InterPARES Trust Project

Research Report

Title:		NA04 – Putting the 'Fun' back in 'Functional'
Status:		Final
Version:		0.2
Date submitted:		November 7, 2017
Last reviewed:		November 7, 2017
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Research domain:		Social Issues
URL:		

Document Control

Version history			
Version	Date	By	Version notes
0.1	Nov 5, 2017	Weimei Pan	Submitted to Fiorella Foscarini for comments
0.2	Nov 7, 2017	Fiorella Foscarini	Revised and finalized
0.2	Nov 13, 2017	Corinne Rogers	Minor formatting updates

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Executive Summary

This research project set out to investigate trust relationships from the perspective of the creators and internal users of organizational records and relevant systems and technologies. Its ultimate goal was to improve such relationships by positively influencing the way in which individuals perceive their work practices and the tools they use to accomplish them. We may not have accomplished such ambitious goal fully. However, by crossing literature review and empirical research findings, our study has identified some areas or themes that appear to be critically important when it comes to taking actions that might result in more fun-to-work-at organizations.

In order to explore the interaction between records creators/internal users, organizational records, and records systems/technologies, and to understand how socio-technical factors shape and are shaped through this interaction, we engaged in a qualitative study that we called *Putting the 'Fun' Back in Functional*, as part of the InterPARES Trust project. In addition to a comprehensive literature review in the areas of human-computer interaction, personal information management, and gamification, a number of semi-structured interviews were conducted with employees from two organizations focussing on the use of two information systems: a meeting management system and an Electronic Document and Records Management System (EDRMS). Several salient themes emerged from the research data, many of which could be explained through theories from the information technology field. The themes identified were: 1) Value accorded to information and records; 2) Implementation of electronic recordkeeping systems as a complex process; 3) Appropriation of electronic recordkeeping systems; 4) Use of "cheat sheets"; 5) Understanding of users; 6) Technology affordances and constraints; 7) Users' engagement in the development and implementation of systems; 8) Information/records specialists as being part of the solution; 9) Importance of Training; 10) Potential of Gamification.

Research Team

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Acknowledgement

1. Background

Research on electronic recordkeeping systems has been around for more than two decades.
During that time there has been a shift in research focus from the functional requirements of these
systems to their implementation. To a certain extent, this indicates that electronic recordkeeping
systems have moved from a theoretical, conceptual stage to a practical delivery stage. The
success of electronic recordkeeping systems in managing digital records depends on both the
validity of the theoretical concepts underlying their design and their successful implementation
such that these theoretical concepts can be put into effective practice. However, anecdotal
evidence and published case studies often report the failure of electronic recordkeeping systems
(Maguire, 2005). We have also observed that empirical research which systematically
investigates the implementation of electronic recordkeeping systems is not yet sufficient (a few
exceptions are Gunnlaugsdottir (2006), and Lewellen (2015)). To fill this research gap, we
undertook this research project.

2. Study Objective

This project aimed to look at the interaction between users and electronic recordkeeping systems
in different stages of adoption (initial introduction, adjustment to the system, continued use, etc.).
Its ultimate goal was to improve such interaction by positively influencing the way in which
individuals perceive their work practices and the tools they use to accomplish them. The
following pages will highlight some of the socio-technical factors that appear to affect the
implementation and continued use of electronic recordkeeping systems.

In addition, inspired by a commercial video[1], the project explored the possibility of
applying the idea that "fun can change behavior for the better" (hence, the name of the project) to

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[1] https://www.youtube.com/watch?feature=player_embedded&v=2lXh2n0aPyw

typical recordkeeping situations and thus improving the implementation of electronic

recordkeeping systems. The research questions of this project were as follows:

- How do users interact with electronic recordkeeping systems in the different stages of
  adoption (initial introduction, adjustment to the system, continued use, etc.)?

- How do users perceive the different functions of electronic recordkeeping systems in
  relation to their own personal information management?

- What are users' opinions on introducing gamification elements into electronic
  recordkeeping systems?

3. Literature Review

The project started in October 2013 with a review of existing literature in the following fields and

subfields:

- Human-technology interaction in organizational settings

    o   Impact of IT on professional identities

    o   Studies of IT design, implementation, adoption, and use

    o   Models of user adaptation of IT

    o   Role of emotions in IT adoption and use

    o   Organizational change issues

- Personal information management

    o   Personal information organization (e.g., subjective classification)

    o   Retrieval strategies

    o   Appraisal issues (personal decisions of what to keep)

    o   Information and task fragmentation

- Game studies and gamification

    o   Defining gamification

- o   Games vs. play

- o   Game elements and mechanics

- o   Methods for planning and implementing gamified applications/systems

- o   Examples of successful applications of gamification

- o   Motivation for engaging with games/using gamification as motivation

3.1 Human-technology Interaction in Organizational Settings

The implementation of information technology in general has been a well-studied topic.

Numerous studies from different perspectives have been published, giving rise and/or

contributing to the development of a number of theories and therefore greatly advancing our

understanding of this topic. For the sake of easy understanding, these studies can be loosely

grouped into the following categories: factor-based studies, process-based studies, studies taking

a socio-cognitive approach, and emotion-focused studies. By contrast, studies on the

implementation of electronic recordkeeping systems did not appear before the past decade.

Moreover, close examination of these studies shows that most of them take the form of case

studies to share experiences and lessons learned related to the implementation of one specific

electronic recordkeeping system, and should mostly be identified as factor-based studies; rarely

do they acknowledge and/or refer to the theoretical advancements made in the field of the

implementation of information technology in general. This literature review intends to offer an

overview of the progress made regarding the implementation of information technology in

general and electronic recordkeeping systems in particular. It is important to note that in no way

does this literature review aim to be exhaustive. Articles selected are intended to illustrate

generally the different perspectives regarding the implementation of information technology and

electronic recordkeeping systems.

The implementation of information technology

Though rarely acknowledged, one of the issues in existing information technology

implementation research is the confusion around the terminologies used to refer to the different

stages of the introduction of information technology, ranging from development, to adoption, to

user's acceptance, to use, to continued use. There are studies investigating and comparing the

different factors or processes at work at the different stages of implementation, for example, pre-

adoption and post-adoption (Karahanna *et al.*, 1999) and continuing IT use (Ortiz de Guinea, and

Markus, 2009). The differentiation between these different stages is necessary in order to gain a

nuanced understanding of the implementation process and to contribute to the successful

implementation of information technology. Despite this, it appears that the use of these terms is

not consistent across different studies, and seldom are there attempts to give clear definitions of

them. One exception is the stage model developed by Zmud and Apple (1989) (cited in Cooper

and Zmud (1990)), which categorizes IT implementation activities into the following stages:

initiation, adoption, adaptation, acceptance, routinization, and infusion; the process and product

of each stage is clearly outlined. Except for works that specifically aim to examine the different

stages of implementation, however, most studies tend to regard implementation as a whole

without distinguishing between different stages. Since the differences between stages were not

the focus of our research, we considered implementation as a whole and defined it as "an

organizational effort directed toward diffusing appropriate information technology within a user

community" (Cooper and Zmud, 1990, p. 124).

Another feature of existing studies on information technology implementation is that the

analysis is usually conducted at a single level (e.g., the individual, group, or organizational level),

which ultimately leads to "an unnatural, incomplete, and very disjointed view" of information

technology implementation (Burton-Jones and Gallivan, 2007, p. 657), and renders the

applicability of analysis conducted at one level to another level uncertain. For instance, the

Technology Acceptance Model (TAM) introduced by Fred D. Davis (1989) aims mainly to

illustrate the constructs and process that lead to individuals' use of information technology. By

contrast, the Critical Success Factors (CFSs) research prevalent in the field of Enterprise

Resource Planning (ERP) system implementation tends to identify factors at the organizational

level (e.g., *top management commitment and support*, *change management*, and *project

management*). Recognizing this limitation, researchers have started introducing multilevel

perspectives to redress the situation (Lapointe and Rivard, 2005; Burton-Jones and Gallivan, 2007;

Jensen *et al.*, 2009). While our study focused on the factors influencing the implementation of

electronic recordkeeping systems at the organizational level, this literature review will cover

studies conducted at different levels, aiming to give a comprehensive overview of the state of the

implementation of information technology.

