize daily tasks and transform the way they carry out their tasks. For instance, a staff from the Audit department indicated that:

the system ensures transparency because we are able to track and trace activities of users of the system. It helps us to know who did what at what time; any modifications done on a document is easily traceable.

Moreover, a staff from the Thermal and Hydro department noted that:

by digitally transforming our workflow and approval processes, we have significantly improved our communication response time; we can sort through incoming documents much faster to determine reply as soon as possible.

Further, another staff from the Procurement and Requisition department indicated that:

the integration of this ECM system with Oracle EBS has eliminated the need for multiple reviews before an approval is made. The system speeds up institution's requisition cycle and provides a complete view of all our approval processes.

The security of data is of significant concern to the institution as explained the technical team. According to management, this also necessitated the need to go in for the Laserfiche ECM system. The needed a system that can effectively secure the institutions business processes, information and all records that are generated and make them available only to authorized users. Management indicated that their perception about the system to effectively protect their document has been manifested because the system comes with some security features that protect their resources. The technical team explained that there are configurable security levels in the system which allow the system administrator to implement access control mechanisms that best fit the institution's information security needs. One member of the technical team noted that:

the features of the system allow the administrators of the system to assign rights and privileges to authorized users of the system. Authentication and authorization mechanisms have been ensured; this prevent illegal entry into the system and illegal access to resources in the system.

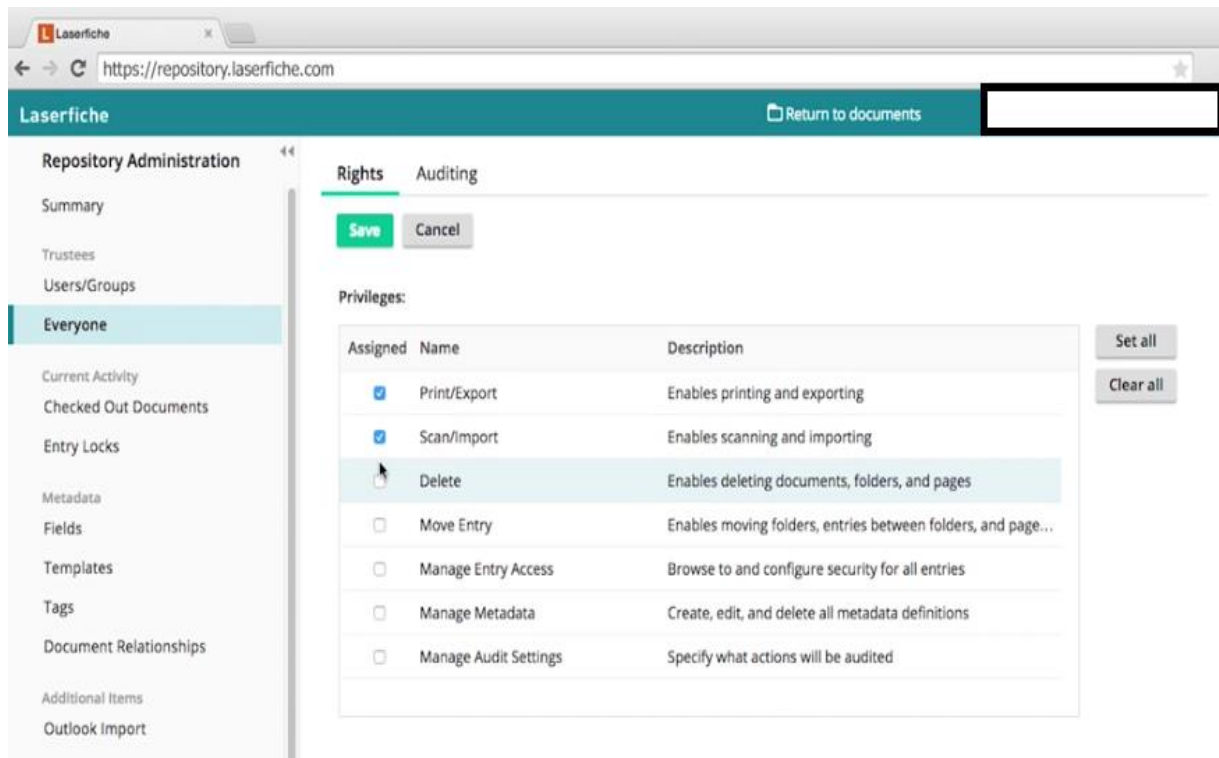
Figure 5.5: The Security Features Interface of the ECM System

Figure 5.5 shows the security features of the ECM system. The system provides authentication and authorization mechanisms by assigning access rights and privileges to users of the system. The system also provides an efficient Information Systems Auditing platform to monitor the use of the system.

In a very brief discussion with the Directors of the Finance and Engineering & Services branches, who also double as the Deputy CEOs for the institution, they described the system as one that is meeting their directive, demands of government and also meeting the perceptions and expectation of management and the institution as a whole. They explained that despite a few challenges they face regarding using the system, the system is up to expectation. The implementation procedure adopted has help them in realizing their expectations as explained by management. Finally, the system allows the Chief Director, Deputy Chief Directors to know and analyse who is working and who is not working since the system allows them to track all

workflows. The system has enhanced their monitoring and supervisory roles in the institution.

The Deputy Chief Director noted that:

with this system in place, we are able to monitor the staff effectively; this has in a way positively change the staff attitude towards work.

5.5 Key Concerns and Future Expectations

According to management and the technical team, they indicated that their future expectation is to allow all users to have a mobile version of the ECM system where they can perform their tasks as they do with their various desktops. This is to allow for performance of task irrespective of their location within the institution. They further explained that even though this initiative is good, they are concern with the security of the users' mobile devices. Another key concern is their business partners. Because there are no workflow links electronically to conduct business externally with them, at the end of the day, documents need to be printed from their system and endorsed so it can be sent to their respective business partners. In view of this, they expect the management of such institutions to collaborate and implement a similar system for easy collaboration. Also management mentioned that despite their efforts to go digital completely, some important documents like land titles, documents of properties, receipts of huge amount of money and some sensitive contracts are still kept manually. The reason management gave was that, in terms of litigation, the admissibility of electronic documents in the country's legal system is challenging so such sensitive documents that will serve as evidence in a law court needs to be kept physically. Finally, management also wish to subscribe to the cloud services of the ECM system to prevent unexpected system downtime as a result of the on-premise data centre server failures. However, the security of the documents to be stored in the cloud remains a concern to them.

5.6 Chapter Summary

This chapter started by presenting a background of the case institution, stating its history, its mandate and responsibilities, various departments and their functions. It further traced the institution's digital transformation journey by explaining some of the previously used systems. The challenges encountered in the use of these systems were established, which influenced the institution to implement a more robust system (Oracle EBS) and subsequently an integration with the ECM system. Moreover, the reason behind the case institution's decision to opt for the implementation of the ECM system was further revealed. This chapter additionally explained the implementation strategy of the institution in meeting the institution's policies, demands and expectations. It then ended by stating the concerns and future expectation of the institutions regarding the ECM system. The next chapter presents the analysis of the case description.

CHAPTER SIX

CASE STUDY ANALYSIS

6.1 Chapter Overview

The intent of this research has been to understand how and why a PSI in a developing country implement an ECM system and the consequences encountered. The preceding chapter provided a detailed description of the selected case for this research. It further presented the pre-digitalization era and provided a comprehensive description of the Oracle EBS. The chapter again presented reasons that finally resulted in implementation of the ECM system. The ECM software selection, implementation procedure, use and consequences were further explained. This chapter therefore presents the analysis of the findings using the affordance theory as a theoretical lens. The chapter presents the affordance perception, affordance actualization and affordance effects of the ECM system implementation. This chapter also by analyses the affordances of the various systems used in the case institution's digital transformation journey. The chapter further presents a cross case analysis of the Oracle EBS and the ECM system using the affordance theory as a theoretical lens.

6.2 Affordance Theory Analysis of the Oracle EBS Application

The efficiency of administrative work was hindered due to the challenges that originated before the Oracle EBS was implemented in the institution. From the case findings, the institution implemented an Oracle EBS in 2012 with the aim of curtailing the constraints that came with the manual and standalone systems. Even though the Oracle EBS had a few constrains experienced after its implementation there were significant enabling affordances that have been experienced. The institution had its expectation about the Oracle EBS and order to actualize the affordances, the institution implemented the system in a manner that fit the institution's needs

and regulatory requirements. The implementation was done to ensure that the users easily interact with the system to achieve positive results. Using the Affordance Theory as a theoretical lens, technology adoption and effective use enable users to achieve positive results. The next sub-section explains the affordances in the era of the Oracle EBS.

The case findings reveal that a technology that is potential in achieving institutional goals and objectives afford stakeholders the opportunity to work easier and efficiently. When a technology exists and its affordances are actualized through a requisite implementation process and use, the affordance effects give institutions the edge to improve productivity and performance. The section describes the affordances experienced with respect to the Oracle EBS.

Conforming to Regulatory Standards and Requirements

The Oracle EBS enabled the case institution to meet the regulatory standards and principles, which in effect meets the requirements of the regulating bodies. The Oracle EBS was designed to meet the requirements and standards such as making real time data available for the regulators to have access to them. The implementation and use of the system enabled the institution to abide by government regulations and meet the reporting standards of the Controller and Accountant Generals Department as well as the Audit Service. The standardized Oracle EBS enabled the institution create and send real time reports as and when the need be.

Speedy Transfer of Data between Departments

The findings of the study reveal that the pre-digitalization era slowed down the rate at which information needed to be transferred between departments. However, the modules of the Oracle EBS were connected so it was faster to send information from one module to another seamlessly. Since it was time wasting to transfer information from the HR department to finance

department, the institution needed a system that can curb this challenge and the Oracle EBS had the solution. The Oracle EBS enables easy transfer of information from one department to another due to its interconnected modules.

Documents are Easily Updated Electronically

Since data is important in every institution, it needs to be updated to provide a true reflection of the changes that has been made to the data over time. Unlike the manual approach and the standalone system, the Oracle EBS makes provisions for data that is created to be updated easily. This created the issue of storage space since any update required for additional documents to be added to the older one. For instance, previously in the HR department, it was almost impossible to update employees 'data electronically. Now data on staff is stored using the HR module of the Oracle EBS, data is backed up periodically and updates are made easily.

Back up of Data to Prevent Data Loss

It is essential to have backups of institutional data to avoid loss of data because data is seen an indispensable resource in every institution. The backup helps the departments to retrieval documents faster and the auditing process of the institution become efficient. The technical team were able to have a real time backup of the daily tasks saved in the institution's data centre. In effect, the findings demonstrate that data could always be retrieved due to a backup in their data centre. This facilitates ease of access to departmental data whenever requests are made. Backups ensure that there is business continuity whenever there is physical data loss. This is because, when there is loss of physical data resulting from any human error, the backups will make it possible for work to continue.

6.3 Affordance Theory Analysis of ECM System Era

The implementation of the Oracle EBS provided crucial solutions to the challenges and constraints experienced in the pre-digitalization era which hindered the efficiency of administrative work in the institution. Even though the Oracle EBS provided solutions, the system was limited to just three departments with three modules. That is to say, only three departments experienced the digital innovation. Since the institution wanted to digitally transform its institutional contents, business processes and workflow management in all its departments, they needed a system that would enable that. From the findings, the institution selected an ECM system to meet government directive for digitalisation, solve the challenges of the manual system and make the institution a digital workplace. The affordance actualization of the ECM system depended on a careful implementation and use strategy so as to enjoy the affordance effects as a result of an interaction with the ECM system. This section presents the affordance existence, perception, actualization and effects of the ECM system.

Affordance Existence and Perception

From the case findings, the ECM affordance existed way before the institution made a decision to implement it. The affordance of the ECM systems spells out what the system can do and the benefits it brings to institution when there is an interaction between the system and the users. In this case, the system had the capacity to digitally transform an institution's workflows, secure its content and bring efficiency. However, for the institution to implement the system, they had an affordance perception of the system. From the case findings, the institution met with the implementers and other institutions in a seminar about digital transformation. Institutions that were using the ECM system gave reports on the features of the system and how beneficial the system can be. The implementers also practically demonstrated how to use the system to achieve an efficient digital workplace. Based on the recommendations from the reports and the

in-house technical team, the institution had an affordance perception which they intended to actualize to produce the needed outcome they expected.

Affordance Actualization

In order to be actualize the affordances there should be an interaction between the users and the system. The institution used an implementation procedure that would create an enabling environment for the users, departments and institution as a whole to interact with the ECM system to yield the expected outcome. The findings indicated that in order to fully actualize the affordances, users were trained to effectively use the system, the system was integrated with the Oracle EBS and the implementation procedure was based on the institution's policies. For instance, the institution implemented the ECM system in two phases. This was to create room to check the system's operational capacity. Also there was the need to integrate the ECM system with the Oracle EBS so the institution can have a full digital transformation project. Again, even though the ECM system have storage options, in order for the institution to actualize its data protection affordance, they opted for an on-premise data centre at the expense of server failures that can lead to business discontinuity when the system goes down.

Affordance Effects

The actualized affordances bring about affordance effects. Affordance effects does not exist on its own but they come about as a result of an interact between the institution (user) and the system. Based on the implementation procedure the institution adopted, user training, user friendly interface and usefulness of the ECM system, the users were able to interact with the system to produce outcomes which are both positive and negative. For instance, when users interact with the system and document is stored in the on-premise data centre, it secures and protects the institution's document since the institution's data is not store by a third party (cloud

services). However, this becomes a constraining affordance because, when there is a severe failure from the on-premise data centre resulting to system downtime, it leads to business discontinuity. Also, the integration of the ECM system with the Oracle EBS gave the institution the platform to operate in a relatively high paperless environment with the vision of making the environment a digital workplace.