Factor-based research is the most common approach adopted to explore the

implementation of information technology. Studies using this approach usually seek to identify a

list of factors that affect the implementation of information technologies. The stream of research

exemplary of this approach is the Critical Success Factors (CFSs) research on the implementation

of the Enterprise Resources Planning (ERP) system, "a packaged business software system that

enables a company to manage the efficient and effective use of resources (materials, human

resources, finance, etc.) by providing a total, integrated solution for the organization's

information-processing needs" (Nah *et al.,* 2001, p. 285). First appearing in the 1960s, CFSs are

defined as "the limited number of areas in which results, if they are satisfactory, will ensure

competitive performance for the organisation" (Rockart, 1978, p. 12). It is, therefore, assumed

that as long as sufficient attention is given to these areas, the ERP system will achieve the

performance goal. A long list of factors has been identified by different researchers ever since the

1960s, such as top management commitment and support, visioning and planning, building a

business case, project championing, implementation strategy and timeframe, Vanilla ERP, project

management, and so on (Finney and Corbett, 2007). More recently, researchers have started

compiling and categorizing these factors so that organizations can effectively utilize them. The perspectives used to categorize these factors include key stakeholders (Finney and Corbett, 2007), strategic versus tactical factors (Holland and Light, 1999), and ERP lifecyle model (Nah *et al.,* 2001).

Despite the large number of CSFs identified, Ram and Corkindale (2014) question whether CFSs have been empirically shown to be "critical." Their analysis found that "only some CSFs" in ERP literature have empirical support associated with some form of positive outcome; they therefore suggest that "more research studies are needed to establish the definitive role of CSFs on project outcome and/or post-implementation performance improvements" (Ram and Corkindale, 2014, p. 164). Though CFSs research is mostly conducted in the context of ERP implementation, the CFSs identified should have much wider applicability beyond ERP system implementation.

Process-based research aims to describe the process by which different constructs interact and lead to the acceptance of information technology or the success of information technology implementation. Most of the outcomes of this research are presented in the form of a theoretical model, such as the Technology Acceptance Model (TAM) (Davis, 1989), or DeLone and McLean's model (DeLone and McLean, 1992, 2003). Theories from other fields have also been drawn on to develop theoretical models or directly explain users' interaction with information technology; some examples include the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), the Theory of Planned Behavior (TPB) (Ajzen, 1985), and Innovation Diffusion Theory (IDT) (Rogers, 1962).

The Technology Acceptance Model (TAM), a model developed based on self-efficacy theory, the cost-benefit paradigm, adoption of innovations, evaluation of information reports, the channel disposition model, and other non-MIS studies, explains the constructs (i.e., *perceived*

ease of use and *perceived usefulness*) that are determinants of individuals' use of information technology. *Perceived ease of use* is defined as "the degree to which a person believes that using a particular system would be free of effort," while *perceived usefulness* refers to "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320). The influence of these two constructs on individuals' use behavior is mediated by another construct—namely, users' intention to use. TAM was later extended by many researchers through identifying the antecedents of *perceived ease of use* and *perceived usefulness*. Some antecedents identified include individuals' general computer self-efficacy, objective usability (Venkatesh and Davis, 1996), subjective norm, image, job relevance, output quality, result demonstrability (Venkatesh and Davis, 2000), performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003). The incorporation of these variables into TAM yields another two extended models of TAM: TAM 2 (Venkatesh and Davis, 2000) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh *et al*., 2003).

Despite its strength in identifying and explaining the core constructs in determining individuals' acceptance of new information technology, one limitation of TAM (even with its subsequent extensions) is that it fails to explicate the process by which external variables influence individuals' beliefs and attitudes (Agarwal and Prasad, 1999). To complement this, studies have been conducted to identify the list of external factors that influence individuals' perception, belief, and attitudes related to information technology. Some external variables identified include individual characteristics (e.g., user training and user computer experience), organizational support (e.g., end-user support and management support), system characteristics (e.g., functionality, equipment performance, interaction, environment, and the quality of the user interface), and individual differences (e.g., computer self-efficacy, and knowledge of search

domains) (Igbaria *et al.*, 1995; Agarwal and Prasad, 1999; Hong *et al.*, 2001; Pituch and Lee, 2006).

Recognizing that though numerous studies had been conducted to identity the factors that contribute to information system success, the dependent variable in these studies was elusive to define, DeLone and McLean (1992) introduced a comprehensive taxonomy of information system success. Based on an extensive review of previous studies, six discrete dimensions of information system success were identified, which are *system quality*, *information quality*, *use*, *user satisfaction*, *individual impact*, and *organizational impact*. These six dimensions were then drawn together to formulate a descriptive model, often referred as the DeLone and McLean model. This model was later updated and extended by adding the dimension of *service quality* (i.e., assistance provided by the IS department with a variety of tasks), and replacing *individual impact* and *organizational impact* with a more inclusive construct—*net benefits* (DeLone and McLean, 2003). The contribution of DeLone and McLean's model is that it provides a repository of dependent variables that can be used to measure the success of information technology, and it outlines the process of how one dimension of information technology success will lead to another dimension.

The socio-cognitive approach represents an alternative perspective on the interaction between information technology and the organization. Unlike most studies that assume information technology to be "an objective, external force that would have deterministic impacts on organizational properties such as structure" (Orlikowski, 1992, p. 398), the socio-cognitive perspective presumes that "organizational members' acceptance, deployment and actions toward information technologies are mediated by their shared interpretations of these technologies" (Gal and Berente, 2008, p. 133). One of the socio-cognitive frames of reference widely employed in the information technology field to study information technology implementation is sensemaking theory. Defined as the "making of sense" (Weick, 1995), it focuses on "the relationship between cognition and action in organisations, specifically addressing cognitive and social mechanisms for

dealing with unexpected events—for example, the introduction of new technology" (Jensen *et al.*, 2009).

The central premise of sensemaking theory is that users make sense of information technology by identifying specific cues of the information technology (i.e., bracketing), then by relating the cues to a repertoire of frames, and finally by responding to the "sense" just made by enactment. The repertoire of frames users draws on to make sense of the cues of the information technology can be institutional logics or professional identity. The connection to institutional logics offers an opportunity to combine sensemaking theory with institutional theory, which makes it possible to link macro- and micro- levels of analysis (Jensen *et al.*, 2009). There are also studies specifically investigating the cues of information technology (e.g., technology features) that serve as inputs to the sensemaking process. For instance, Griffith (1999) describes the types of new or adapted features contained within the technology from two dimensions—concrete versus abstract, and core versus tangential—and identifies three triggering conditions: novel, discrepant, and deliberate initiative. Sensemaking theory explicates the underlying process of how individuals' exposure to new information technology leads to their behavior.

Another of the most influential social theories that have been drawn on in information systems research is British sociologist Anthony Giddens' structuration theory. As of 2008, more than 300 papers in the literature of information systems research were found to have cited Giddens' work (Jones and Karsten, 2008). Research employing structuration theory contends that while information technology has an inherent social structure (e.g., the structural features and the spirit of this feature set as defined by DeSanctis and Poole (1994)) in its own right, the effects of this structure on the organization are mediated by the social practices of the organization (DeSanctis and Poole, 1994). Structuration theory emphasizes the interaction between the structure within the technology and the organization, and how this interaction may change existing structures or yield new structures. In other words, it is argued that instead of merely

existing as an objective entity, information technology depends on its inherent structure and the organization's interpretation, that not only will information technology have impacts on the organization but that the organization will have impacts on the information technology as well, and that through this adaptive structuration process between information technology and the organization, both will achieve a new structure. Studies employing this perspective mostly aim to examine the impact of information technology on organizational change (e.g., organizational structure); yet, it can also be used to explain the implementation of information technology in an organization.

Two variants of Giddens's work have been introduced for the study of information system phenomena: duality of technology (Orlikowski, 1992) and adaptive structuration theory (AST) (DeSanctis and Poole, 1994). Jones and Karsten's (2008) examination of structuration theory and its use in information systems research shows that a number of studies primarily use structuration theory to support their rejection of determinist accounts of information systems, and that "AST's view of structure within technology, its identification of other independent sources of structure, and its concept of a dialectic of control between the group and the technology would seem inconsistent with Giddens's position that structure is virtual, existing only in its instantiation; that it does not have independent sources, but is the indivisible medium and outcome of the reproduction of practices; and that the dialectic of control is between (human) agents" (p. 146). Despite the discrepancy between structurational information systems research and Giddens's work, this strand of research nevertheless offers an integrative perspective that encompasses both "the decision-making school"(i.e., the positivist tradition) and "the institutional school" (DeSanctis and Poole, 1994).

Emotion-focused research represents another strand of research parallel to those that study the social, cognitive, and technical factors that influence use; it focuses on the role of emotional factors in influencing users' use, and continued use, of information technology. Unlike

other factors, the role of emotions in the implementation of information technology has been largely understudied (Beaudry and Pinsonneault, 2010; Stein *et al.,* 2012). Yet, research conducted recently confirms that emotions complement other factors in explaining and predicting the use and continued use of information technology. Existing research on the role of emotions in the implementation of information technology can basically be grouped into two categories: those that examine emotions as antecedents of adoption and use of new information technology, and those that examine emotions in the adaptation behavior.

As to the first category, a number of studies have identified the relationships between certain types of emotions and different user behavior, for instance, users' satisfaction with initial information system use and their intention to continue using (Bhattacherjee, 2001), anxiety during initial use and users' perception of ease of use and, indirectly, continuance intentions (Venkatesh, 2000). Beaudry and Pinsonneault (2010) offer a systematic study of the direct and indirect relationship between different types of emotions and users' use behavior, classifying emotion into four distinct types—challenge, achievement, loss, and deterrence—based on the coping model of user adaptation (Beaudry and Pinsonneault, 2005) and appraisal theories of emotions (e.g., Lazarus and Folkman, 1984; Smith and Ellsworth, 1985). One emotion from each type (i.e., excitement, happiness, anger, and anxiety) is selected to study their relationships with IT use. Expanding on Beaudry and Pinsonneault's (2010) and prior research, Stein *et al*. (2012) investigate *how* technology triggers different emotions, and further, how various emotions link to various use patterns. Based on previous research, Stein *et al.* (2012) identify three categories of cues that will trigger emotions: material (IT instrumentality and change from established practices), social (interactions with others and involvement in change), and personal (identity work and IT symbolism) cues. Five use patterns were identified as well: personalization, gaming the system, being a good citizen, personalization, and opting out (Stein et al., 2012). Though not in such a systematic fashion, previous studies have empirically verified that users' perception of

instrumental qualities (e.g., controllability, effectiveness, and learnability) and non-instrumental

qualities (visual aesthetics, haptic quality, and identification) is likely to influence users' emotion

(Thuring and Mahlke, 2007). As to the second category of research on the role of emotions in the

implementation of information technology, the Coping Model of User Adaptation (CMUA)

developed by Beaudry and Pinsonneault (2005) identifies two types of coping efforts—problem-

focused and emotion-focused. The latter refers to the efforts the users make to change their

perception of the situation, rather than to alter the situation itself (e.g., regulating personal

emotions and tension, restoring or maintaining a sense of stability, and reducing emotional

distress) (Beaudry and Pinsonneault, 2005).

In addition to the strands of research discussed above, other constructs identified that may

have bearing on the implementation of information technology include identity (Alvarez, 2008),

technology-use mediation (Bansler and Havn, 2003), and user personality (Maier *et al.*, 2012).

This brief review shows that the implementation of information technology is a complex process

that involves a number of constructs and has to be understood using different perspectives. These

studies have greatly advanced our understanding of the implementation of information

technology and are of significant practical value. Though there has as yet been no attempt to

synthesize these studies, such an attempt will constitute a comprehensive framework of reference

for any information technology implementation projects.

The implementation of electronic recordkeeping systems

Compared with the implementation of information technology, the implementation of electronic

recordkeeping systems is relatively poorly studied. Most of the publications related to the subject

are descriptive, relating the authors' experience in managing an electronic recordkeeping system

implementation project and discussing a number of factors perceived as significant in influencing

the success of the project. Therefore, most of this work would be identified as factor-based.

Systematic empirical studies are scarce. Moreover, few studies have drawn on the research and

theory in the information technology field. A review of works related to electronic recordkeeping

system implementation identifies a list of frequently mentioned factors: training (Di Biagio and

Ibiricu, 2008; Gregory, 2005; Maguire, 2005; Johnston and Bowen, 2005; Gunnlaugsdottir, 2008),

engaging "key users" or "power users"(Smyth, 2005; Di Biagio and Ibiricu, 2008), user-

friendliness of the technology (Maguire, 2005; Gunnlaugsdottir, 2009; Wiltzius *et al.*, 2014),

communication (Smyth, 2005; Gregory, 2005; Di Biagio and Ibiricu, 2008), and support by top

management (Gunnlaugsdottir, 2008).

Interestingly, recent works in the archival and records management field show that

academics have started recognizing that electronic recordkeeping systems constitute one type of

information technology, and that there exist numerous theories and studies related to the

implementation of information technology resulting from decades of research. Therefore, despite

the uniqueness of electronic recordkeeping systems, it is possible to utilize the theories in the

information technology field to understand the implementation of electronic recordkeeping

systems. One such recent work is Matthew James Lewellen's (2015) PhD dissertation, which

explores "the factors that influence a user's intention to use an electronic recordkeeping system"

(p.i). Lewellen (2015) first proposed a conceptual model drawing on TAM, organizational

context, and knowledge interpretation literature, and then tested the model using a survey

instrument. It was found that that the three most important constructs influencing users' intention

to use electronic recordkeeping systems were: *the perceived value of records, effort expectancy,*

and *social influence*. Two earlier papers have used dimensions from DeLone and Mclean's model

to measure the success of Electronic Documents and Records Management Systems (EDRMS)

and Electronic Records Management Systems (ERMS), and investigated the independent

variables that lead to different outcomes (Hsu *et al.*, 2008; Hsu *et al.*, 2009). Though studies of

the implementation of electronic recordkeeping systems are still in the early stages, huge potential

exists in this field. Building the connection between electronic recordkeeping system

implementation and that of information technology in general will open up many new research possibilities that will benefit both fields.

3.2 Personal Information Management

With digital records being the norm, records management is no longer the routine filing task that is to be done by records manager after the business activity; instead, it has to be addressed as an integral component of the conduct of the business functions and activities. As a result, records management is part of every employee's job. However, unlike records managers who have a holistic view of the organization's business functions and activities, general employees mostly are only familiar with the activities that are part of their responsibilities. Moreover, since many decisions are involved in record management, e.g., classification, retention and disposition, and metadata, records management at personal level becomes an area of interest to our research. Literature review on personal information management enables us to compare personal information management with work-related ones, and identify any similarities and/or differences between these two.

This literature review has identified a list of factors that might affect personal information management, including psychological psychological burden (Boardman & Sasse, 2004), external pressure (Boardman and Sasse, 2004; Ducheneaut & Bellotti, 2001), perceived benefits of managing information (Boardman & Sasse, 2004), and personality (Boardman and Sasse, 2004). These factors might be relevant if we study records management at personal level.

Psychological Phenomenon

Ross and Nisbett (1991) argued that, as cited in Bernstein et al.'s (2008) paper that small difficulties or facilitators usually have amplified effects on human action, just as "a pebble placed at the fork of a stream can dramatically divert the course of water" (p. 24: 5). Thus, seemingly

small time required to carry out records management activities such as classifying records, or adding metadata might be perceived as enough of psychological burden for employees to avoid them or complete it hastily.

Users' Adaptation of Their Tool for Their Present Purpose

Kuutti (1996) discussed the applicability of activity theory as the theoretical framework for human-computer interaction (HCI). Unlike cognitive theory, which at that time served as the theoretical foundation for HCI, activity theory regards human as actor rather than a factor. Therefore, users are not perceived as another systems with limited attention, processing capability, etc. that need to be completed by computers; instead, they are believed to have the capacity to coordinate and regulate their behaviors. Further, users are not isolated individuals; rather, they will communicate, coordinate with each other to accomplish the task.

Users usually will adapt the technologies used to fit their own purpose. Sun (2012) proposed three antecedents for the adaptation of information systems: "novice situation", "discrepancies", and "deliberate initiative", and two moderators between the antecedents and the resulting adaptation behavior: "personal innovativeness in IT" and "facilitating situation". Four adaptation behaviors have been defined: " new features", " feature substituting", "feature combining", and " feature repurposing".

3.3 Game studies and Gamification

Defining Gamification

The definition of gamification that seems to be most widely accepted comes from Deterding et al. (2011): "the use of game design elements in non-game contexts" (9). Schacht and Schacht (2012) expand this definition to include the concept of enjoyment as an essential element, describing

gamification as the use of game elements in non-game contexts to "…create a sense of playfulness [...] so that participation becomes enjoyable and desirable" (186).

Deterding et al., and others, consider this issue of playfulness as well. Deterding et al. (2011), however, differentiate between games and play, saying that play is a broader category that contains, but is different from, games. They argue that play is a "more free-form, expressive, improvisational… recombination of behaviors and meanings," whereas games are a type of play that contains rules, competition, and goals (p.11). In their discussion of an attempt to create a gamification model for improving project staffing in business, Gears and Braun (2013) discuss how rather than focusing on delivering "fun," they sought to offer a positive and engaging experience that employees would find interesting and important.

Another definition comes from Huotari and Hamari (2011), who look at gamification from the perspective of service marketing, a form of marketing which focuses on services rather than physical goods and emphasizes the entire service package and system. They provide a more detailed definition than others: "[gamification is] a form of service packaging where a core service is enhanced by a rules-based service system that provides feedback and interaction mechanisms to the user with an aim to facilitate and support the users' overall value creation" (3). Like Deterding et al., they emphasize the need for rules.