The affordance theory has enabled the researcher to establish why the ECM system was selected as it identified the institution's affordance perception of the ECM system. This subsection starts by establishing the affordances of the ECM system that influenced the institution for its implementation. It then describes the implementation strategy that was used to ensure that the perception of those affordances were being actualized to gain the affordance effects. It then compares the affordances of the Oracle EBS and the ECM system. The findings revealed the following factors influenced the institution to implement an ECM system.

Government Directive for Digital Transformation

In order not to be left behind, government is putting the necessary measures in place for its agencies, departments, ministries and key institutions to transform and innovate their processes digitally as indicated from the findings. The findings revealed that the government believes in digital transformation projects and wants its institutions to digitally transform their operations. Government was therefore ready to accept an IS that can help in meeting and achieving its objectives and directives. Though the idea to implement the ECM originated from the in-house technical team, management bought into the idea, owned it and communicated it to government. The management of the case institution saw the ECM system as the requisite system that can provide solutions to government expectations. To achieve this, government through management of the institution made sure that budget had already been made available and the needed structure and assistance were available for the implementation to kick start.

Effective and Secured Information and Document Management

Information is essential to the existence of an institution and as such, it needs to be effectively managed and well secured. The constraints of the manual approach in some departments were that sometimes sensitive documents were accessed by unauthorized users which was not appropriate. The findings reveal that though management instituted some policies that sensitized staff to keep sensitive data safe in their cabinets, it was still not enough to properly secure such content. Management wanted a system that has access control mechanisms like firewalls, user accounts, passwords to check and prevent unauthorized access to institutional data thereby ensuring data security and privacy in the institution. Management were made aware in a seminar attended that the ECM system could offer an environment for a secured and effective management of their institutional records to meet the institution's legal and regulatory obligations.

Going Paperless to Ensure Timely Workflow of Activities

Institutional periodic goals are best achieved when there is a timely workflow of business processes and tasks. Though workflow was performed by various departments manually, sometimes, it slows down because some managers and directors allowed files to sit in their offices for a long time before it could be passed to another department for decision making. This attitude, first delay workflow and decision making processes and secondly, endanger sensitive files to be accessed by unauthorized users. The ECM system was seen to prevent these delays due to its electronic workflow capabilities.

Mitigating Problems Associated with Paper-based System.

For an institution to be efficient, there is the need to put measures in place to reduce its cost of operations. The findings show that management of the case institution had an expectation of reducing the problems associated with the paper-based system in the institution. These problems

range from slow retrieval, regular cases of misplaced files, duplication of documents, lack of storage space which in the long run increased the cost of operations in the institution. They therefore wanted a system that will lower the cost of capture, use and storage of content to reduce the impact of document loss in the paper-based system. According to the findings, there were cases of document loss and misplaced files probably due to lack of secured storage space and this increased the cost of operations, hence the need for the ECM system to curb this challenge. The institution also wanted to reduce their printing costs and the ECM system was seen as a platform that would bring about a paperless workplace.

As a means to go paperless, the institution also needed to implement a technology that would be compatible with their existing IS. Eliminating an institutions current system and completely implementing a new system is costly. The ECM system was therefore selected and implemented based on its capacity to integrate with the institution's already existing IS (Oracle E-Business Suite) so as to ensure a seamless flow of information and activities electronically. The findings reveal that the institution was very keen in making sure that, before the introduction of a completely new system, an assessment was made to ensure that there is a high possibility of integration with the institutions' current system.

6.4 ECM System Implementation Strategy and Procedure

As indicated already, management of the institution opted for the ECM system because they wanted to achieve their institutional goal of going paperless and mitigating the paper-based system problems to effectively perform their mandate. The affordance perception of the ECM system enabled the institution to implement it in a manner that would allow management and the various departments to actualize the affordances to yield the needed outcomes that matches with the institution's expectations of the system and fulfil the reasons they opted for the system.

The findings reveal that even though the decision to purchase the Laserfiche ECM software originated from the in-house technical team, management needed to own that idea in order to communicate it to government for its implementation. Once management is in the position of owning the idea as if it was their thoughts, implementing the system becomes fast and stress free. The next sub-section provides details on how the ECM was implemented to realize institutional and government expectations.

6.4.1 Information Gathering and Requirements Specifications

Requirement gathering is key for a superior system with less hassle and frustration. This is because, not gathering the right amount of information and specification requirements creates a chaotic environment where stakeholders may be disappointed with the system, creating a loss in the end. With good requirements gathering and specification, developers and vendors are able to implement a system that suits institutions' needs by adding or taking away features, reducing project chaos and defects in delivering the system. The findings reveal that all the twenty-two departments in the institution were consulted one after the other to know their workflow and activities in order to agree on a standardized corporate implementation plan. The involvement of all stakeholders in the implementation gives users some sort of digital transformation readiness which puts them in a position to properly interact with the system to actualize its affordances after implementation.

6.4.2 Installation and Deployment of the ECM System in Phases

It is important to sometimes conduct a pilot study when implementing a system in institutions. A pilot study is a pre-studying of a system by using a limited number of actors than the whole actors in the full study. A pilot study helps stakeholders of a system to conduct various types of testing. This often provides the stakeholders with ideas and approaches that may not have been foreseen before conducting the pilot study. Such ideas increase the chances of shaping the

system in a way that fit the environment in which it will be used. The findings show that a number of five departments were used for the initial installation and deployment. This was to reduce the number of unanticipated problems and find out the digital transformation readiness of the institution as well as the capacity of the system. The institution therefore made sure that measures were put in place to create an environment that allows for the full potential of the ECM system to be actualized to bring positive results when it's in full operation. After about close to a year, the ECM system was installed and deployed in all the departments.

6.4.3 Perfect Integration with the Already Existing Information System

Institutions wants their staff to maximize the use of a technology implemented to gain maximum benefits at reduced cost. This is possible when there is compatibility between institution's current system and the new system to be implemented. The findings indicate that, in order to ensure a seamless collaboration and communication among departments, there was the need for an integration. In effect, the implementation strategy involved integrating the ECM system with the existing system, the Oracle EBS. This has given the institution the right environment to explore the system for its affordances to be actualized since it will not create any extra work of migrating the activities and documents onto the new system.

6.4.4 Adequate Training of Users of the ECM System

Training users to use an Information System is necessary if an institution wants to benefit from the full potentials of the system. Users need to have the requisite knowledge on how a system must be used effectively to gain the maximum benefits that the system can provide and this can be achieved through a well-organized training sessions for users of the system. The findings reveal that an intense training sessions were organized for users of the system so they can find it easy and gratifying using the system. In the process of training, adequate awareness was

created and users were sensitized enough towards the best use of the system to create a digital workplace. Since the ECM system has a user friendly interface, users were for instance, trained on how to effectively start a workflow on their own since it did not require any complex IT expertise to perform such task. In effect, users were able to create and start their own workflow processes without any assistance from the technical team.

6.4.5 Assured Maintenance of the System

It is sometimes annoying for users of a system to experience system failure and downtime and this put users in an environment that does not motivate them to use the system. The findings reveal that, the technical team of the case institution were specially trained to maintain the system and solve minor issues that may arise during the use of the system. This was to allow work to continue to as to enjoy the benefits the system brings to the institution. They were also trained to perform preventive maintenance to prevent the occurrence of system downtimes leading to expensive repairs. Switching from reactive to proactive maintenance does not only provide an enabling environment for business continuity but also extend the life of the system. In addition, the vendor and developers signed a contract with the case institution to perform maintenance services when the system problem is beyond their expertise. Having vendors support and maintenance does not only ensure an enabling environment for the users to interact with the system but also reduces the operational costs regarding systems maintenance.

In a nutshell, based on the affordance of the ECM system, the institution needed to place the actors, that is, the various departments and offices that will be using the system, in an enabling environment that would positively influence them to interact with the system to actualize all the potential affordances for an expected outcome. This therefore necessitated the need for the case

institution to employ an implementation strategy that users interact with the system for the affordances to be actualized and consequently, produce positive concrete outcomes.

6.5 Enabling Affordances of the ECM System

According to the theory of affordance, through the process of actualization, the departments and the institution as whole can achieve multiple effects which can be immediate concrete outcomes, intended outcomes or unintended outcomes. The affordance effects are the actualized immediate outcomes that help institutions and departments to assess whether the process of actualizing the affordances made it possible to achieve government, management and institutional goals and expectations. IS affordances therefore affect the form and function of institutions since actors perform some actions as they take advantage of the affordances through the use of technology to achieve immediate concrete outcomes in support of institutional goals. This subsection compares the affordances that the case institution obtained from implementing the ECM system as compared to the pre-digitalization era. The subsection presents the intended affordances and outcomes of the ECM system.

Efficiency of Workflow and Easy Collaboration among Departments

Digital transformation ensure that institutions are able to easily manage content and workflow efficiently and effectively. This is as a result of easy collaboration among departments in the institutions which in effect speeds up the decision making processes. The findings reveal that, since users were effectively trained to use the ECM system, directors and managers from almost all the departments could initiate their own workflow targeted to various departments. With this, managers do not need to physically send files to offices to be worked on. This in essence has reduced the movement of managers and ensure a speedy decision making process and a streamlined business processes.

Easy Monitoring of Tasks Performed by Managers

In performing the function of supervision and monitoring, it is important for top management to strategically position themselves in an environment that enhances the performance of this mandate. The ECM system provides the platform for supervisors to effectively and efficiently monitor work processes and assigned tasks. The findings show that the ECM system give top management the platform to supervise managers and staff by effectively monitoring them in the performance of their tasks. When there is a delay in workflow, top management is able to trace and determine which department and manager or secretary is causing the delay for the necessary measures to be taken.

Improved Retrieval Response Time

A faster decision making process results in high productivity. But in order to ensure a speedy decision making process, information needed should be made available at the right place, time and quantity. From the findings, the ECM system ensure a timely and efficient capture, storage and a timely retrieval of documents to enhance the decision making process. Since the ECM system allows documents to be stored digitally, retrieving data for decision making is efficient. The relatively low retrieval response time results in a faster decision making process.

Improved Documents Security and Privacy

Since digital transformation involves using IS to store and transfer information, one key issue is the security of information, whether at rest or in transit. The findings reveal that the implementation of the ECM system has helped in document security and privacy. The system provides access control mechanisms such as user name, user accounts, passwords and firewalls to check and prevent unauthorized access into the system thereby ensuring user authentication. Moreover, to ensure integrity and confidentiality of contents, the ECM system allows the

systems administrator to assign rights and privileges to users of the system based on their roles. This ensures user authorization. That is, only authorized users are allowed to have access to some classified contents. The security features of the system therefore ensures that the sensitive data stored on the system is secured and protected from unauthorized users. This feature is available not only to ensure the security and privacy of content but also aid in ensuring non-repudiation of activities.

Eliminating the Duplication of Information

When an institution has a challenge with storage space for its contents, duplication of information worsens the situation. Documents in institutions is duplicated when there are regular cases of misplaced files, inability to retrieve a document and so on. This mostly happens when a manual system is used to store and keep institutional contents. So if the records management strategy of an institution is poor, it affects the rate at which information is duplicated which in effect, create storage space problems. From the findings, the manual system of storing data posed problems such as loss of data and frequent duplication of data due to the inability to retrieve the data. The ECM system has provided the institution with an electronic archival facility that stores all business transactional information in a secured environment. This has eliminated the duplication of data and at the same time reduce the impact of document loss.

Reduction in Operational Cost

The findings reveal that before the introduction of the ECM system, almost every internal document needed to be printed for approval and endorsement. Documents that need to be endorsed and approved by directors and managers from other departments needed to be printed in order to be approved. Thus, the cost of printing in the case institution was relatively high. However, the introduction of the ECM system has reduced the cost of printing which include, buying toners, papers and maintenance of the printers. This is possible because the ECM system

has an electronic signature, a stamp and a message that accompanies contents to signify their approval internally. However, documents need to be printed, signed and endorsed when they are going out from the institution. This is so because, according to top management, other institutions do not have systems that ensure digital approval of documents.

6.6 Constraining Affordances of the ECM System

When an Information System is implemented, an interact with it results in some affordances. However, these affordances also trigger some constraints that create some challenges in the systems' use. The next subsection explains the constraints of the ECM system.

Delay in Work Due to a Major System Failure

From the findings, the acquisition of the ECM software was done through a vendor that serves as an intermediary between the developers and the institution. Therefore, when there are some downtimes that are beyond the in-house technical team, the vendors will have to be contacted to either work on it electronically or come physically. Where the fault is supposed to be fixed electronically, the developers log in remotely but when the fault requires an on-site solution, the developers come to the case institution to rectify the problems. In effect, this sometimes causes delay in carrying out task in the system because when the system is down, most of the users cannot work and will have to rely on the manual approach. From the findings, frequent systems downtime in the institution is as a result of sever or network failures. This is because the institution opted for an on-premise data centre to store their operation at the expense of the Laserfiche cloud services. The decision was based on the institution's data protection policy.

Control of Departments' Activities is Reduced

From the findings, when the Finance, Procurement and HR departments started using the Oracle EBS, the other administrative departments operated manual system before the ECM system was implemented. The findings revealed that before the introduction of the ECM system, the individual departments had full control over their day-to-day activities since they were working silos. Management of departmental activities was done without having to consult external developers, software vendor or the IT technical team. The various departments' heads were able to effectively control their activities without restrictions from network failures and system downtimes. The ECM system has eliminated that control by improving the level of collaboration due to the system's interconnectivity. Also, managers using the system are monitored through the system's tracking facility so there is that feeling of loss of control.