Game elements and mechanics

The challenge in defining game elements is that they can be interpreted differently by different people in different contexts (Deterding et al., 2011). In identifying the key game elements that they see, Schacht and Schacht (2012) distinguish between in-game and in-person mechanics. Examples of in-game mechanics Schacht and Schacht (2012) provide include awarding points, awarding bonuses, the presence of different game levels, tracking and displaying users' progression ('progression bars'), appointments (participating in the game at a certain time or

place), extinction mechanics (such as time countdowns for completing tasks), ranking mechanics (such as leader boards), community collaboration (working as a team to achieve a goal/complete a task), and virality (rewarding players for inviting others to play). Examples of in-person mechanics include envy ("taking advantage of users' desire to get what others already have;" this relies on "some kind of visibility where players can compare themselves to others") (p.189); loss aversion (motivating players to persist in playing and to do well by threat of a negative consequence for not doing so, such as loss of points or status), free lunch ("users get a reward for free because another player has done a specific task" (p.189), and epic ("individuals' motivation to do a work because they believe that they can achieve something great, something awe-inspiring, and something bigger than themselves" (p.189).

Motivation and psychological considerations.

Given that many gamification projects have the end goal of motivating users to engage with the system and the work that it is designed to accomplish, it is useful to look at ideas around motivation related to games. Schacht and Schacht (2012) have looked to research done in the world of gaming, such as that done by Richard Bartles, a computer scientist whose focus is gaming. Bartles developed four categories of game players based on what motivates them to play: achievers, explorers, socializers, and killers. "Achievers" focus primarily on achieving goals and status; their primary activities are geared to winning, challenging, and comparing. "Explorers" are motivated by exploring and discovering new aspects of the game and its environment and by being surprised. "Socializers" are driven by communicating and empathizing with other players. They seek to establish and maintain relationships with other users. "Killers" are motivated by battling "against others in direct peer-to-peer competitions" and a strong desire to win (Schacht and Schacht, 2012, p.190).

4. Data Collection and Analysis

This research employed a qualitative research design with the use of semi-structured interviews as the data collection method. Qualitative interview investigations attempt to gather information from an individual for the purpose of soliciting responses about their experiences as opposed to their beliefs and opinions (King and Horrocks, 2010). Semi-structured interviews allow interview questions to be addressed, yet, allowing new themes to be brought up. Seventeen semi-structured interviews with public sector employees from a large city government (Organization A) (11) and a large provincial government (Organization B) (6) were conducted. Participants were purposefully recruited through formal contacts with individuals working for the identified institutions. The study participants were volunteers from different functional roles and various government units or divisions. To participate in the study, the selected participants needed to routinely use an information/document/records management system/application in their daily work. The system participants from Organization A use is a meeting management system, which has a back side which staff can use to manage the meeting and a front public-facing website that people can use to access meeting information. The system participants from Organization B use is an Electronic Documents and Records Management System (EDRMS), which has two components: one for managing or "tracing" physical records, one for managing electronic records. Most of the units we interviewed have already been using the EDRMS to manage physical records for a couple of years and are in the process of introducing the electronic part.

This research applied a single data collection method in two locations. Data was collected both onsite and offsite over the phone by two independent investigators in each research site during either work hours or off hours. Prior to the interview, participants were provided with an overview of the research project, including the intent, purpose, and the nature of the investigation. An informed consent form (See Appendix B Consent Form) has to be signed by each study participant prior to commencing the interview.

An interview guide (See Appendix A Interview Guide) was developed and revised beforehand based on issues identified in literature review and a publication by two of the researchers of this project—Oliver and Foscarini (2014). The interview guide included 24 open-ended questions with some sub questions and was logically organized into 5 sections. Section 1 required participants to introduce themselves and provide information about their background, experiences, and role within the organization. The questions in Section 2 examined the value accorded to records and information and required participants to discuss their views on records and information management practices in their organizations. Section 3 specifically solicited information about the participant's experiences using the information/records management system/application in question including the introduction and continued use of the system. Here participants were explicitly questioned about the practice of brining your own device (BYOD) and the inclusion of specific game elements to improve the adoption and use of information/ records management systems. Section 4 required participants to comment on specific functionality of the system including record creation, classification, storage, retrieval and disposition. Finally, in section 5, participants were provided with a series of questions which were designed to gauge participants' views and experiences relating to cloud storage and information trust and trustworthiness.

The researchers in both locations used the same interview guide and followed similar interview protocols. Participants were required to directly respond to questions posed by the researchers, yet, the interviews had a fluid and flexible structure. All participants answered the same interview questions, however, there was flexibility in how and when the questions were put forth and how the interviewee decided to respond. The interview pacing allowed participants to consider each question carefully prior to responding. Each interview was approximately 1-hour in length.

All interviews were audio recorded and transcribed. Data collected was anonymized (e.g., each interviewee was assigned a unique identification number, e.g. Interviewee 1, Interviewee 2) and securely stored. The data was reviewed and coded by the researchers with the assistance of NVivo, a qualitative data analysis software. The coding process starts with open coding on data collected from Organization B, using a combination of different coding methods including attribute coding, descriptive coding, and themeing the data (Saldaña, 2015), and the framework embedded in the interview guide. The generated codes were then reviewed and tested on data collected from Organization A by another research assistant. Once the validity of the codes was confirmed, a second round coding was performed. Some codes generated include *attitude*, *attitude change*, *background*, *on-going support*, and *IT Culture*. The data was then analyzed for overarching patterns. All data was analyzed according to documented procedures to ensure coding consistency among researchers. The research design was feasible for the focus of this study and yielded valid results and conclusions to effectively address the research questions under investigation.

5. Findings

5.1 Value accorded to information and records

In the Information Culture Framework (ICF) introduced by Gillian Oliver and Fiorella Foscarini (2014), as shown in Figure 1, value accorded to information and records is regarded as one of the fundamental factors influencing and explaining general staff's attitudes towards records management, and their behavior. It constitutes "respect for recordkeeping, or the extent to which it is accepted by members of the organization that it is necessary to manage information for the purpose of accountability and to support ongoing business activities" (Upward et al., 2013, pp. 43-44). This understanding of records is usually shaped by layers of culture—national,

occupational, and corporate—and is therefore often hard to change (Oliver, 2011). A similar

premise can be found in the information technology field. For instance, a core theory of TAM is

that individuals' intention to use information systems is preceded by their perceptions/beliefs

related to these information systems (i.e., perceived usefulness, and perceived ease of use).

Further, as mentioned in the literature review, the main premise of the social-cognitive

perspective regarding the implementation of information technology is that organizational

members' shared interpretations of these information technologies will mediate their acceptance,

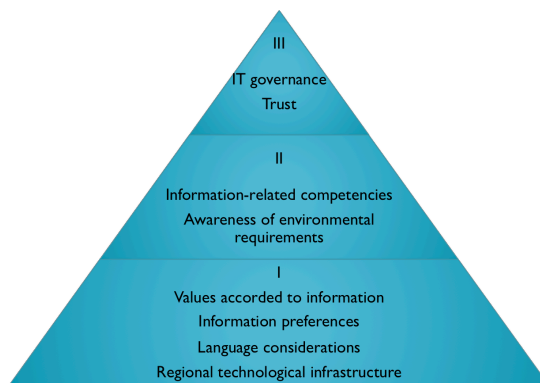deployment, and actions related to them (Gal and Berente, 2008).

FIGURE 1. INFORMATION CULTURE FRAMEWORK (ICF) - REPRODUCED FROM OLIVER AND FOSCARINI (2014)

Interviews conducted with records management specialists from Organization B show

that not every records management specialist has an adequate understanding of the value of

records and record management work. While one interviewee acknowledged that records are

"meant to document the business decisions and actions of your organization, so they allow you to

show that … you've documented or discharged your duties and accountabilities," other four

interviewees gave varied reasons as to why records management must be done (e.g., historical

value, legal compliance) or why they chose a records management job (e.g., a records

management job fits with personal career preference). This variety in records management

specialists' understanding of records and records management indicates the theoretical diversity

in the archival and records management field; yet, different views of records and records management may also give rise to different records management practices.

When these records management specialists were asked to comment on general staff's understanding of records at their organizations, most of them noted that not everyone recognized the importance of records, or, if they did understand the value of records, they did not want to do records management. In other words, there is a gap between general staff's perception of records management work and their intention to do records management work. Additionally, it was revealed that staff with different job responsibilities tended to have different reasons for their avoidance of records management, which reflects the influence of occupational culture and indicates that occupation might serve as a mediating factor between users' perception of records management work and their intention to do records management. For instance, management people usually think that records management is not part of their job and should be done "by somebody lower on the food chain than them," while front line workers often are afraid "if they take the time to do the filing, that they won't get their other work done and then they'll look like slackers to their bosses". This identification of the influence of occupation on individuals' interpretation of electronic recordkeeping systems echoes the meaning of the construct identity in sensemaking theory. The basic premise is that individuals "attempt to relate their interpretations of the technology to the expectations they have of the their roles and responsibilities and thus their identity" (Jensen et al., 2009, p. 346).