6.7 Cross Case Analysis

This section presents a cross case analysis with respect to the era before the Oracle EBS against the era of the Oracle EBS and the era of the ECM system. As indicated earlier, the Oracle EBS was implemented to curtail the challenges of the manual and standalone systems, and the ECM system brought about some level of digital transformation in all departments in the institution. However, the findings revealed that inasmuch as the ECM system have enabling affordances, there are also some constraining affordances. The enabling and constraining affordances before the institution's digital innovation era, the Oracle EBS era and the ECM system era are presented below.

6.7.1 Constraining Affordances of the Pre-Digitalization Era against the Oracle EBS Era

As stated earlier, the case institution encountered some challenges during the era of the manual and standalone systems and that led to the introduction of the Oracle EBS in some key

departments. The findings reveal that activities in the manual environment delayed the case institution from making timely decisions due to loss of documents and poor retrieval response time. Moreover, the manual approach increased the human intervention which in effect made contents documents insecure. This resulted in lack of the confidentiality, integrity, security and privacy of institutional contents. For instance, documents were put on files and sent manually to offices of directors for an action to be taken. When the directors are not available, it gave room for unauthorized users to have access to it. Further, there was a problem of storage space due to duplication of documents. When staffs cannot search and retrieve documents, they tend to create new ones to replace the missing ones. Update of documents also created physical storage space problems since new addition to information required the creation of a new document to be added to the existing ones. There was also difficulty in meeting regulatory standards since the loss and misplacement of information create a problem for regulators to audit the institution's dealings.

Moreover, the standalone applications before the Oracle EBS could not collaborate with other departments. For instance, the system could not send data from the HR department to the Account department. Again it was difficult for the staff records to be updated. Even though documents were stored electronically, an update required that a previously created data should be deleted and new one created to effect the information update. These and other indirect challenges slowed down operations and influenced the case institution to implement an Oracle EBS with the hope of curbing the challenges they face.

One key challenge with the implementation of the Oracle EBS is network issues. The network connectivity which is a key component for the system is the major constraint with the use of the system. Since the system has interconnected modules, when one module encounters a problem,

it affects the other modules thereby slowing down business processes. The findings revealed that whenever there is a network failure, the departments cannot continue to work electronically so they rely on the manual approach in performing their activities. Again, the Oracle EBS did not ensure a complete digital transformation as the Oracle EBS was restricted to just three modules in three departments. The system also did not have the platforms to electronically endorse documents without having to print it. There was still much use of paper even after the introduction of the Oracle EBS. Another constraint is the cost of acquiring and maintaining the system. Comparatively, the cost involved in the implementation of the Oracle EBS was high. However, the affordances to be derived from the system compelled the case institution to implement the system regardless of the cost. Table 6.1 shows the constraining affordances that were experienced in both the pre-digitalization era and the Oracle EBS era.

Table 6.1: Constraining Affordances of the Pre-Digitalization against Oracle EBS Eras

Pre-Digitalization Era	Oracle EBS Era
<ul style="list-style-type: none"> • Difficulty in meeting regulator’s standards • Issues with security and privacy of contents • Poor collaboration among departments • Poor retrieval response time • Storage space problems due to duplication • Difficulty in updating contents 	<ul style="list-style-type: none"> • Network challenges and system downtime • Digitalization limited to few departments • Cost of maintenance is relatively higher

6.7.2 Enabling Affordances of the Pre-Digitalization Era against Oracle EBS Era

Despite the challenges of the manual approach, some enabling affordances were encountered. For instance, the various administrative department in the institution were able to work even when there were power outages. They did not need to depend on power always or even internet connectivity. Also, the fact that staff were working in the manual approach enabled them to work irrespective of the conditions at the other departments since they were not necessarily interconnected. Administrative heads had the privilege to fully coordinate and control and

overall activities of the department because the manual approach did not rely on a collaborative system to operate though they all work together at some level.

The Oracle EBS was implemented to control and reduce the challenges experienced in the pre-digitalization era. For the first time in the history of the institution, as many as three departments were connected electronically. There was a collaboration and integration of activities among the three departments. Workflow became efficient, the security of contents was improved, document is easily updated and changes are automatically reflected in the system. There was also improvement in the management of accounting and payroll processes thereby enabling the institution to meet the standards of their regulators. Again, performing update was easier since the developers sends notifications to all customers of their products to perform systems update.

From the case findings, the Oracle EBS brought more benefits as compared to the pre-digitalization era. The table 6.2 shows the enabling affordances in both eras.

Table 6.2: Enabling Affordances of the Pre-Digitalization Era against Oracle EBS Era

Pre-Digitalization Era	Oracle EBS Era
<ul style="list-style-type: none"> • Ability to work with or without power • Ability to work irrespective of what goes on in other departments 	<ul style="list-style-type: none"> • Collaboration and integration of activities among departments • Meeting regulatory requirements and standards • Performing document updates with ease • Effective data backup to prevent data loss • Improved system and document security

6.7.3 Constraining affordances of the Oracle EBS Era against the ECM system Era

It has already been indicated that the case institution decided to implement the Oracle EBS in order to curb some challenges encountered in the pre-digitalization era. The findings reveal that the implementation of the Oracle EBS mainly had network issues. Whenever there is a network

failure, the departments could not continue to work electronically so they rely on the manual approach to perform their activities. Also, the Oracle EBS was limited to only three departments with three modules while the remaining departments were still working using the manual approach. The institution therefore experienced digital innovation with the Oracle EBS but a complete digital transformation in all departments was not achieved. Again, because the system focuses mainly on business processes and document management, the issue of records management was a challenge. The institution's plan of turning its working environment into a digital workplace was not realized with the Oracle EBS.

Similar to the Oracle EBS, the ECM system also has network failure as its challenge. This issue is mainly due to the institution's decision to opt for an on-premise server at the expense of the cloud services that comes with the system. When the server fails, users are unable to work digitally leading to delays in performing routine tasks. The network connectivity which is a key component for the system is the major constraint with the use of the system. Since the system is interconnected with all the departments in the system, when the system encounters a problem, it affects the all departments including the office of the Chief Executive thereby slowing down business processes. Another challenge is the reduction in departmental control of activities. The ECM system has eliminated departmental control by improving the level of collaboration since the system is interconnected with all departments in the institution. Managers using the system are monitored through the system's tracking facility so there is that feeling of loss of control among managers. The ECM system has therefore reduced departmental control and has increased the entire institution's control.

Though the Oracle EBS and the ECM system have similar challenges, the findings reveal that the ECM system was not implemented to eliminate the Oracle EBS but to make the institutions

a digital workplace by transforming and streamlining the activities of every single department in the institution. The table 6.3 shows the constraining affordances that were experienced with the Oracle EBS and the ECM system.

Table 6.3 Constraining affordances of the Oracle EBS Era against the ECM system Era

Oracle e-Business	ECM system
<ul style="list-style-type: none"> • Network and Systems Failure • System used in few departments • Supports digital innovation but not digital transformation • Supports document management but not records management. 	<ul style="list-style-type: none"> • Network and Systems Failure • Reduction in departmental control

6.7.4 Enabling Affordances of Oracle EBS against the ECM System

For the first time in the digital history of the institution, three departments started to operate in a digital interconnected environment. There was collaboration and integration of activities among the three departments in the case institution. Workflow become efficient, the security of content is improved, data could easily be updated and changes were automatically reflected in the system. The system also brought about an improvement in the management of the accounting and payroll processes thereby enabling the institution to meet the financial standards of their regulators. Again, performing systems update was easier since the developers sends notifications to all customers to perform systems update.

Despite the implementation and use of the Oracle EBS which brought about digital innovation in the institution, the ECM system was later implemented. From the findings, the Oracle EBS was not eliminated, rather, the system was integrated with the ECM system. Management were looking for an ECM system that would provide a platform for an easy integration with their already existing system and the ECM system perfectly provided just that. The ECM system

therefore gave the case institution an opportunity to prevent total collaboration of their contents from the already existing system onto the ECM system thereby saving cost. Further, since the system is tailored to accept institutional requirements, the developer's team and the case institution's technical team collaborated to implement the system in a manner that ensures digital transformation to fulfil government directive and the institution's expectations. For instance, they needed the system to change its retention schedule to one that fits the legal requirements of the country and such changes were done with ease. They also needed documents to be stored in an on-premise site and that was also done easily. Moreover, the findings reveal that the ECM system has a user friendly interface so using it did not require any advanced technical skills after training. Managers and Directors can create and capture their own contents into the system and at the same time initial a digital workflow process on their own thereby speeding up workflow in all the functional departments.

The ECM system has also improve document security and privacy issues in all the departments in the case institution. The findings reveal that the ECM system has access control mechanisms for authenticating and authorizing users to have access to sensitize contents thereby restricting unauthorized users. Again, the system has also ensured non-repudiation of activities and workflows. Due to the control mechanisms, systems administrators and top management are able to track the activities of all users of the system to ensure easy IS auditing. From the findings, top management also indicated they are able to monitor workflows so when there is delay in the process, the can easy detect the user causing such delay. The system therefore ensures there is an effective level of supervision and monitoring for top management.

The ECM system has both a document management and records management features. The system manages the institution's information from its current stage through to its semi-current to the non-current stage. At the same time, it provides a retention schedule that helps to destroy

unwanted documents and keep important documents permanently in the electronic repository. The flexible nature of managing records in the system ensures easy update of data, elimination of lost and misplaced files and speedy retrieval response time. Consequently, this enables the case institution to meet all the legal requirements needed to manage and keep government contents safely. Also, since greater percent of activities is performed digitally, there is reduced amount of physical storage space and reduction in operational costs associated with printing. From the findings, the system has also given the case institution some unintended benefits such as motivation of managers and instilling discipline in the staff. This is because, every information and metadata on a business process is provided in the systems. Because of the non-repudiation nature of the system, any changes made in a business process can be traced. Managers are also motivated to workplace in a digital workplace due to how easy it is for them to perform their task in such environment. With the ECM system is place, the institution enjoys business efficiency through efficient workflows, compliance and secured contents. The table 6.4 shows the enabling affordances of the Oracle EBS against the ECM system era.

Table 6.4: Enabling Affordances of Oracle EBS against ECM system

Oracle EBS	ECM system
<ul style="list-style-type: none"> • Meeting Regulatory Standards • Electronic Collaboration among few departments • Easier Monitoring of System Updates • Performing document updates with ease • Effective data backup to prevent data loss • Improved system and data security 	<ul style="list-style-type: none"> • Meeting government directives for digital transformation • Effective electronic workflow and collaboration in all departments. • Improved system and document security in all departments • Improved storage facility and effective data backup in all departments • Easily performing of document updates • Speedy retrieval response time • Reduction in operational cost • Non-repudiation of business activities • Effective monitoring and control of workflow • Ensures both documents and records management

It is evident that the implementation of the ECM system has brought more benefits to the institution. The analysis of the findings indicates that the most of the issues faced by the case institution throughout its digital transformation journey have been addressed by the ECM system. Table 6.5 illustrates the issues faced from the pre-digitalization era through to the Oracle EBS and finally to the ECM. It shows all the issues that have been addressed by the ECM system.

Table 6.5: Issues Raised Against Affordances of the Implemented ECM

Issues and Challenges	Enabling Affordances of the ECM system
Security and privacy of content challenges	Improved document security with access control mechanism
Issues with limited storage	Provision of electronic repository
Poor retrieval response time	Electronic searching makes retrieval easy
Regular cases of misplaced files	Proper management of contents throughout their life cycle
Difficulty in Updating data	Contents are updated in just a matter of few minutes
Issues with communication and collaboration challenges	Easy connectivity for collaboration in all departments
Delay in workflow	Automation of business processes and workflows
Monitoring issues	Non-repudiation of processes and effective monitoring
Management of documents issues	Provision of both documents and records management
Duplication of data	Duplication is checked using the metadata available

6.8 Chapter Summary

This chapter presented the analysis of the findings of the case study. Using the affordance theory, the affordance perception, actualization effects of the ECM system were analysed. The

chapter also provided details of how the institution carried out its implementation strategy to actualize the affordances of the ECM system. The affordances of the pre-digitalization era, Oracle EBS era and the ECM era were provided in this chapter. A cross case analysis was further presented to compare the enabling and constraining affordances of the various eras. The various challenges that were addressed by the ECM have also been indicated as well in this chapter. The next chapter discusses the themes and concepts that were used in this chapter relating it to the relevant literature.

CHAPTER SEVEN

DISCUSSION OF FINDINGS

7.1 Chapter Overview

The purpose of this research has been to understand how and why a PSI would implement an ECM system and the consequences encountered. In order to get answers to the research questions, the previous chapter made an analysis of the data collected in Chapter five. The preceding chapter presented some sub cases namely the pre-digitalization era, the Oracle EBS era and the ECM system era in the same case institution. The Affordance Theory was used as a theoretical lens to understand the affordance perception, affordance actualization and affordance effect of the ECM system. In addition, a cross case analysis of the enabling and constraining affordances of the various periods was presented to better understand the consequences of implementing the ECM system. This chapter therefore presents a discussion of the findings making references to relevant reviewed literature in the second chapter. Moreover, the chapter further explains in detail why and how the case institution implemented an ECM system while comparing the findings to existing literature. The chapter ends by presenting the consequences of implementing the ECM system.

7.2 Basis for the Implementation of an ECM System.

The evolution of Information Systems has provided a means for institutions to successfully digitalize their operations with real-time IS tools to enhance operational efficiency and effectiveness (Matt, Hess, & Benlian, 2015). In order to digitally manage institutions' contents and workflows, ECM system implementation and use has become a critical project for institutions today (Jaakonmäki *et al.*, 2018). The findings reveal that the principal factors that triggered the implementation of the ECM system were trying to meet digital transformation

directives of government, mitigating paper-based problems and making the institution a digital workplace. The ECM system was implemented to provide a paperless environment by enabling an integration with existing systems. The implementation was also done to prevent the regular cases of misplaced institutional contents, to have an effective records management to ensure effective monitoring, and to enhance timely workflows. With the ECM system in place, it was expected to enhance the security of documents, provide real time backup data, prevent the duplication of documents as well as create a digital workplace for business efficiency and effectiveness. But in all this, the findings reveal that top management had to own the idea to implement the ECM system as though it originated from them before the implementation was carried out. Once management is in the position of owning the idea as if it was their thoughts, implementing the system becomes fast and stress free. Owning the idea gives management some affordance perception about the ECM system which speeds up its implementation. This subsection provides a detailed explanation of the factors that led to the implementation of the ECM system relating it to relevant literature.

7.2.1 Public Sector Institutions Implement ECM Systems to Meet Government Directives for Digital Transformation

Digitalization in the information age is key for the survival of both private and government businesses (Lederer *et al.*, 2017). In order not to be left behind, governments are putting the necessary measures in place for their agencies, departments, ministries and key institutions to transform and innovate their contents and business processes digitally (Ndemo & Weiss, 2017). The findings revealed that the government of the day, spearheaded by the Vice President of the country believes in digital transformation and is providing the necessary support to help transform PSIs digitally. Government want its key institutions to enjoy the benefits of digital transformation so there was the need for the case institution to secure an IS that would ensure

digitalization. The ECM system was therefore seen as being capable of achieving this goal. The findings reveal that government had given directives for its keys to transform their operations digitally. In this regard, government provided the necessary support for the PSI to digitally transform its operations. The ECM system was therefore implemented as it was perceived by both the government and the institution to be the appropriate IS tool that has the requisite features to make the PSI a digital workplace. In order to successfully implement the IS, government collaborated with the case institution and provide the needed support, resources and budget for the implementation of the ECM system. This is in consistency with the studies by Janowski (2015) and Sarker *et al.*, (2018) which reveal government support for digital transformation projects in its institutions.

7.2.2 Public Sector Institutions Implement ECM Systems to Mitigate Problems Associated with the Paper-based System

Every organization needs information to make decision but the lack of available and timely information influence their decision making capacities negatively. As a result, the speed at which decision makers get relevant and accurate information go a long way to affect productivity (Maican & Lixandriou, 2016). The findings reveal that the institution faced a number of challenges emanating from the paper-based system. These include regular cases of misplaced files, document security issues, poor retrieval response time, monitoring of workflow issues, inadequate storage space and records management issues. This created a relatively high cost of operation and delay in decision making processes. The PSI implemented an ECM system to ensure that all institutional contents are secured and made available at the right place, right time and right quantity for effective decision making (Alalwan *et al.*, 2014; Alalwan, 2013). The ECM system was therefore implemented to mitigate all these problems so as to improve the decision making process. This is possible because the ECM system has a repository that

store documents thereby preventing regular cases of lost and misplaced files as well as preventing high retrieval response time. Decision making rely on timely, reliable and accurate information for better results and the ECM system is designed to make that happen (*Alalwan et al.*, 2014).

Information and for that matter document is essential to the existence of an institution and as such, it needs to be effectively managed and well protected (*Laumer et al.*, 2017). One of the constraints of the manual approach of storing information was that sometimes sensitive documents were accessed by unauthorized users which was not appropriate (*Leyer & Hollmann*, 2014; *Hwang et al.*, 2013). The findings from this current study reveal that, even though management had instituted some policies sensitizing staff to keep sensitive information safe in their cabinets, it was still not enough to properly secure such information from unauthorized staff. The institution therefore needed a system that would prevent unauthorized access and secure information so it opted for an ECM system. A good ECM system has access control mechanisms like firewalls, user accounts, passwords to check and prevent unauthorized access to institutional data thereby ensuring document security and privacy in institutions (*Jaakonmäki et al.*, 2018; *Laumer et al.*, 2017; *Maican & Lixandriou*, 2016). The institution needed a system that would ensure a secured and effective information management to meet the institution's administrative and legal obligations. The institution also needed a system that ensured non-repudiation of activities and workflows. The findings reveal that due to the access control mechanisms, systems administrators and top management are able to track the activities of all users of the system to ensure effective IS auditing and accountability (*Alalwan et al.*, 2014). With the ECM system, they are able to monitor every workflow so when there is delay in the process, the user causing such delays can easily be detected. The system therefore ensures there is effective level of supervision and monitoring for top management.

The institution also implemented an ECM system to improve its records management. The institution needed a system that can manage information from its current stage through to its semi-current to the non-current stage. At the same time, the system should be able to provide a retention schedule that will help to destroy unwanted documents and keep important documents permanently in an electronic repository. The flexible nature of managing records in the ECM system ensures easy update of data, prevention of lost and misplaced files and speedy retrieval response time (Jaakonmäki *et al.*, 2018; Alalwan *et al.*, 2014). Consequently, this influenced the case institution to opt for the implementation of the ECM system

Institutional periodic goals are best achieved when there is a timely workflow of business processes and tasks (Abollado *et al.*, 2017; Dowdy & Raeford, 2014). Though workflows were performed by various departments manually, sometimes, they slowed down because some managers or directors allowed files to sit in their offices for long periods of time before they are transferred to another department for actions to be taken. This, first delays workflow and decision making processes and secondly, endangers sensitive files to be accessed by unauthorized users. The institution therefore needed a system that would ensure easy collaboration among departments in the institutions speeding up the decision making processes. This is consistent with a study by Alalwan, (2013) which reveals that ECM systems enhance decision making process. The findings reveal that managers from the various departments can initiate their own workflows targeted at various departments and with this, managers do not need to physically send files to offices to be worked on. The institution therefore needed a system that can help reduce the physical movement of contents, reduce document loss, secure sensitive documents and streamline workflows. For the PSI to benefit from the system, the findings also reveal that the institution implemented the ECM system in a manner that fit into institutional policies and standards. Such policies include data protection policies and IS

implementation policies. This is consistent with previous studies that indicate that a proper IS implementation plan that takes into consideration the culture, standards and policies of institutions to produce a successful outcome (Ilvonen et al., 2018; Ndemo & Weiss, 2017).

7.2.3 Public Sector Institutions implement ECM systems to transform into a Digital Workplace

Most institutions implement ECM systems to digitally transform their content and go paperless (Laumer *et al.*, 2017; Escalona, 2015; Zhao *et al.*, 2015) and this is consistent with this study. The institution wanted a seamless collaboration and transfer of documents and workflows without using paper documents. This implied that they needed an electronic environment where every administrative activity would be conducted digitally in a system. This necessitated the implementation of the ECM system by the institution. The findings reveal that in an attempt to obtain the paperless system, certain factors were taken into consideration by the institution. These include top management support, staff support and compatibility with existing systems to ensure the paperless environment. In order to acquire, implement and use an IT artefact, most of the time, the request or idea come from the technical team with support from the top management (Hinings *et al.*, 2018; Loonam *et al.*, 2018; Reis *et al.*, 2018). The findings reveal that though the idea to implement the ECM system originated from the in-house technical team, management had to buy into the idea and own it as if it was their idea. This idea was then communicated to government and the staff of the institution before the implementation begun.

The benefits that digital transformation will give to an institution is somehow dependent on the attitude and the willingness of staffs who are going use the digital technologies to work (Achatz, 2017; Laumer *et al.*, 2017; Heinze *et al.*, 2018). Staffs readiness is key when implementing a system to be used in an institution. This is because in the digital environment, it is this same

staff that will be working with the system. In effect, when the staff are not ready, the full benefits that the technology brings will not be actualized since the interaction between the technology and the staff results in the affordances that the technology provide (Wang, Wang, & Tang, 2018). However, the findings of this current study reveal that the staff were ready to accept the ECM system since it was going to help them in the performance of their tasks as indicated in a previous study (Laumer *et al.*, 2017). This study therefore supports the above studies which show that staff commitment and attitude influence the use of an IS in a digital workplace. The findings also indicate that staffs wanted to have a feel of working in an entirely digital workplace because they were motivated by the rate of digital transformation across the globe. Yeh & Xing (2016) are of the view that staff who are yet to have a feel of digital technologies find it difficult to accept new technologies in institutions due to lack of experience. On the contrary, the views of Li (2018) and Sousa & Rocha (2019) are consistent with the findings of this study which explains the willingness of staff to appreciate technologies in this age of information.

The findings also reveal top management support for the implementation of the ECM system, and this is consistent with that of other studies (Abollado *et al.*, 2017). Top management support and staff of the case institution were commitment to ensure the ECM system is well implemented and used. However, the findings of this study contradict the findings of other studies (Bakunzibake *et al.*, 2016; Jaakonmäki *et al.*, 2018; Maican & Lixandriou, 2016) which indicate that ECM system implementation mostly fail in institutions because its implementation lacks user readiness and management support. Further, institutions implement IS taking into consideration the implementation plan of the software vendor and the ability of the software to integrate with other systems (Sakowska *et al.*, 2017). To ensure paperless processes and a digital workplace, the ECM like any other IS was selected based on its capacity to integrate with other

existing IS to ensure a paperless environment (Deelman *et al.*, 2015; Smith *et al.*, 2013). The ability of the software to integrate and collaborate seamlessly with existing IS tools in an institution makes it easy to realize the benefits that comes with digital transformation and is relatively cheaper since the existing systems are not ignored and replaced (Escalona *et al.*, 2015). Institutions are therefore very keen in making sure that, before the introduction of a completely new system, an assessment is made to ensure that there is a high possibility of integration with the institutions' current systems (Hullavarad *et al.*, 2015; Escalona *et al.*, 2015).

7.3 ECM System Implementation in the Public Sector Institution

As earlier indicated in the findings, the activities that occurred and the sequential processes the case institution went through to implement the ECM system need to be mentioned. These activities include planning, training of the in-house technical team, initial installation of the ECM software and integration with existing systems, full ECM software installation in all departments, use of the system and finally, software maintenance and support.

7.3.1 Planning the ECM System Implementation

This phase of the implementation process consists of maiden meetings with stakeholders, forming the implementation team and performing information gathering and specifications. The findings of this study show that the challenges that originated from the pre-digitalization era and influence from government, management and the in-house technical staff made the case institution opt for the ECM system. Though the original idea emanated from the technical team in the institution, top management bought into the idea and they were allowed to own it and push the agenda for digital transformation backed with government support. The choice of the ECM system was therefore based on the directives, demands and expectation from government,

management and the institution as a whole. The whole implementation process began with having a number of meetings between the G-Consult and the management and technical team of G-PSI. After coming to a consensus, contracts were signed for the commencement of the ECM system implementation.

Though the cost of an IS such as the ECM system and the usefulness of an ECM software influences its selection (Haug, 2012; Bakunzibake *et al.*, 2016; Laumer *et al.*, 2017; Cho, 2018), this is contrary to the findings of this study. The findings of this study reveal that cost was not a major criterion for the selection of the ECM system. Rather, the decision to implement it was based on the usefulness of the system and its ability to meet government directive for digitalization and to mitigate the challenges of the paper-based system. A conclusion was made by the various stakeholders on the implementation of the ECM software regarding EULA, institutional policies, implementation plan, systems support, and the integration procedures. A final decision was made and the software installation processes commenced. Prior to the actual implementation, a team was formed to spearhead the implementation process. The implementation team comprised of technical members from both the vendors (G-Consult) and the case institution (G-PSI). There was a ten-member implementation team which consisted of six (6) technical people from the software vendor and four (4) technical people from the case institution. The software was an outsourced proprietary software so the representatives from G-PSI played a role of aiding the implementers in terms implementing the system to meet the needs, demands and policies of the institution. This implementation team were tasked to ensure that the whole implementation process was carried out successfully.

A good information and requirement gathering ensures that the needed inputs that make a system meet users' needs is determined (Bakunzibake *et al.*, 2016; Oliveira & Martins, 2011).

Requirements and information gathering is key for a system to be implemented with less hassle and frustration. This is because, not gathering the right amount of information and specification requirements creates a chaotic environment in which stakeholders may be disappointed with the system (Matt *et al.*, 2015), creating a loss in the end. With good requirements gathering and specification, developers and vendors are able to implement systems that suit institutions' needs by adding or taking away unused features, reducing project chaos and reducing the defects in delivering the system (Bakunzibake *et al.*, 2016). This will therefore result in a faster and better delivery of the software and increase the levels of satisfaction from both the institutional stakeholders and the developers or vendors (Kaur & Aggrawal, 2013; Sarker, Wu & Hossin, 2018). The findings of this current study reveal that all the departments in the institution were consulted individually to know their workflows and activities as well as the types of systems used in order to agree on a standardized corporate implementation plan. The involvement of all stakeholders in the implementation process put users in a position to properly interact with the ECM system after its implementation to help the institution actualize the enabling affordances.

7.3.2 Training and Sensitization of the In-house Technical Team by Vendors.

In order to carry out a successful implement the ECM system implementation, an initial training was done for the in-house technical team for four days before the actual installation began. The training was necessary because the vendors needed the in-house technical team to provide the needed support to effectively implement the ECM software to fit the institution's standards and policies. The training was also to enable the in-house technical to be familiar with the software before the installation process began. This is consistent with a study which states that training of technical members before a software installation is necessary for a smooth implementation process (Majchrzak & Markus, 2016).