However, data collected at the Organization A on the meeting management system uncovered a very different picture. When general staff at the Organization A were asked about their understanding of information/records management and the relationship between their work and records management, they were mostly able to recognize that creating, managing, making publicly available, and using information/records are an essential part of their job.

Certainly, this awareness of and respect for records and records management did not grow out of a vacuum. When discussing their information/records management work, staff at the Organization A frequently highlighted how environmental factors influenced their information/records work (e.g., legal compliance, digital literacy of citizens). The high digital literacy of citizens and the widespread use of social media by citizens in interacting with meetings urged the staff to work assiduously to ensure the accuracy of the information/records to be made public, the privacy of data subjects, and the right time to publish the information. A unique organizational information culture emphasizing openness, confidentiality, accuracy, quickness, and quality of the processed information/records was nurtured in this process and was considered as the basic non-functional requirement for the meeting management system. This echoes the institutional perspective on information system implementation, which consists of three key constructs: rationalized myths, isomorphism, and institutional logics. Rationalized myths explains how organizations strive to "maximize their legitimacy and increase their resources and survival capabilities" (Meyer and Rowan, 1977) by aligning with the expectations the organizational field may have—for instance, the assessment and endorsement of information technology by suppliers, customers, consultants, and professional associations (Jensen et al., 2009).

Not only does this analysis confirm that value accorded to records (or the perception of records and records management) precedes users' intention to do records management, but also it shows the complexity underlying the discerned value accorded to records. Individuals' perception of records and records management may be influenced by their identity, organizational culture, and/or the organizational field. This explains how different groups of people may have different interpretations of technology. Records management specialists should take this complexity into consideration when navigating the records management ecology at their organization, and employ appropriate methodologies and tools to unravel this complexity.

5.2 Implementation of electronic recordkeeping systems as a complex process

Scholars in the records management field often contend that the introduction of electronic recordkeeping systems into an organization is about managing change—in other words, disrupting the stability, the routines, and the state of "normal" that people were used to, integrating the introduced information system into the business process, and establishing a new "normal" (Gunnlaugsdottir, 2008). Similarly, Gregory (2005) asserts that embarking on a journey of implementation of an ERM means "changing completely the way people work, think and act"; thus, the ERM is much more than a piece of software—it is also about cultural change (Gregory, 2005, p. 82). As a result, these scholars often recommend using the concepts and principles of change management to smooth the implementation process. However, what is not clear are what kinds of change the introduction of electronic recordkeeping systems bring about, why these changes would hinder the implementation process, and how these changes will evolve along with that process.

According to AST, each information technology has its inherent social structure, which can be described in two dimensions: its structural features, and the spirit of this feature set (DeSanctis and Poole, 1994). When users interact with this social structure and appropriate it (e.g., making judgments about whether to use or not use a certain structure, directly using this structure, relating or blending this structure with another structure, or interpreting the operation or meaning of this structure), the structuration process occurs, which is "the process by which social structures (whatever their source) are produced and reproduced in social life" (DeSanctis and Poole, 1994, p. 128). Nevertheless, how the technology will be appropriated and what the outcome of appropriation will be is difficult to anticipate, as this is influenced by a number of factors, such as users' style of interacting, users' degree of knowledge and experience with the

structures embedded in the technology, and the degree to which users agree on which structure

should be appropriated (DeSanctis and Poole, 1994).

Other studies have explored the factors that influence the appropriation process, the

relationships between the factors and different patterns of appropriation, and the underlying

reasons for such connections. For instance, Beaudry and Pinsonneault (2005) posit that the

adaptation strategies users choose are based on a combination of primary appraisal (i.e., a user's

assessment of the expected consequences of an IT event) and secondary appraisal (i.e., a user's

assessment of his/her control over the situation), and that there are four adaptation strategies (i.e.,

benefits maximizing, benefits satisficing, disturbance handling, and self-preservation). From an

emotions perspective, Stein et al. (2012) investigated how different types of cues—including

material (i.e., IT instrumentality and change from established practices), social (i.e., interactions

with others and involvement in change), and personal (i.e., identity work and IT symbolism)

cues—trigger different emotional responses, which in turn give rise to different use patterns (e.g.,

gaming the system, opting out, and being a good citizen). These studies show that users are not

passive recipients of information technology who simply use the system without judgments;

instead, they constantly make judgments about the technology and, based on these judgments,

develop different use patterns (e.g., resistance, appropriation, and acceptance).

Our data shows that staff's initial reaction to the introduction of the new information

system was mixed. While some might be receptive and weren't stressed at all, a considerable

number of people experienced a "neutral to negative" response to news of the new system's

introduction. They were "nervous," "concerned," and "worried," and therefore resisted the

introduced system at the beginning. According to our interviewees, part of the reason why people

had negative attitudes towards the introduction of the information system was because it

represented change.

Anxiety about the introduced system becomes more intense if change is introduced into work that by nature is already very challenging and demanding. The committee meeting work which the meeting management system supports requires efficiency and accuracy, and is oftentimes live; this puts information technology into a critical position, and if the technology could not deliver what it used to be able to because of a minor change made to the system, people would definitely resist such change. Drawing on AST, Beaudry and Pinsonneault's (2005) theory, and Stein et al.'s (2012) theory, we are able to explain that users' emotional response and their inertia towards adopting the new information technology resulted from their initial judgments of the technology, namely their primary and secondary appraisal of the information technology—or, more specifically, whether the information technology was perceived by users as threat or opportunity, and whether they felt they had control over such challenges.

At present, records managers often recommend adequate preparation prior to the deployment of information technology, in other words, communicating with staff and raising their awareness of the project (Smyth, 2005; Di Biagio and Ibiricu, 2008; Gregory, 2005). Communication can take various forms (e.g., email, workshops, and even pre-analysis of business process) and usually aims to ease users into the introduced system and inform them of the need to weigh "temporary adaptation problems in the initial phase against future, longer-term benefits" (Di Biagio and Ibiricu, 2008, p. 173). Prior communication can certainly help prevent any misunderstanding about the information technology being introduced, and can therefore help avoid unnecessary anxiety and resistance. However, the introduction of new information technology will no doubt induce some changes to existing structures of the organization (e.g., political changes, social changes, and structural changes). Therefore, appropriation of the technology by users is unavoidable.

5.3 Appropriation of electronic recordkeeping systems

When individuals do not want to use the technology, or they have to go through a painstaking process in order to properly use the technology, "they abandon it, or work around it, or change it, or think about changing their ends" (Orlikowski, 2000, pp. 323-324). The appropriation users undertake can take various forms. DeSanctis and Poole (1994) identified four aspects of appropriation that are helpful for us to understand users' different use behaviors. First, users may choose to appropriate a given structural feature in different ways (e.g., directly using the structures, relating the structures to other structures, interpreting the structures as they are used, or making judgments about the structures); second, users may choose to appropriate the technology features faithfully or unfaithfully, with faithful appropriations being "consistent with the spirit and structural feature design, whereas unfaithful appropriations are not"; third, users may choose to appropriate the features for different purposes; and fourth, users may display various attitudes toward the appropriation (e.g., comfort, respect, and challenge) (DeSanctis and Poole, 1994, pp. 129-130). These four aspects of the appropriation are observed in users' interaction with both the meeting management system and the EDRMS we studied.

In the case of the meeting management system, for instance, despite the many benefits it offers (for instance, the replacement of the previous paper-based manual process such that not only will meeting agendas, reports, amendments, and other council meeting documents be published in standard formats, but public access to information and the meeting process will be facilitated, and better use of organizational records promoted), it nevertheless requires substantial adaptation of the work process from the user end. Therefore, in the early stages of the introduction of the system, great appropriation by the users has been observed. For instance, instead of typing information directly into the system, users would first create a separate Word document outside of the system and then copy and paste the text into the system, which not only renders the text susceptible to errors, but also raises the issue of version control. In the case of the EDRMS, when users don't like the functions provided, they either reject the system completely or

establish their own ways of coping with the difficulties or hassles encountered. For instance, for

the classification function within the EDRMS, the system is designed such that you have to use

the e-file function to file the records, after which the related metadata will be added automatically.