7.3.3 Initial Installation and Integration with Existing Systems

In this phase of the project, the ECM software was installed by the implementers with support from the in-house technical team in five functional departments of the case institution. Before the installation, the team prepared the servers, data centre, networks, desktops and all the needed IT infrastructure to ensure that the installation was successful. The ECM software was therefore installed on the institution's hardware infrastructure, integrated with the Oracle EBS and linked to the institution's on-premise data centre. To make the process smooth, the findings showed that the technical team of the case institution enthusiastically supported the vendors to make this digital transformation project a success.

The findings of this study reveal that, the ECM system was implemented to integrate with existing IS (Oracle EBS) and make the institution a digital workplace by digitally transforming the operations of all the departments. The ECM system was integrated with the modules of the Oracle EBS to ensure easy collaboration and transfer of contents across selected departments. The implementation approach employed was first a parallel method. With the parallel approach, new content was created using the new system and old paper contents were migrated unto the system by digitizing them, a process known as digitization (Abu-Shanab *et al.*, 2015). The departments selected for the initial installation were chosen based on the fact that they receive and process most of the institutions information and processes. Installation of the ECM system in the five departments was done to monitor and study the ECM system on how effective it can operate in the institution and also to deal with frequent errors that occurred. Various types of system testing were carried out during the process to make sure the system is operational before the full implementation. Deploying an IS in all departments at once is challenging and costly, as there is a colossal number of factors that can influence the implementation so it therefore critical to implement IS in phases (Abollado *et al.*, 2017; Ardolino *et al.*, 2017). They indicated

that it is recommended to start with just a few users and a limited number of activities, and then expand the project to reach the defined scope. The findings reveal that the institution needed to seek a scalable solution, so it had to start small but then be capable of expanding the ECM system to the rest of the departments.

7.3.4 Full installation of the ECM system in all Departments and Units

For an institution to become a digital workplace, it should be capable of operating in a paperless or a nearly paperless environment (Hess, Benlian, Matt, & Wiesböck, 2016; Hinings *et al.*, 2018). The findings reveal that the initial installation and use of the system existed for close to one year as the institution was testing its readiness and the system's usability. The institution was ready to be turned into a digital workplace after a year. To achieve this, they needed to make the system operational in all the departments and units in the institution. This meant that electronic workflow was not only limited to a few departments but managers from every department could initiate their own workflows and electronic collaborations. Each user of the ECM system had authentication and authorization credentials and this served as a means to ensure contents and systems security. Digital transformation in the case institution therefore started when the ECM system was fully implemented in all departments.

7.3.5 Providing Training and Support for the ECM Software

The implementers and the in-house technical team provided a suitable training and education for the users of the system for three weeks. This was to certify that they understand how the system operates and how it can assist them in performing their administrative tasks digitally. User manuals and documentations were given to users, a number of training seminars were organized and online tutorials and support were made available for users to ensure the appropriate understanding of the ECM system's functionalities. The training and education was

done because, failure to deliver substantial education and training for users creates end-user ignorance which may lead to a system failure (Ali *et al.*, 2016). On this basis, support and training were provided to the users of the system both remotely and on sight to make sure users understand the system comprehensively. G-PSI opted for an outsourced system because of the nature of system needed, the usefulness of the system, the expectations of management and government and the availability of vendor support. Since the ECM software was outsourced, the implementers are always consulted whenever there are problems with the system. This study confirms the study by Effah and Abbeyquaye (2013) which states that the in-house technical team usually seek for the assistance of consultants to obtain successful results in the implementation of an IS.

7.3.6 Use of the ECM System

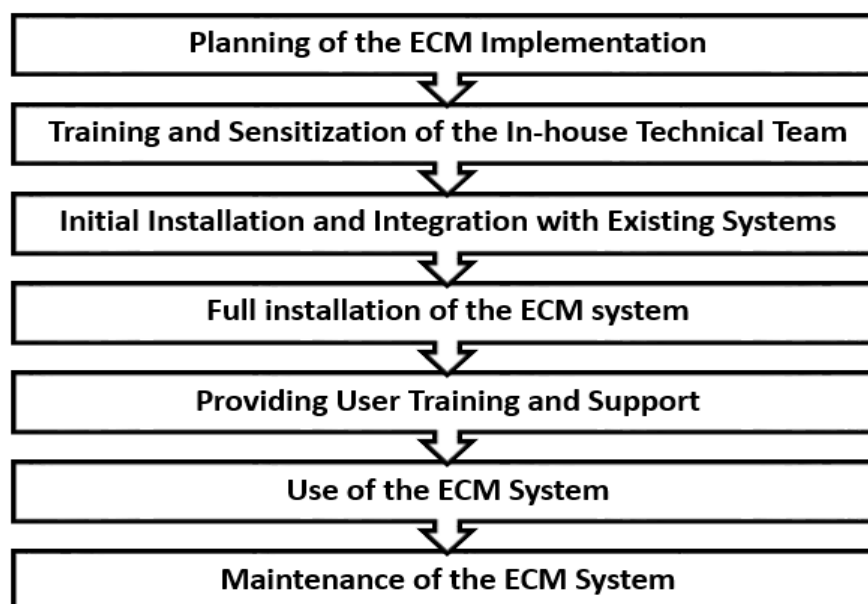
The findings reveal that the implementation was successful because the staff, top management, the in-house technical team, the implementers and government were all ready for a digital transformation change to make the PSI a digital workplace. Intrinsicly, they all pulled their efforts together in order to make the ECM implementation a success. Users had a feeling that they were not being forced and pressured to use the system because they also needed the system to help them perform their task efficiently. However, the findings support that of Effah and Abbeyquaye (2013) which revealed that when top management supports the implementation of an IS, it does not automatically mean that users support the initiative. The findings of this study reveal that users were not forced to use the ECM system; hence the use the ECM system was not as a result of apathy staff had for its usage. Since staff and top management were in full support of the ECM system, and adequate training were given to users of the system, its use has been very successful.

7.3.7 Maintenance, Update and Upgrade of the ECM Software

The changing nature of IS usage as a result of innovation in technology calls for a regular maintenance, update, upgrade and support for an implemented system (Heavin & Power, 2018). The findings reveal that the readily availability of support for the ECM software was one of the reasons the case institution selected that particular ECM system. The software implementers perform updates, maintenance and provide support for the ECM system when the need be. The findings from this study also showed that even though the maintenance cost is expensive, it was factored in the initial cost and an agreement was made to maintain the system after its implementation without paying for exorbitant maintenance fees. Therefore, when there is an upgrade on the system, the institution incurs a little cost to cater for such upgrade. Although the cost of maintenance is little due to the initial agreement, management are prepared to provide the necessary financial support for the system to be properly maintained, upgraded and updated.

The figure below gives a pictorial representation of the process flow of the implementation of the ECM system as analyzed from the case description.

Figure 6.1: Process Flow of ECM Software Implementation



Source: Author's Construct

7.4 Consequences of Implementing the ECM System

The implementation of the ECM system in the PSI triggered some consequences which are either enabling or constraining consequences (positive and negative effects) The consequences that the case institution prepared for, perceived, predicted and anticipated it to happen are seen as the intended consequences while the unintended consequences were the ones that had not been anticipated for and the case institution had not prepared for its occurrence. This section presents the enabling and constraining consequences as well as the intended and unintended consequences that the case institution experienced after the implementation of the ECM system. Also, the findings of the study show that the success obtained from the ECM implementation was not automatic. Rather a conscious effort was made to see to it that the ECM system was implemented to fit the necessary institutional requirements and policies. The appropriate checks and balances were put in place to ensure that the case institution experience the full benefits of the ECM system so as to overshadow the negative effects.

7.4.1 Intended Consequences

The findings of the study reveal that some consequences were expected and anticipated; hence its occurrence was not a surprise to the case institution. One of the ultimate expected consequences was to make the case institution a digital workplace. Though a complete digital workplace was not achieved, the ECM system has enabled the case institution to operate in a nearly paperless environment since most of its operations have been digitally transformed. The findings reveal that certain contents are still kept manually due to challenges with the admissibility of electronic contents in the country's legal system. However, the aspect of digital transformation has increased the decision making rate as timely information is made available to carry out the process without unnecessary delays. This is because, the retrieval response time to search for an information has been reduced and the problem of regular cases of lost and

misplaced files has been curbed. Further the ECM system has provided a secured system that suits the PSI's administrative work environment and satisfies its policies in terms of document security (Laumer *et al.*, 2017; Singh & Hess, 2017). The findings of this study reveal that the ECM system was implemented not only to satisfy the needs and expectations of management and staff but also to fulfil the directives of government.

The findings reveal that the ECM system has enabled the integrity, confidentiality and privacy of the activities and contents through access control mechanisms. This has reduced intervention of sensitive documents by unauthorized users. From the findings, sensitive contents available to unauthorized users posed security threats. The security of contents is therefore ensured with the ECM system. Also, since the institution needed to provide reports to their regulators, there was the need to lessen human intervention to reduce the severity of document loss and produce timely accurate contents to meet regulators' standards. With the ECM having security features like authentication, authorization and trackable features that allows for non-repudiation of activities, sensitive contents and workflows are secured.

Unlike the Oracle EBS that enhances business operations and manages documents, the ECM system goes beyond just document management (Katuu, 2012). The institution wanted a system that can ensure effective records management from its current stage through to the semi-current stage to the non-current stage digitally. Based on this, the ECM system was selected and this is giving the institution the opportunity to customize a retention schedule that fit the institution's and government requirements to determine content retention and destruction. Through this, there is always be adequate storage space for the institution to store all institutional contents in the ECM system repository.

From the findings, current records sometimes get stacked in offices of managers and this slows down decision making. The implementation of the ECM system ensures electronic workflow and help track and monitor which office a document is in the entire workflow process. Also, approval and endorsement of documents in the system is done electronically using a digital signature accompanied by an approval message. However, documents to be sent externally and huge contracts needs physical approval. With the system in place, the case institution is able to create and capture day to day records electronically, manage workflow electronically and the resulting records are kept electronically in an archival repository (Laumer et al., 2017; Escalona, 2015). The findings of this study reveal that, with the exception of some significant contracts, receipts involving huge money, land titles and some external documents, all other documents and administrative activities internally are digitally transformed.

One question that need to be asked is if the ECM system has digitally transformed or digitally innovated the institution's operations. While digital transformation means digitalization of the entire internal documents and processes of an institution (Demirkan *et al.*, 2016), digital innovation means digitalization of an aspect of the business processes or a department of in an institution (Hinings *et al.*, 2018; Solis & Littleton, 2017). The findings of this study reveals that the case institution is experiencing digital transformation. This because the ECM system allows all its branches and departments to digitize their records and digitalize their workflow processes and store all contents from the ECM system electronically in its repository. This is consistent with the above studies (Hinings *et al.*, 2018; Solis & Littleton, 2017). This study is also consistent with Hinings *et al.*, (2018) which noted that one of the key reasons for digital transformation is to give businesses competitive edge for efficient and effective management of contents processes and performance. The ongoing discussion therefore indicates that the intended consequences were all anticipated by the case institution, hence all stakeholders

prepared well for the implementation of the ECM system to achieve the maximum benefits. These benefits have therefore enable the institution to meet its demands of mitigating the problems of the paper-based system ensuring efficiency and effectiveness. (Alalwan, 2013; Demirkan *et al.*, 2016; Jaakonmäki *et al.*, 2018)

7.4.2 Unintended Consequences

The case institution had some expectations from implementing the ECM system and a greater percentage of these anticipated expectations have been met as indicated above. However, the ECM system has also given the institution some unintended consequences that were not anticipated prior to the implementation of the project. The implementation of the ECM system has transform the working environment of the case institution into a smarter environment. Due to this, staff of the case institution are motivated to work in this newly created environment. The findings reveal that managers from the various departments can digitize contents and initiate their own workflow processes due to the ease of use of the system. Also workflow and activities that happen in the institution is easily traced by top management using the system. This new manner of operation has positively change the attitude of staff towards work as staff are regular and punctual at work. Again, the retrieval response time taken to get access to information has been reduced drastically since search and retrieval is now digital. This has also reduced the efforts and time used to search for contents by staff and has provided the avenue for a relatively faster decision making process. The staff attitude towards work has been transformed positively due to the usefulness the ECM system provide in performing their task. In effect, the findings reveal that the staff are ready to work with the system effectively to ensure that the institution meets it goals and objectives.

7.4.3 Enablers of the Consequences

The interaction between the users of a system and the system itself results in some affordance effects (Bygstad *et al.*, 2016). However, the interaction between the users and the system depends on certain factors known as enablers. First, the usefulness and ease of use of the system triggered the effective use of the system, hence the consequences. This supports the studies by Ardolino *et al.*, (2017) and Laumer *et al.*, (2017) which reveal that users benefit from IS that are useful and easy to use. The findings of the study reveal that the system helps the users in performing their functions effectively, hence the need to use it. For instance, in the manual system, staff were stressed up when searching for contents for managers to take actions. Since staff get little or no stress in performing their functions using the system, it influences them to interact with the system more. Again, the findings reveal that the system has a user friendly interface which influences users to interact with the system easily. As indicated by Abollado *et al.* (2017), digital transformation technologies with complex user interfaces influence the usability of an IS. However, this study reveals that the ECM system has a flexible easy to use interface that enables managers to create and initiate workflows on their own without any advanced technical skills. The ease of use of the system is also due to adequate training and education on the effective use of the ECM system. So managers can create contents electronically and initiate an electronic workflow on their own which makes the ECM system implementation result-oriented.