However, if you simply drag and drop the records into the system, then the system will not add

the metadata. Due to the easiness of "drag and drop," when the system was first set up, some of

the users would use this method to file their emails, which created great metadata holes. Since

both of these appropriations are not consistent with the spirit of the systems—being as the spirit

of the meeting management system is to avoid errors and standardize the meeting process while

the spirit of the EDRMS is to guarantee the reliability and authenticity of digital records—they

are unfaithful appropriations. Further, in the case of the EDRMS, a pilot test conducted shows

that different departments may use it for different purposes, and therefore may only use certain

functionalities provided by the system.

5.4 Use of "cheat sheets"

The use of a "cheat sheet" is very common among users. It indicates users' inability to handle

certain aspects of the system and constitutes their way of addressing this inability, mostly in the

early stages of the adoption of the system. Two interviewees shared their experiences of using a

cheat sheet to help them make sense of the new system.

Not only will information and records managers prepare cheat sheets for users, but users

will share their cheat sheets with each other. Based on our interview data, there are three types of

cheat sheet: reminders for actions that are complex and not used frequently, short-cuts or a

specific way of performing certain actions to make the use of the system more efficient, and

personalized manuals to help users map what they learned at training sessions onto their own

work.

5.5 Understanding of users

Downing (2006) argues that for successful implementation of an EDMS, 20 percent of efforts should be focused on the technology, while 80 percent of efforts should be focused on the cultural issues, including the people and the business process. Our research data also shows that human issues play a crucial role in the successful implementation of information systems. Moreover, human issues are very complex, involving a wide range of factors, like degree of tech savvy, personality, and attitude towards change, as McLeod and her colleagues found that "people issues are predominant, fundamental and challenging as they concern culture, philosophical attitudes, awareness of RM and ERM issues, preferences, knowledge and skills" (McLeod et al., 2010, p. ii). Our research identified three aspects of users themselves that may have bearing on their acceptance of the information technology: degree of tech savvy, personality, and the consistency between users' understanding of records management and structures embedded in the information technology.

Previous research argued that the widespread ownership and use of computers rendered the argument of insecurity in working with information technology no longer relevant (Gunnlaugsdottir, 2009). However, our study shows that degree of tech savvy remains a relevant factor influencing the implementation of information systems, particularly for those coming from an older generation. Of the four interviewees that were asked about how comfortable they felt using information technology in general, they all answered that they were very/pretty comfortable; in addition to the studied information system, they reported that they used a couple of other information systems (e.g., email management systems) and Microsoft Office Suite. So, in general, users feel comfortable with information technology and do not have technophobia. Yet, their level of comfort with regard to information technology in general does not mean that they are equally capable of learning new information systems, particularly for users of an older generation

(Johnston and Bowen, 2006). For instance, while more tech-savvy users could start using the system without even training, those who are less tech-savvy often had a hard time trying to figure out how to use the system and to adjust to the new business routines. Furthermore, the fear and insecurity with regard to information technology restrained them from freely exploring the system. An interviewee revealed his hesitancy to use the system, saying, "I thought 'well, if I make a mistake, someone is going to come and yell at me and I just deal with it and I [am] just going to be still and quiet.'" Yet our data also shows reassurance that exploration of the system will not crash the system may help alleviate users' concerns. Another interviewee remarked, "I'm not scared, as soon as I learn, oh, you can't press one button and it will explode! You can't really crash the system."

Personality constitutes another aspect that can have an impact on people's adjustment to the new information system. Each person may have their own unique approach to learning new things, and this may not match well with the training or project management philosophy in place. For instance, the trainer's forthrightness might be seen as condescension to the new learner, and make the learner feel intimidated. Further, some people may be very introverted and not feel comfortable with records managers intervening directly and telling them what's wrong with their use of the information system. Another factor mentioned frequently throughout the interviews which may contribute to people's inertia—their tendency toward doing things in the old ways and not using the new information systems—is their mindset as to how records and information management jobs should be done and their willingness or unwillingness to embrace change. When it comes to records management, for instance, some users cannot accept the fact that the records they created in the course of business activities are not their own, and that they are supposed to manage the records they created according to organizational policies. Another representation of the records management mindset from the older generation is management level staff expecting secretaries to do records management work for them, as described by some

interviewees. Conversely, our data also shows that those who are open-minded and ready to embrace change can more easily adjust to the introduced system. While these examples demonstrate how people's personality and their understanding of records management may influence their learning style and their attitude towards external assistance, previous studies have investigated the role of the dispositional resistance personality trait in influencing individuals' belief update over time and transferring behavior intentions into adoption behavior. The dispositional resistance trait refers to "an inclination to resist any kind of changes and includes that individuals change their views, minds, and behaviors differently" (Maier et al., 2012, p. 5). Four dimensions were identified that would influence individuals' overall dispositional resistance: routine seeking, emotional reaction, short-term focus, and cognitive rigidity (Oreg, 2003). Routine seeking refers to "individuals' degrees of preference for stable environments, whereby individuals' [sic] oppose abandoning habits and favor fewer new inputs from the environment"; emotional reaction indicates "the extent of individuals' levels of stress when confronted with upcoming changes"; short-term focus refers to "individuals' degree of concern with the short-term inconveniences of a change while not considering its possible long-term advantages"; and cognitive rigidity reflects "individuals' disinclination to take account of innovative ways, solutions or perspectives, which derive from individuals' stubbornness or unwillingness" (Maier et al., 2012, p. 5). It was found that individuals with stronger dispositional resistance do not update their beliefs related to information technology as frequently as those with weaker dispositional resistance, and that the threshold when individuals transfer intentions into use behavior is much higher for those with stronger dispositional resistance than those with weaker dispositional resistance. Further, it was found that a high extent of technology usage would contribute to overcoming negative beliefs about the information technology.

5.6 Technology affordances and constraints

Despite the significance of people issues in determining users' adoption of the information systems concerned in this study, the technology per se is not without problems. Previous studies have highlighted the user-friendliness of the technology as an important success factor in the implementation of information systems (Maguire, 2005; Gunnlaugsdottir, 2009; Wiltzius et al., 2014). User-friendliness is often associated with the simplicity of the system, or the fact that the system does not require additional rules to be set to complement the system (Maguire, 2005). From a records management perspective, Gunnlaugsdottir (2009) gave a much broader interpretation of user-friendliness, explaining that the ERMS must be user-friendly concerning a list of records management functionalities, including word processing, classification of records, cataloguing or registering of records, saving records, searching for and retrieving records, and distribution of records. In this paper, Gunnlaugsdottir's interpretation will be used to define the scope of user-friendliness.

The search and retrieval function generally works very well for both the EDRMS and the meeting management system. People primarily rely on the keyword function provided by the system and the retrieval code to search for records. For the EDRMS, the area where most of the issues seem to have arisen is the classification of records. Explanations provided are that the classification scheme is not comprehensive and up-to-date, and cannot therefore accommodate all the records created. As a result, some records may be declared without retention periods or simply remain in organization's share drive and not be captured. The existence of these problems cannot solely be attributed to the people using the technology; the technology itself also requires further improvement.

5.7 Engaging users in the development and implementation of systems

Previous electronic recordkeeping system implementation case studies show that the participation of expected users themselves in the development and adaptation of the system will greatly boost

their acceptance of the system (Gnnlaugsdottir, 2008). Some projects may not be able to engage all general users, but they usually will include "key users" (Biagio and Ibiricu, 2008) or "power users" (Smyth, 2005) in the design and implementation of the system. Unlike general users, "key users" or "power users" are usually charged with tasks in the implementation project. For instance, in the implementation of the EDRMS project at the European Central Bank, key users were those "who have the task of ensuring that the business units' folder structure and access rights are correctly maintained and certain records management conventions are observed and practised" (Biagio and Ibiricu, 2008, p. 172). And in the implementation of PRONI at the Public Record Office of Northern Ireland, power users were sectional representatives who were regularly updated, consulted, and given additional training throughout the project to facilitate cultural change (Smyth, 2005).

Indeed, in contrast to the EDRMS, which is an off-the-shelf system, the meeting management system, which is a "homegrown" system and a system being constantly improved based on users' feedback and suggestions, seems more likely to win its audiences' hearts. A couple of interviewees expressed to the researcher their pride in the system.

Additionally, a collaborative relationship is established between the general users and the development team of meeting management system, wherein the system development team constantly encourages general users to put forward suggestions, ideas, or any change they would like to make to the system. The development team will consider seriously each proposal and, if they reject it, will respond with reasons why they could not do that.

In addition to adopting general users' advice for improving the system, the development team also does a good job of supporting general users. Since the general users are involved in the upgrade of the system, they are more likely to accept any new changes made to the system. As a result, a trust relationship is formed between the users and the development team.

This phenomenon of the positive influence users' participation in development activities has on their acceptance of the information technology could be explained by the construct of psychological ownership of information technology (POIT)—that is, "the sense of ownership an individual feels for an IT or IS"— proposed by Barki et al. (2008, p. 270). Based on TAM, it is hypothesized that POIT is a key antecedent of perceived usefulness and perceived ease of use. Further, users' psychological ownership is viewed as influenced by users' participation in system development, for users' participation in the development or implementation of IT is "likely to favor approaches or solutions that reflect their assumptions and objectives, which in turn is likely to enhance their feelings of control, intimate knowledge, and investing oneself" (Barki at al., 2008, p. 271). Nonetheless, POIT is one among many theories that can be used to analyze and explain the causal relationship between users' participation in information system development and implementation and information system success. Another theory that is more comprehensive and that, to a certain extent, contradicts the concept of POIT, is the theoretical framework developed by Markus and Mao (2004). Markus and Mao (2004) summarize that traditional information system participation theory contains at least three explanations for users' participation improving system success: psychological experience of buy-in, improving system quality, and emergent relationships between system developers and users. However, they assert that these three concepts provide only "partial and conflicting explanations" for participation's effects on system success, and this is even more acute in the emerging technology environment (Markus and Mao, 2004). More specifically, the conceptual gaps of each explanation are "the gap between participants and affected parties who did not participate, the gap between developers' knowledge of requirements and the quality of the solutions they produce, and the gap between functional outcomes and outcomes related to relationships and acceptance"(Markus and Mao, 2004, p. 524). To bridge these three conceptual gaps and accommodate new information system practice, Markus and Mao (2004) updated these elements by 1) separating the traditional outcome concept of "system success" into two concepts: system or solution development success and

system or solution implementation success, with emergent reciprocal relations between them; 2) distinguishing relevant actors (e.g., stakeholders, participants, and change agents); 3) refining participation activities along the dimensions of richness, methods, and conditions; and 4) defining the causal process as emergent rather than necessary or sufficient (p. 538).

5.8 Information/records specialists as being part of the solution

As to the role of information/records specialists in the implementation of information technology, one of the key findings of the AC$^+$erm project is that "records professionals may be part of the problem as well as part of the solution, e.g., they take the holistic view and have the principles and tools to manage records but their demands may be unrealistic or too constraining" (McLeod et al., 2010, p. ii). Our research confirms that records management specialists can use their "holistic view" to facilitate the implementation of information systems and serve as the interface between the information system and users' actual work, therefore serving as part of the solution. For instance, an interviewee who was a records coordinator, described how she saw users as her clients and herself as a waitress, and how she "delivered" personalized "service" based on the personality of the "clients," helped them understand the importance of their records, and illustrated the system by mapping the information system to the clients' own work using their records. She also highlighted that it was unrealistic and risky to use rules to "force" general staff to do records management or use the system.

The role of information/records specialists in the implementation of information technology can be explained by the theory of technology-use mediation, in particular, the influence mediators—a group of people who "adapted the technology to the local context of work" (Bansler and Havn, 2003, p. 136)—can exert on how a particular technology will be established and used in an organization (Bansler and Havn, 2003). Identified as "metastructuring" (i.e., structuring of others' structuring of technology) by Orlikowski et al. (1995), technology-use

mediation involves influencing other users' "interpretations and interactions, by changing the institutional context of use, and by modifying the technology itself" (Bansler and Havn, 2003, p. 136). To achieve such a purpose, it is essential that the mediators have a sufficient understanding of both the technology and the "specific needs and circumstances generated by the local use situation" (Bansler and Havn, 2003, p. 137). They usually act as the boundary spanners between the users and developers of technology, and "employ a broad repertoire of different practices, some of which aim at modifying the technology, while others aim at transforming the organizational environment (e.g., people's opinions and beliefs, working procedures, and communication norms)" (Bansler and Havn, 2003, p. 141).

5.9 Importance of training

Previous studies show that, when it comes to the implementation of information systems, training is a component whose importance cannot be emphasized enough (Gregory, 2005; Johnston and Bowen, 2005; Maguire, 2005; Di Biagio and Ibiricu, 2008; Gunnlaugsdottir, 2008). Training provides the opportunity for future users to learn the system, get hands-on experience under the direction of the trainer, and overcome any resistance that may arise once the system goes live. Despite the important role training plays, our research found that there are some problems with the existing training provided at the organizations we studied. For instance, there can be such a long gap between the time when training takes place and the actual live use of the technology, that users forget what they learned at the training. Additionally, the database used for training was a fake one, which is not relevant to users' everyday work, so users might not be able to relate what they learned at the training to their own use of the system. Further, several interviewees complained that the training offered by the government training team is a standardized one, meaning it is not geared towards the needs of each business unit or person.

To make sure that training fulfills its purpose in the implementation of the information system, it is vital to understand that training involves more than a one-time classroom session; instead, it should be designed based on the varying business needs of the users, their IT competence, their learning curve, their learning styles, and their records management knowledge. For instance, instead of merely offering a generic training designed for all business departments, it would be better to offer focused training related to the functions that the business departments use the most; instead of providing detailed training to users of differing IT competence, it would be better to adjust the content and length of the training according to the IT competence of the users (as some super users may need no training at all, while others may require complete, one-to-one training); instead of offering a one-time classroom session, it would be better to combine this with desk-side training to reinforce what users learned in the classroom; and instead of offering solely information system training, it would be better to combine this with records management principles and knowledge training. In addition to the training itself, our research found that manuals, guidelines, wikis, and other referencing materials are invaluable resources that users can refer to after the training. For instance, for the meeting management system, a wiki has been created wherein training materials, news for the next training, any upgrade made to the system, step-by-step instructions for the system, and other information concerning the system is posted regularly; for the EDRMS, a dedicated training guide, resources, tips, how-to instructions, video instructions, and help are posted on the intranet so that users can consult these sources whenever they have questions.

5.10 Potential of gamification

When interviewees were asked about the applicability of gamification elements to improve their interaction with records/information systems, their response varied based on their familiarity with gamification. Respondents who were not familiar with gamification or who misunderstood that

incorporating gamification elements means playing games usually raised their concern that the use of these non-functional gamification elements will distract users and affect their normal work, as a few interviewees remarked. Those who were familiar with this concept showed great interest in this element; some even envisioned how this could be realized.

6. Conclusion

This project has identified a list of salient themes that have bearing on the implementation of electronic recordkeeping systems; it has also explored the applicability of gamification elements in improving users' interaction with electronic recordkeeping systems. The analysis of these themes and the explanations provided by drawing on the theories from the information technology field indicate the applicability of theories from the information technology field in explaining and predicting the implementation of electronic recordkeeping systems. Compared with the rather mature development of theories in the information technology field, the records management field requires more systematic, accumulative, and empirical research to understand the factors and processes that contribute to electronic recordkeeping systems' success. Though the theories in the information technology field can serve as a valuable reference framework in investigating issues concerning electronic recordkeeping systems, the uniqueness of electronic recordkeeping systems requires independent studies be conducted to test these theories and identify any discrepancies.

Dissemination

Publicly available research dissemination:

Peer-reviewed publications

Pan, Weimei. (2017)"The Implementation of Electronic Recordkeeping Systems: An Exploratory
Study of Socio-Technical Issues". *Records Management Journal* 27, (1): 84-98.

Conferences (Symposia, Sessions, Panels, Papers):

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Appendixes

Appendix A: Interview Guide

Interview Guide
Putting the 'Fun' back in 'Functional'

Section I Demographic Information

1. Tell us about yourself and your work here:
    a. Could you tell us briefly about your background and experience?
    b. How long have you been working here?
    c. What is your position title? What are your responsibilities?
    d. How long have you had this role here? Have you performed a similar role elsewhere
       previously? How does it compare?

Section II The Value Accorded to Records/Information management

2. Tell us about your understanding of records/information management in your organization?
    a. What do you see as being the role of records/information management in your
    organization?
    b. Does your understanding of the management of records/information match its role in
    your organization? Why or why not?
    c. Do you see records/information management as being a part of your role?What kinds
    of records/information management functions are involved in your work?
    d. What do you think are the benefits of managing organizational records/information
    management? Have you experienced such benefits?
- Improving the efficiency and success of re-accessing information/records
- Serving as reference for future work
- Other, please specify_____

Section III The Introduction and Continued Use of the Information Management System/Application

The Introduction/Implementation of the Information Management System/Application

3. What kind(s) of records/information management systems do you work with on a frequent basis? [NOTE: examples may include EDRMS, email management systems, financial information management systems, case/contract management, workflow tools, social media applications, specialized, CAD etc.]

4. If possible, tell us what you know about the way the Information Management System/Application was introduced to your organization.
  a. What is the system?
  b. When you speak of the Information Management System/Application with colleagues, what do you call it? Why?
  c. When was it introduced?
  d. Do you know why it was introduced? What reasoning was given for the introduction of the System/Application?
  e. How was the Information Management System/Application introduced?
  f. How was the Information Management System/Application presented?
  g. What language was used?
  h. How did you feel about the introduction/implementation Information Management System/Application and why?