Further, the users always interact with the system because of the rate at which the institution gets assistance from the implementers (vendors). This study supports the study by Effah and Abbeyquaye, (2013) which indicated that in-house technical teams usually seek for assistance from consultants for a successful IS implementation. The findings reveal that anytime there is a system problem, the implementers give them a quick response to solve the problem remotely

and when it involves physically visiting the institution, they come promptly. The timeliness of implementers to solve systems issues put users of the system in a position to interact with the system since any errors caused will be promptly attended to and solved.

As indicated already, the findings of the study reveal that the implementation of the ECM system was influenced by the in-house technical team, management of the case institution and government. This meant that staff and users of the system had no option to opt out since the decision to use the system was backed by government. However, the findings of the study show that staff were ready and had interest in using the system so they are not using the system out of apathy. This therefore makes it easier to comply with government and top management directives to interact with the system to achieve the benefits that come with digital transformation.

7.4.4 Constraints of the ECM System for Digital Transformation

The implementation of an IS for the purpose of digital transformation can bring operational modifications in an institution and these changes provide some benefits as well as drawbacks (Abollado *et al.*, 2017). Since the implementation of the ECM system resulted in some enabling affordances that were planned for and those that were not planned for, the constraining affordances of the system are also worth mentioning. From the findings of the study, the case institution faced a few challenges.

Like most networked IS, two challenge that is being faced is network failure and power failure. Network connectivity, a key component of digital transformation, is the major constraint in the institution. The findings of the study reveal that users are unable to work digitally when there is network problem leading to delays in performing routine tasks. This is partly as a result of

the implementation plan by the case institution. The case institution opted for an on-premise server at the expense of the cloud service to fulfil the institution's data protection policy. Issues such as where its contents were going to be stored, who have access to the content and who manages the content were discussed and analyzed before the option of an on-premise content storage was determined. The ECM system is interconnected in all departments so when the system encounters a problem, it affects all departments including the office of the Chief Executive thereby slowing down administrative processes and workflows. The findings of this study is consistent with other studies (Lederer *et al.*, 2017; Loonam *et al.*, 2018) which also indicated network problems as a challenge in digital transformation. Nonetheless, the ECM system provides cloud services. Using the hybrid cloud architecture comparatively reduces the frequency of server failures and is reliable for business continuity. This is something the case institution can consider moving forward.

7.5 Future Implications and Expectations

There are some future expectations regarding the use of the ECM system. These are expectations that management, the technical team and users of the system want to see to make the institution utilize the ECM system effectively and efficiently to produce better outcomes. On the part of management, the findings clearly reveal they support the implementation of the system and are willing to provide the needed support to make the institution a perfect digital workplace. Despite the content security issues raised, management are putting measures in place to ensure that users can interact with the system on other computing devices such as personal phones and tablets. This will enable users of the system to interact with the system not only in their offices but at any location within the institution. Also, management together with government and the implementers, are having long term plans to sign up for the system's cloud

storage services. Signing up to the ECM system's cloud services will enable users interact with the system with a very minimal server failure possibility to ensure business continuity.

In order to survive and work effectively in a digital environment, an effective use of the system for digital transformation is key. On the part of the users, the findings clearly reveal that the effective use of the system is highly reliant on adequate training and the user friendly interface of the system. The users therefore hope that future systems maintenance, update and upgrade would make the user friendliness nature of the system even much better. This, in effect is going to improve the rate at which users interact with the system and influence will them to work effectively and efficiently in the digital environment.

7.6 Chapter Overview

This chapter gave a detailed discussion of the analysis of findings from the sixth chapter. As such, the literature reviewed in the second chapter was used to enable the researcher to detect contemporary themes and concepts and the findings were discussed in relation to reviewed literature. The discussion concentrated on themes that led to how and why the case institution implemented the ECM system. The chapter additionally presented the enabling and constraining consequences encountered as a result of using the ECM system to digitally transform operations in the PSI. The enabling consequences were further broken down into intended and unintended consequences. The chapter ended by presenting future expectations and implications on the part of the stakeholders of the ECM system.

CHAPTER EIGHT

CONCLUSION, RECOMMENDATIONS AND FUTURE RESEARCH

DIRECTIONS

8.1 Chapter Overview

The preceding chapter presented a discussion based on the analysis in chapter six and provided answers to this study's research questions in relation to existing literature. This current chapter presents a summary and the conclusion of this study by revisiting the research questions in chapter one and showing how these questions have been addressed in this study. Additionally, the chapter presents an assessment of how the study was done and its' contribution to literature, knowledge and theory. Further, this chapter presents the implications of this study for research, policy and practice. Finally, the limitations and recommendations for future studies and the overall conclusion of the study is provided in this chapter.

8.2 A Review of Research Questions

The purpose of this study is to understand ECM implementation and use in a developing country's PSI. ECM systems implementation enable institutions to obtain valuable digital transformation benefits such as content security since data is a vital resource in this age of information. Institutional and national growth in this current age of information thrives on timely, accurate and reliable data so information security has become an important phenomenon. Reviewed literature indicates that most studies on ECM systems focused on the adoption of the ECM system (Herbst *et al.*, 2014; Bakunzibake *et al.*, 2016; Hullavarad *et al.*, 2015; Laumer *et al.*, 2017). The ECM implementation procedure to digitally transform an institution's content and workflow remains under researched in developing countries. Also the implementation and use of ECM systems in the public sector remains under researched as well.

Since the values, culture, user awareness, technology adoption and other internal and external factors of the private sector differ from the public sector's perspective, there was the need to conduct a more current research on the implementation of ECM system in a developing country's PSI.

In a quest to fill the gaps identified in the relevant reviewed literature, the first chapter presented the following research questions so as to address the research purpose. The questions are therefore presented again here as:

- i. Why would a public sector institution in a developing country opt for an ECM system?
- ii. How can a public sector institution in a developing country implement an ECM system?
- iii. What are the consequences of implementing an ECM system in a public sector institution?

This sub section gives a description of how the research questions in chapter one were addressed.

- i. A literature review of relevant studies has been done on the concepts paper-based system, digital transformation and ECM systems. The relevant literature was reviewed to find the needed gaps that this study intends to address. It was revealed in the reviewed literature that studies on ECM mainly focused on its adoption and also the document management aspect of the ECM system. This calls for more studies to be conducted on the how ECM systems are used for digital transformation and the consequences encountered. Moreover, the reviewed literature also discovered that most of these studies originated from the developed countries and also in the private sector with a limited focus on public institutions and developing countries such as Ghana. Since the

culture, technology adoption, user perceptions and other internal and external factors differ geographically, this study focuses on a PSI in a developing country.

- ii. The third chapter presented the theoretical foundation for this study. The chapter discussed the basic principles of the affordance theory and provided reasons for the choice of this theory. The affordance theory was selected due to its applicability in studying the affordance perception actors have about an IT artefact and how the IT artefact is implemented so as create an enabling condition to actualize the affordances. The premise of affordance theory is that affordance are perceived and the interaction between users of a technology and the technology results in affordance actualization. The interaction can bring enabling affordances as well as constraining affordances which may hinder the system's performance and affect output.
- iii. Additionally, the methodology used in this study was presented in the fourth chapter. The paradigms used in IS research were described, the interpretive paradigm was selected and a justification was made for its applicability in this study. The chapter further described the research approach, research method and the strategy used for this study. The chapter concluded by indicating the data collection tools and techniques that were used to collect and analyze the data of this study.
- iv. An overview of the case institution was presented in chapter five as a case study, premised on the findings from the data gathered. Chapter five begun by presenting the background of the case institution, stating its history, mission and mandate, the various departments and the activities of the various departments. The chapter further traced the history of the various systems and the current system used in the case institution. The rationale behind the case institution's decision to implement an ECM system was also clarified. The chapter then explained the implementation procedure and the consequences encountered after the implementation.

- v. Chapter six used the case description from chapter five to present the analysis of the study. It provided adequate insights on the findings and produced interpretation for the findings. The chapter addressed why and how the PSI implemented an ECM system. Again, the affordance theory was used as a theoretical lens to identify the affordances and constraints of the already existing system and the ECM system. The chapter ended by providing explanations on the consequences of implementing the ECM system.
- vi. The seventh chapter presented the discussion of the findings relating it to the relevant existing literature in chapter two. The chapter addressed the research questions asked in the first chapter in relation to the relevant reviewed literature in the second chapter and the research findings in the fifth and sixth chapters. This chapter argued that government directive for digitalization, making the institution a digital workplace and mitigating the challenges of the paper-based system influenced the PSI to implement the ECM system. The chapter further revealed that, though the idea to implement the ECM system to fulfil government directive originated from the in-house technical team, management had to own the idea before the implementation became possible. The chapter finally presented a discussion on the enabling and constraining consequences of implementing ECM system. From the findings, the plan to make the institution a complete paperless workplace was not achieved due to difficulty in admissibility of digital content as evidence in the country's legal system.

8.3 Contribution to knowledge

Interpretive case study research in IS can contribute to the body of knowledge in four main ways (Walsham, 1995). The author explained that these four main areas consist of concepts development, theory generation, provision of rich insight, and provision of specific implications. Conversely, although the aspects of theory generation and the development of

new concepts were not achieved in this study, rich insight, and specific implications can be drawn in this study when it comes to the aspect of research, policy and practice.

8.3.1 Contribution to Theory

As already stated, a new theory was not formulated in this study, nonetheless, the study provides a contribution to knowledge in IS discipline by applying the affordance theory to generalize the reason behind the basis for ECM implementation in a PSI. Further, the study generalized the implementation procedure and the consequences that accompanies the ECM systems implementation in the PSI. Studies in ECM systems adoption and implementation mostly use factor-based theory like the Technology Acceptance Theory (TAM), Delone and McLean IS Success Model, Technology, Organization and Environment (TOE) framework among others. These theories treat the process part of an IS phenomenon as a black box and do not explain how and why the predictors and outcomes are related and therefore offer partial understanding of the ECM phenomenon. While the use of affordance theory in ECM research remains under researched, this study however used the affordance theory to understand how and why a PSI implements an ECM system and the consequence encountered. Using this interpretive theory is useful and has enabled this study to provide deep insight into the implementation and use of the ECM system in a PSI.

8.3.2 Providing Rich Insights

As explained in the research findings and analysis this study provides rich insight into the implementation of an ECM system and the consequences encountered. The study revealed that since the case institution is a PSI, government played a role in the ECM implementation. As such, the study further revealed that PSIs implemented the ECM system to meet government directive for digital transformation. Further, the findings also show that though the idea to opt

for the ECM system originated from the in-house technical team, management had to buy into the idea and own it before the system was implemented. Also, to ensure digital transformation, ECM systems are selected based on their compatibility capacity with existing IS. Moreover, the findings of the study reveal that since decision to implement the ECM system was supported by both government and management, cost of acquiring, installing, training and maintaining the system was not a major challenge provided the ECM systems fit their expectations. As such, cost is not a major criterion for the implementation of the ECM system in a PSI, but rather the usefulness of the system and how best the system suits the expectations of government, management and the institution as a whole.

Moreover, the study provided a deeper understanding on how an ECM system is successfully implemented in a PSI. This is because the whole implementation process from start to finish was spelt out in this study. Periodic meetings were scheduled among stakeholders of the system and the exact terms and conditions and needs of the case institution were ascertained. Also requirements were gathered from the in-house technical team and users of the system from all the departments by the vendors. Most of the digital transformation projects performed by the vendor happen to be in the private sector so there was the need for the implementers to understand the organizational culture and the environmental factors that are likely to influence the implementation of the system. The implementation of the ECM system started with a few departments for close to a year before the entire institution was digitally transformed. This was to perform real time monitoring and testing to know the strengths and weaknesses of the system and the readiness of the institution. During the implementation process, the ECM system was integrated with the institutions Oracle EBS for the purpose of seamless collaboration. The implementation plan gave the PSI the chance to opt for an on-premise data centre and this decision was based on the data protection policy of the institution.

8.4 Implication for Research, Practice and Policy

With regard to the research, policy and practice aspect, the study has made significant contributions. This has been explained in detail in this sub-section.

8.4.1 Implications for Research

The findings of this study has provided the need for researchers in IS discipline to extend their studies in ECM systems beyond its adoption and implementation which focuses more on the private sector working environment and the document management aspect of the system. The implication for research is that though ECM systems work effectively in the private sector, it works better in a PSI when it is implemented in a manner that meets the needs, demands and expectation of government, management and staff of the institution. These expectations include compatibility with existing system, conforming to institutional policies, and provision of readily available support from the implementers. This is to ensure that the ECM system effectively serve the purpose for which it was implemented. As such, researchers ought not to make a generalization that the implementation of an IS is influenced mainly by management and staff. Instead, government in developing countries also play a role in the implementation of IS in a PSI regardless of the cost. The reason is that the case institution is a PSI and is therefore influenced by government policies and directives.

In addition, the affordance theory also revealed that inasmuch as there may be an affordance with an IS, there are also constraints that users encounter. As such technology use can constrain users of the technology from performing their activities to achieve their objectives. The affordance theory enabled the researcher to understand why G-PSI opted for an ECM system and explained what they can do with the system to achieve its benefits. However, though the study tried to capture how the implementation was done, that aspect of the study was not

adequately analyzed with the affordance theory and this is because it is not a process-based theory. There is therefore the need for researchers studying a process-based approach to be cautious in the selecting of the affordance theory as a theoretical lens. It is however very important to have an aspect of the theory that will enable researchers to study a process-based phenomenon in addition to understanding the consequences of an IS implementation.