5. Was any formal training given prior to using the Information Management System/Application/software?
  If yes,
  a. Was the training conducted by the software provider/vendor or by institutional staff?
  b. Was the training mandatory?
  c. Where training guides provided?
  d. Where the training guides produced by the software provider/vendor or made in-house?
  e. Where/how were the guides disseminated?
  f. Where you able to test/pilot a beta version of the software prior to actually using it?
  g. Is there anything else that you want to share with us about the training and implementation of the Information Management System/Application?

Adjusting to the Information Management System/Application

6. What was your initial reaction to the Information Management System/Application the first time you used it?
  a. Did you play around with different functions, or just do strictly what you needed in order to use it?
  b. Did using the Information Management System/Application cause anxiety or stress?
  c. Did anyone facilitate your adoption/acceptance of the system?

7. Can you access the Information Management System/Application System using your own devices, e.g., smart phone, tablet? If not, would doing so make your work easier? (If yes, please describe.)

8. If you can use your own device, does your organization require any software to be installed on your device? If so, what is its purpose?

9. Do, or, did you ever play online games[2]? Do, or did, you ever play computer, console or mobile games?

    a. If yes, which of the following mechanics do you like the best? What kind of games do you play?

        i.   To display users' progression (achievements, points, bonuses, leveling up and progression)

        ii.   Providing feedback (appointments, extinction, countdown, and leader boards)

        iii.   To engage a specific behavior (community collaboration and virality)

    b. If no, why not?

    c. How do you feel about games?

10. Will the Information Management System/Application in your organization be more successful if it incorporates online game elements? Which parts of Information Management System/Application do you think need online games elements most, e.g. classification?

    a. Are there particular game elements that would encourage you to use the Information Management System/Application? Points? A social side? More customization in the UI?

<u>Continued Use of the Information Management System/Application</u>

11. Tell us about your use of the system after the initial introductory/adoption stage.

    a. How often are you required to use the Information Management System/Application?

    b. Have you had to change your work process because of the Information Management System/Application?

        i.   In what ways?

        ii.   Do you feel that you are more or less productive while using the Information Management System/Application?

    c. Have you had to learn new skills to use the Information Management System/Application?

        i.   How did this make you feel? (Challenged – in a good or bad way? Overwhelmed?)

    d. Do you discuss your use of the Information Management System/Application with:

        • Co-workers?

        • Superiors?

        • Records management specialists?

        • Other?

    e. What sort of continuing support are you given?

        • Continuing training if you feel that you need it

        • Locally produced how-to-guides

        • Other, please specify_____

    f. Do you feel proficient at using the Information Management System/Application?

        i.   Do you know how to do things "in your own way", or do you actually know how the system functions?

    g. Have you produced any "cheat-sheets" on use of the system?

        i.   Do you share these with co-workers?

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[2] According to Wikipedia, online games can range from simple text based environments to games incorporating complex graphics and virtual world populated by many players simultaneously. Many online games have associated online communities, making online games a form of social activity beyond single player games. Wikipedia contributors, "Online game," *Wikipedia, The Free Encyclopedia,* http://en.wikipedia.org/w/index.php?title=Online_game&oldid=615954340 (accessed July 11, 2014).

        h. Do you think the Information Management System/Application helps or hinders your work?

        i. What functions or features would you change about the system if you were given the choice?

        j. Aesthetically, how do you find the Information Management System/Application (interface)?

12. Has your understanding of the Information Management System/Application changed since you began using it? Do you agreed with the rationale behind it?

Section IV Information Management System/Application Functionality

Information/Records Classification

13. How are records/information classified (organized) within the Information Management System/Application? Did you experience any difficulty in classifying/organizing the records/information? If so, what do you think causes these difficulties? Could these difficulties be mitigated?

14. Does the way information is organized or records are classified in the Information Management System/Application make sense to you? Why? Or why not?

Information/Records Retrieval

15. How do you search records within the system? What search functions are provided, e.g., keyword, retrieval code, sorting?
16. In general, do you think the Information Management System/Application in your organization friendly in terms of helping you re-access information/records?

The Interrupted Concentration

17. Do you need to pause your work in order to classify/organize the records/information e.g. tag metadata, and so on? What do you think of this experience?

Section V Other Items

Environmental Awareness

18. What is your understanding of the records/information management policies and procedures that have been built into the Information Management System/Application?
        a. Have you found that the Information Management System/Application makes it easier
        to meet these requirements?

Information /Records Storage and Access

19. What is your understanding of how records/information is stored, shared and accessed in the Information Management System/Application?
        a. How does this make you feel?
        b. Do you ever deliberately not save/store records/information? Is so, why?

20. Does your organization adopt any cloud service, e.g., Gmail, Dropbox, etc.? Information Management System/Application involve any cloud service?

        a. If yes, what types of records/information are generated and stored in the cloud? Does your

        b. If no, is your organization considering moving to the cloud?

                1) If yes, is records management part of the assessment process?

                2) If no, why?

Comparison of Information Management System/Application with Other Software

21. How comfortable do you feel using information technologies in general?

22. What other software do you use, and for what purpose?

        a. Have you ever taken courses on using other software, or are you self-taught?

23. What do you think are the similarities and differences between Information Management System/Application and other software that you use?

Trust in Information Management System/Application

24. In general, do you trust the Information Management System/Application in your organization in terms of managing the information/records?

Appendix B: Consent Form

UBC

a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA

Consent Form
Putting the 'Fun' back in 'Functional'

InterPARES
Trust

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Study Purpose:
Putting the 'Fun' back in 'Functional' is a research project funded by a SSHRC Partnership Grant. The proposed research looks at trust relationships from the perspective of the creators and internal users of organizational information/records and relevant systems/technologies. Its ultimate goal is to improve such relationships by positively influencing the way in which individuals perceive their work practices and the tools they use to accomplish them. The expression 'trust relationships' includes the relationship between accuracy, reliability, and authenticity on the one hand, and trust on the other.

This project will explore some of the socio-technical factors that appear to affect the management of written and non-written information in organizations. It is based on the assumption that the social (i.e., cultural, historical, political, ideological, economic, ethical, linguistic, rhetorical, epistemological,… in one word, human) interactions that are involved in using available technologies shape and are shaped by the technologies used. In particular, we are interested in understanding how people engage with the information they create/use to accomplish their work in networked environments.

To do so, we will compare personal information management attitudes with work-related ones. How active/passive, involved/distracted, motivated/discouraged do individuals behave when they deal with information in different contexts (or human activity systems)? Is there a relationship between fun (or 'Hedonic Motivation'[3]) and the way in which individuals use information (systems)?

Procedure:
The interview in which you agree to take part will draw on your knowledge, experience and opinion about various aspects of organizational information/records and relevant systems/technologies. This interview will be conducted between you and the researcher at a time mutually agreed upon, either in person, over the telephone or by other means of digital communication. The session will last approximately 60-120 minutes. The interview questions will be sent to you prior to the scheduled interview, however no preparation is necessary. This

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[3] van der Heijden, H. (2004). User acceptance of hedonic information systems. *MIS Quarterly 28* (4) (2004): 695-704.

interview will be digitally recorded and transcribed into print format. Your participation is voluntary, and you may choose to end the interview at any time.

Confidentiality:
Your identity as a participant in this study will be kept in strict confidence. All sensitive data collected will only be used in aggregated form. Any identifying information reported will be coded to ensure that data are not connected to interviewees. All electronic research data collected will be kept on a password-protected computer, including (optional) audio recordings. By no means will any of the data gathered in the course of fieldwork be communicated to anybody within your organization. Your organization will be anonymized so that it will not be possible to identify the source of the data in any published reports of this study.

Potential risk:
There are no known risks or potential risks from participating in this interview.

Contact for information about the study:
If you have any questions or desire further information with respect to this study, please contact the Principal Investigator Luciana Duranti at luciana.duranti@ubc.ca

If you have any concerns about your rights as a research subject and/or your experiences while participating in this study, you may contact the Research Subject Information Line in the University of British Columbia's Office of Research Services by email at RSIL@ors.ubc.ca or by telephone, at 604-822-8598 or toll free 1-877-822-8598.

Consent:
Your participation in this study is entirely voluntary and you may refuse to participate or choose to withdraw from the study at any time without jeopardy.

If, for any reason, you decide to withdraw from the study before its completion, any collected data will be immediately destroyed and you will be excluded from the study.

Your signature below indicates that you consent to participate in this study and that you have received a copy of this consent form for your own records.

_____

Subject Signature   Date