8.4.2 Implications for Practice

In terms of the research's implication to practice, this study provides directions for other institutions, especially other PSIs in a developing country that would want to implement an ECM system. The study showed that the various stakeholders who play a significant role in the implementation of the ECM system comprise government, management, the in-house technical team, users and the vendors. This sub-section details how the implication of this study is crucial for institutions in developing countries that would want to opt for ECM systems.

Practitioners should note that the decision to implement a digital transformation tool in a developing country is not only influenced by the PSI's management team. Instead, government and the in-house technical team play a key role in the decision. Moreover, it should be noted that, though most ECM systems implementation are web-based or network based, it is not automatic that this feature would be implemented in a PSI despite its usefulness. This is because of issues relating to data security and data protection policies. As such, when it comes to data storage, PSIs opt for an on-premise data centre so they can protect their contents. More so, there is a restriction on the type of device such as personal computers to access the ECM system since the security of staff personal devices is delicate. Therefore, it is important for researchers not to generalize and create the assumption that all ECM system are cloud-based so users can have access irrespective of their location and access device.

Further, this study acknowledged the need for institutions to develop competences and skills needed by users to interact with the digital technologies used for the digital transformation effectively. This is achieved through requisite training and education so as to make it easy for them to upgrade themselves for the development, implementation and use of ECM systems. In the process of training, the expectations and anticipation of the users in terms of what can be done with the system must be communicated to them such that aspects of the training are geared towards users' expectations.

8.4.3 Implications for Policy

Finally, with respect to policy, the findings of this study is going to help institutions in understanding how and why PSIs implement ECM systems. The study revealed that there were some institutional policies that influenced the institution's decision to implement the ECM system in a manner that fit its expectations and demands. Nonetheless, these policies should be flexible for other PSIs so as to enjoy the full benefits of digital transformation.

8.5 Limitations of the Study

Despite the fact that the study offered some rich insights and provided implications for research, policy and practice, the study however has some limitations. These limitations can be a guidance for further studies by researchers and practitioners in the IS discipline and other related fields. In this study, the case institution was a PSI with some level of autonomy so the findings cannot be generalized to other institutions because of the differences in structure and business models. Also, the contextual diversities may restrict researchers to generalize the findings to other settings.

Further, in terms of resources, time and scope, the study is restricted in these aspects. Since data collection was done in a limited time, out of two PSIs that have implemented ECM systems, only a single case institution has effectively implemented the system fully to ensure digital transformation. In this sense, further studies should do a multiple case study to include all the two institutions and possibly a third one that is surely yet to start its implementation process. This will help in comparing the ECM system's performance and will assist in determining the main factors that are causing the differences.

Debatably, theories give researchers direction, but the affordance theory limited the study because it restricted the researcher to pay attention to only the aspects that are applicable to the theory. However, since the interpretive research paradigm is evolving, the selection of theories is based on beliefs and assumptions and not based on the fact that the theory is the most appropriate to study a particular phenomenon. Therefore, in the quest to find an answer to one of the research questions identified in the first chapter, the theory restricted the researcher in responding adequately to how the PSI implemented the ECM system.

Moreover, in terms of methodologies, they are being applied to find answers to the research questions. Since the study sought to get deeper insights and understanding of the phenomenon, the qualitative method was used. Nonetheless, using the qualitative method limited the researcher in terms of extensiveness.

8.6 Future Research Directions

This study presents some important, notable and vital dimensions that can contribute to knowledge in the field of IS which future researchers can explore.

- i. Further research can conduct a multiple case study to include the other PSIs in Ghana that have implemented ECM systems. This will offer more generalizations on the implementation and use of ECM systems in a developing economy's perspective.
- ii. Since the structure, business model and stakeholders in PSIs differ from other industry, this study can be extended beyond the scope of PSIs by exploring how institutions in different industries implement ECM systems.
- iii. In terms of data storage, the implementation was restricted to an on-premise data centre due to data security policies. This study can be extended by future researchers to investigate the security of web-based and cloud networked based ECM systems.

8.7 Conclusion

The purpose of this study was to understand why and how a PSI in a developing country implements an ECM system and the consequences encountered. Previous studies on ECM systems focused on the adoption and the document management aspect of the system paying less attention to the features that aid digital transformation. Also, though ECM implementation exists in practitioners' viewpoint, there is negligible ECM system implementation firstly in the public sector, and secondly, in a developing country like Ghana. The research sought to address such gaps identified.

The study revealed that when the government and management of a PSI, express interest and support in an IT artefact due to its usefulness, cost is not a major benchmark for the technology to be selected. This opposes the findings of other studies which revealed that cost is a major criterion for the choice of a technology (Haug, 2012) especially in a developing economy. In effect, the major criteria for the selection of the ECM system in the PSI is its ability to meet government directive, integrate with already existing system, make the institution a digital

workplace and mitigate the challenges of the paper-based system. The study also revealed that not all ECM systems implementation are web or cloud based providing remote accessibility. The fear of data security implications restricts PSIs in developing countries to implement an on-premise data centre access to manage their contents at the expense of the web-based services.

Finally, the interpretive case study approach and the affordance theory as a theoretical lens were used to study why and how a PSI implemented the ECM system and the consequences encountered. The researcher was able to find answers to the research questions in responding to the identified gaps in the literature. Moreover, the findings enabled the researcher to gain a deeper understanding and insight in justifying digital transformation in a PSI, how it was done and the consequences that were encountered.

REFERENCES

- Abollado, J. R., Shehab, E., & Bamforth, P. (2017). Challenges and Benefits of Digital Workflow Implementation in Aerospace Manufacturing Engineering. *Procedia CIRP*, 60, 80–85.
- Achatz, R. (2017, June). Digital Transformation at thyssenkrupp: Challenges, Strategies and Examples. In *International Conference on Advanced Information Systems Engineering* (pp. 3-12). Springer, Cham.
- Alalwan, A., Thomas, M. A., & Weistroffer, H. R. (2014). Decision support capabilities of enterprise content management systems: An empirical investigation. *Decision Support Systems*, 68, 39–48.
- Alalwan, A., (2013). A taxonomy for decision support capabilities of enterprise content management systems. *Journal of High Technology Management Research*, 24(1), 10–17.
- Alalwan, A., & Weistroffer, H. R. (2012). Enterprise content management research: A comprehensive review. *Journal of Enterprise Information Management*, 25(5), 441–461.
- Ali, M., Zhou, L., Miller, L., & Ieromonachou, P. (2016). User resistance in IT: A literature review. *International Journal of Information Management*, 36(1), 35-43.
- Ardolino, M., Rapaccini, M., Saccani, N., Gaiardelli, P., Crespi, G., & Ruggeri, C. (2018). The role of digital technologies for the service transformation of industrial companies. *International Journal of Production Research*, 56(6), 2116-2132.
- Bakunzibake, P., Grönlund, Å., & Klein, G. O. (2016). E-government implementation in developing countries: enterprise content management in Rwanda. *Electronic Government and Electronic Participation: Joint Proceedings of Ongoing Research and Projects of IFIP WG 8.5 EGOV and EPart 2016*, 251–259.
- Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The qualitative report*, 13(4), 544-559.
- Berman, S. J. (2012). Digital transformation: Opportunities to create new business models. *Strategy and Leadership*, 40(2), 16–24.
- Besson, P., & Rowe, F. (2012). Strategizing information systems-enabled organizational transformation: A transdisciplinary review and new directions. *The Journal of Strategic Information Systems*, 21(2), 103-124.
- Bianco, A. P., & Covino, L. (2018, July). How service design can drive the digital transformation of the retail revolution. In *ServDes2018. Service Design Proof of Concept, Proceedings of the ServDes. 2018 Conference, 18-20 June, Milano, Italy* (No. 150, pp. 1209-1209). Linköping University Electronic Press.
- Boateng, R. (2018). *Research Made Easy*. Accra: Pearl Richards Foundation.
- Bonfante, L. (2016). Digital Transformation, Cultural Transformation. *CIO Insight*.

- Bygstad, B., Munkvold, B. E., & Volkoff, O. (2016). Identifying generative mechanisms through affordances: a framework for critical realist data analysis. *Journal of Information Technology*, 31(1), 83-96.
- Chen, C. (2011). Quantitative Methodology: Appropriate use in Research for Blind Baseball Ergonomics and Safety Design. *Journal of Human Resources & Adult Learning*, 7(1)
- Chetty, K., Qigui, L., Gcora, N., Josie, J., Wenwei, L., & Fang, C. (2018). Bridging the digital divide: measuring digital literacy. *Economics: The Open-Access, Open-Assessment E-Journal*, 12(2018-23), 1-20.
- Cho, W. (2018). Digital Transformation: Challenges and Opportunities: 16th Workshop on e-Business, WeB 2017, Seoul, South Korea, December 10, 2017, Revised Selected Papers (Vol. 328). Springer.
- Ciuriak, D., & Ptashkina, M. (2018). The Digital Transformation and the Transformation of International Trade. *RTA Exchange. Geneva: International Centre for Trade and Sustainable Development (ICTSD) and the Inter-American Development Bank*
- Corbin and Strauss (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory*.
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage.
- Cronholm, S., & Hjalmarsson, A. (2011). Experiences from sequential use of mixed methods. *The electronic journal of business research methods*, 9(2), 87-95.
- Deelman, E., Vahi, K., Juve, G., Rynge, M., Callaghan, S., Maechling, P. J., ... & Wenger, K. (2015). Pegasus, a workflow management system for science automation. *Future Generation Computer Systems*, 46, 17-35.
- Demirkan, H., Spohrer, J. C., & Welser, J. J. (2016). Digital innovation and strategic transformation. *IT Professional*, 18(6), 14-18.
- Dowdy, B., & Raeford, R. (2014). Electronic resources workflow: Design, analysis and technologies for an overdue solution. *Serials Review*, 40(3), 175-187.
- Dremel, C., Herterich, M. M., Wulf, J., & vom Brocke, J. (2018). Actualizing big data analytics affordances: A revelatory case study. *Information and Management*.
- Dubé, L., & Paré, G. (2003). Rigor in information systems positivist case research: current practices, trends, and recommendations. *MIS quarterly*, 597-636.
- Effah, J., & Abbeyquaye, G. (2013). Social Construction of Open Source Application for Student Records: The Case of Cape Coast University
- Escalona, M. J., Domínguez-Mayo, F. J., García-García, J. A., Sánchez, N., & Ponce, J. (2015). Evaluating enterprise content management tools in a real context. *Journal of Software Engineering and Applications*, 8(08), 431.

- Gibson, J. J. (1986). *The ecological approach to visual perception*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc. (Original work published 1979).
- Grahlmann, K. R., Helms, R. W., Hilhorst, C., Brinkkemper, S., & Van Amerongen, S. (2012). Reviewing Enterprise Content Management: A functional framework. *European Journal of Information Systems*, 21(3), 268–286.
- Goldkuhl, G. (2012). Pragmatism vs interpretivism in qualitative information systems research. *European journal of information systems*, 21(2), 135-146.
- Gray, J., & Rumpe, B. (2015). Models for digitalization. *Software and Systems Modeling*, 14(4), 1319–1320.
- Hartson, R. (2003). Cognitive, physical, sensory, and functional affordances in interaction design. *Behaviour & Information Technology*, 22(5), 315-338.
- Haug, A. (2012). The implementation of enterprise content management systems in SMEs. *Journal of Enterprise Information Management*, 25(4), 349–372.
- Heavin, C., & Power, D. J. (2018). Challenges for digital transformation—towards a conceptual decision support guide for managers. *Journal of Decision Systems*, 27(sup1), 38-45.
- Heinze, A., Griffiths, M., Fenton, A., & Fletcher, G. (2018). Knowledge exchange partnership leads to digital transformation at Hydro-X Water Treatment, Ltd. *Global Business and Organizational Excellence*, 37(4), 6–13.
- Herbst, A., Simons, A., vom Brocke, J., Müller, O., Debortoli, S., & Vakulenko, S. (2014). Identifying and Characterizing Topics in Enterprise Content Management: A Latent Semantic Analysis of Vendor Case Studies. *Proceedings of the 22nd European Conference on Information Systems*, 1–15.
- Hess, T., Benlian, A., Matt, C., & Wiesböck, F. (2016). Options for Formulating a Digital Transformation Strategy. *MIS Quarterly Executive*.
- Hinings, B., Gegenhuber, T., & Greenwood, R. (2018). Digital innovation and transformation: An institutional perspective. *Information and Organization*, 28(1).
- Howard, A. G., Zhu, M., Chen, B., Kalenichenko, D., Wang, W., Weyand, T., ... & Adam, H. (2017). Mobilenets: Efficient convolutional neural networks for mobile vision applications. *arXiv preprint arXiv:1704.04861*.
- Hullavarad, S., O’Hare, R., & Roy, A. K. (2015). Enterprise Content Management solutions - Roadmap strategy and implementation challenges. *International Journal of Information Management*, 35(2), 260–265.
- Hu, B., Lu, B., & Liu, Z. (2018). The Perspective of Manufacturing Enterprise Innovation Ecosystem Evolution Based on Technology Affordance: Transformation Path of the Bright Moon Company. *Digital Enablement: The Consumerizational And Transformational Effects Of Digital Technology*, 325.

- Hutchby, I. (2001). Technologies, texts and affordances. *Sociology*, 35(2), 441-456.
- Ilvonen, I., Thalmann, S., Manhart, M., & Sillaber, C. (2018). Reconciling digital transformation and knowledge protection: A research agenda. *Knowledge Management Research and Practice*, 16(2), 235–244.
- Jaakonmäki, R., Simons, A., Müller, O., & vom Brocke, J. (2018). ECM implementations in practice: objectives, processes, and technologies. *Journal of Enterprise Information Management*, 31(5), 704-723.
- Janowski, T. (2015). Digital government evolution: From transformation to contextualization. *Government Information Quarterly*, 32(3).
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher*, 33(7), 14-26.
- Kaplan, B., & Duchon, D. (1988). Combining qualitative and quantitative methods in information systems research: a case study. *MIS quarterly*, 571-586.
- Katuu, S. (2012). Enterprise content management (ECM) implementation in South Africa. *Records Management Journal*, 22(1), 37–56.
- Katuu, S. (2018). A comparative assessment of enterprise content management maturity models. In *E-manufacturing and e-service strategies in contemporary organizations*, 93-118. IGI Global.
- Kaur, B. P., & Aggrawal, H. (2013). Exploration of Success Factors of Information System. *International Journal of Computer Science Issues*, 10(1), 226–235.
- Klein, H. K., & Myers, M. D. (1999). A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS quarterly*, 23(1), 67-94.
- Kuusisto, M. (2015). Effects of Digitalization on Organizations. *Tampere University of Technology*. (Masters thesis)
- Laumer, S., Maier, C., & Weitzel, T. (2017). Information quality, user satisfaction, and the manifestation of workarounds: A qualitative and quantitative study of enterprise content management system users. *European Journal of Information Systems*, 26(4), 333–360.
- Lederer, M., Betz, S., Kurz, M., & Schmidt, W. (2017). Some say Digitalization - others say IT-enabled Process Management thought through to the End. *Proceedings of the 9th Conference on Subject-Oriented Business Process Management - S-BPM ONE '17*, 1–10.
- Lederer, M., Knapp, J., & Schott, P. (2017). The digital future has many names—How business process management drives the digital transformation. *2017 6th International Conference on Industrial Technology and Management (ICITM)*, 22–26.

- Leonardi, P. M. 2013. "When Does Technology Use Enable Network Change in Organizations? A Comparative Study of Feature Use and Shared Affordances." *MIS Quarterly* 37 (3).
- Li, F. (2018). The digital transformation of business models in the creative industries: A holistic framework and emerging trends. *Technovation*.
- Loonam, J., Eaves, S., Kumar, V., & Parry, G. (2018). Towards digital transformation: Lessons learned from traditional organizations. *Strategic Change*, 27(2).
- Maican, C., & Lixandriou, R. (2016). A system architecture based on open source enterprise content management systems for supporting educational institutions. *International Journal of Information Management*, 36(2).
- Majchrzak, A., Markus, M. L., & Wareham, J. (2016). Designing for digital transformation: Lessons for information systems research from the study of ICT and societal challenges. *MIS quarterly*, 40(2), 267-277.
- Majchrzak, A., & Markus, M. L. (2012). Technology affordances and constraints in management information systems (MIS). *Encyclopedia of Management Theory*, (Ed: E. Kessler), Sage Publications.
- Mapleson, D., Drou, N., & Swarbreck, D. (2015). A workflow management system for de novo genome assembly. *Bioinformatics*, 31(11), 1824-1826.
- Markus, M. L., & Silver, M. S. (2008). A foundation for the study of IT effects: A new look at DeSanctis and Poole's concepts of structural features and spirit. *Journal of the Association for Information systems*, 9(10), 5.
- Marutha, N. S., & Ngulube, P. (2018). Enterprise Content Management System Implementation Readiness to Improve Medical Records Management in Limpopo Province, South Africa. *Library Philosophy & Practice*.
- Máriás, Z., Suhajda, Z., Fekete, I., & Giachetta, R. (2013). AMNIS - Design and Implementation of an Adaptive Workflow Management System. In *7th International Conference on Methodologies, Technologies and Tools Enabling e-Government (MeTTeG 2013)*.
- Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering*, 57(5), 339-343.
- Mensah, I. K. (2016). Overview of E-government Adoption and Implementation in Ghana. *World Academy of Science, Engineering and Technology, International Science Index 109, International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*, 10(1), 61-72.
- Mertens, D. M. (2010). *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods*. (3rd ed.) Thousand Oaks, CA: Sage

- Mosweu, O., Bwalya, K. J., & Mutshewa, A. (2017). A probe into the factors for adoption and usage of electronic document and records management systems in the Botswana context. *Information Development*, 33(1), 97–110.
- Myers, M. D., & Avison, D. (2002). An introduction to qualitative research in information systems. *Qualitative research in information systems*, 4, 3-12.
- Myers, M.D. (2013), *Qualitative Research in Business and Management*, Sage, London
- Nambisan, S., Wright, M., & Feldman, M. (2019). The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes. *Research Policy*, 48(8), 103773.
- Ndemo, B., & Weiss, T. (2017). Making sense of Africa's emerging digital transformation and its many futures. *Africa Journal of Management*, 2373, 1–20.
- Neuman, W. L., & Robson, K. (2004). *Basics of social research*: Pearson
- Nordheim, S., & Päiväranta, T. (2006). Implementing enterprise content management: From evolution through strategy to contradictions out-of-the-box. *European Journal of Information Systems*, 15(6), 648–662.
- Oliveira, T., & Martins, M. (2011). Literature review of Information Technology Adoption Models at Firm Level. *Electronic Journal of Information*, 14(1), 110–121.
- Orlikowski, W. J., & Iacono, C. S. (2001). Research commentary: Desperately seeking the “IT” in IT research—A call to theorizing the IT artefact. *Information systems research*, 12(2), 121-134.
- Orlikowski, W. J., & Baroudi, J. J. (1991). Studying information technology in organizations: Research approaches and assumptions. *Information systems research*, 2(1), 1-28
- Pelletier, C., & Cloutier, L. M. (2019, January). Challenges of Digital Transformation in SMEs: Exploration of IT-Related Perceptions in a Service Ecosystem. In *Proceedings of the 52nd Hawaii International Conference on System Sciences*.
- Petty, N. J., Thomson, O. P., & Stew, G. (2012). Ready for a paradigm shift? Part 2: Introducing qualitative research methodologies and methods. *Manual therapy*, 17(5), 378-384.
- Pfeiffer, A., & Jarke, M. (2017). Digital transformation within the emobility market— Learnings and insights from early market development. In *Smart Energy Research. At the Crossroads of Engineering, Economics, and Computer Science (pp. 23-42)*. Springer, Cham
- Pozzi, G., Pigni, F., & Vitari, C. (2014). Affordance Theory in the IS Discipline: a Review and Synthesis of the Literature. *Twentieth Americas Conference on Information Systems, Savannah, 2014*, 1–12.

- Ramaiah, M., Subrahmanian, E., Sriram, R. D., & Lide, B. B. (2012). Workflow and electronic health records in small medical practices. *Perspectives in Health Information Management / AHIMA, American Health Information Management Association*.
- Reis, J., Amorim, M., Melão, N., & Matos, P. (2018). Digital transformation: a literature review and guidelines for future research. In *World Conference on Information Systems and Technologies*, 411-421. Springer, Cham.
- Ritchie, J., Lewis, J., Nicholls, M. C., & Ormston, R. (2003). *Qualitative Research Practice; A guide for social science students and researchers*. Los Angeles: Sage publications Inc.
- Robson, C. (2011). *Real world research (Vol. 3)*. Chichester: Wiley.
- Sacks, R., Barak, R., Belaciano, B., Gurevich, U., & Pikas, E. (2013). KanBIM Workflow Management System: Prototype implementation and field testing. *Lean Construction Journal*.
- Sahay, S., & Robey, D. (1996). Organizational context, social interpretation, and the implementation and consequences of geographic information systems. *Accounting, Management and Information Technologies*, 6(4), 255-282.
- Sajjad, F., Lee, H., Kamal, M., & Irani, Z. (2011). Workflow technology as an e-participation tool to support policy-making processes. *Journal of Enterprise Information Management*, 24(2), 197-212.
- Sakowska, M. M., Thomas, M. V., Connor, S., & Roberts, R. (2017). Hospital-wide implementation of an electronic-workflow solution aiming to make surgical practice improvement easy. *ANZ Journal of Surgery*, 87(3), 143–148.
- Savoli, A., & Barki, H. (2013). Functional affordance archetypes: A new perspective for examining the impact of IT use on desirable outcomes.
- Schrock, A. R. (2015). Communicative affordances of mobile media: Portability, availability, locatability, and multimodality. *International Journal of Communication*, 9, 18.
- Schwertner, K. (2017). Digital transformation of business. *Trakia Journal of Science*. 15(1), 388-393.
- Seidel, S., Recker, J., & Vom Brocke, J. (2013). Sensemaking and sustainable practicing: functional affordances of information systems in green transformations. *Mis Quarterly*, 1275-1299.
- Shovlin, A., Ghen, M., Simpson, P., & Mehta, K. (2013). Challenges facing medical data digitization in low-resource contexts. In *Proceedings of the 3rd IEEE Global Humanitarian Technology Conference, GHTC 2013*.
- Singh, A., & Hess, T. (2017). How Chief Digital Officers Promote the Digital Transformation of their Companies. *MIS Quarterly Executive*, 16(1), 1–17.

- Smith, A. W., Rahman, N., & Schmitt, J. J. (2013). Workflow management for ETL development. *Journal of Decision Systems*, 22(4), 319–331.
- Solis, B., & Littleton, A. (2017). The 2017 State of Digital Transformation. *Altimeter*.
- Sousa, M. J., & Rocha, Á. (2019). Digital learning: Developing skills for digital transformation of organizations. *Future Generation Computer Systems*, 91.
- Srinivasan, S., Diepeveen, S., & Karekwaivanane, G. (2019). Rethinking publics in Africa in a digital age. *Journal of Eastern African Studies*, 13(1), 2-17.
- Strong, D. M., Volkoff, O., Johnson, S. A., Pelletier, L. R., Tulu, B., Bar-On, I., ... & Garber, L. (2014). A theory of organization-EHR affordance actualization. *Journal of the Association for Information Systems*, 15(2), 2.
- Svärd, P. (2017). Enterprise content management (ECM). *Enterprise Content Management, Records Management and Information Culture Amidst e-Government Development*, 25–33.
- Timonen, H., & Vuori, J. (2018). Visibility of Work : How Digitalization Changes the Workplace. *51th Hawaii International Conference on System Science*, 9, 1–10.
- Tokosi, T. O., & Naicker, V. (2015). Electronic patient record (EPR) system in South Africa: Continuing the debate. In *8th IADIS International Conference on Information Systems, IS 2015*.
- Varghese, B., & Buyya, R. (2018). Next generation cloud computing: New trends and research directions. *Future Generation Computer Systems*, 79, 849-861.
- Vithayathil, J. (2018). Will cloud computing make the Information Technology (IT) department obsolete?. *Information Systems Journal*, 28(4), 634-649.
- Volkoff, O., & Strong, D. M. (2013). Critical realism and affordances: Theorizing IT-associated organizational change processes. *Mis Quarterly*, 819-834.
- vom Brocke, J., Simons, A., Herbst, A., Derungs, R., & Novotny, S. (2011). The business drivers behind ECM initiatives: A process perspective. *Business Process Management Journal*, 17(6), 965–985.
- von Leipzig, T., Gamp, M., Manz, D., Schöttle, K., Ohlhausen, P., Oosthuizen, G., ... & von Leipzig, K. (2017). Initialising customer-orientated digital transformation in enterprises. *Procedia Manufacturing*, 8, 517-524.
- Walsham, G. (1995). Interpretive case studies in IS research: nature and method. *European Journal of information systems*, 4(2), 74-81.
- Wang, H., Wang, J., & Tang, Q. (2018). A Review of Application of Affordance Theory in Information Systems. *Journal of Service Science and Management*, 11(01), 56–70.

- Weber, R. (2004). Editor's comments: the rhetoric of positivism versus interpretivism: a personal view. *MIS quarterly* 36(3).
- Winseck, D. (2018). *Networking China: The Digital Transformation of the Chinese Economy*, by Yu Hong. *Mass Communication and Society*, 21(4), 524–527.
- Wynn Jr, D., & Williams, C. K. (2012). Principles for Conducting Critical Realist Case Study Research in Information Systems. *MIS quarterly*, 36(3).
- Yeh, C.-C., & Xing, M.-H. (2016). Key factors influencing digital content industry in Taiwan from the triple helix perspective. *Technology Analysis & Strategic Management*, 28(6), 691–702.
- Yin, R. (1994). *Case Study Research, Design Methods, second Edition*. Newbury Park: Sage Publications
- Yoo, Y., Boland Jr, R. J., Lyytinen, K., & Majchrzak, A. (2012). Organizing for innovation in the digitized world. *Organization science*, 23(5), 1398-1408.
- Yu, H. (2017). *Networking China: The Digital Transformation of the Chinese Economy* Yu Hong Urbana, Chicago and Springfield: University of Illinois Press, 2017 225 pp. \$28.00 ISBN 978-0-252-08239-9. *The China Quarterly*, 231, 817–819.
- Zammuto, R. F., Griffith, T. L., Majchrzak, A., Dougherty, D. J., & Faraj, S. (2007). Information technology and the changing fabric of organization. *Organization science*, 18(5), 749-762.
- Zhao, Y., Li, Y., Raicu, I., Lu, S., Tian, W., & Liu, H. (2015). Enabling scalable scientific workflow management in the Cloud. *Future Generation Computer Systems*.