Technology Acceptance Model (TAM) and Use of the Document Management System

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Abstract. The Document Management System (DMS) provides a means of managing documentation generated in public institutions, making it possible to store, organise and manage the flow of documents. The adoption of such systems is of interest, as evidenced by proposals for the use of theories and models of technological adoption. The Technology Acceptance Model (TAM) has been used alone and in combination with other theories to study people's behaviour towards the use of technology. This article presents a literature review concerning hypotheses raised about the constructs of the TAM and their influence on the intention to adopt a DMS. A total of 14 studies related to the DMS and TAM published during the period 2016–2024 were selected. The results show that perceived usefulness influences the intention to adopt the DMS, that the perceived ease of use influences adoption of the DMS, and that the intention to adopt the DMS influences its manner of use.

Keywords: TAM; Document Management System; Perceived usefulness; Perceived Ease of Use; Intent to Use.

1 Introduction

With the advent of information and communication technologies (ICT), the amount of information available has increased exponentially. Access to large volumes of information has changed the way organisations conduct business and manage records [1]. Documents are an integral part of an organisation's business processes and how documents are managed influences the efficiency of these processes.

[1] Please note that the LNCS Editorial assumes that all authors have used the western naming convention, with given names preceding surnames. This determines the structure of the names in the running heads and the author index.

Traditional paper-based document management has given rise to several solutions for managing documents. In Latin America and the Caribbean, the costs of face-to-face procedures are higher than those incurred virtually [2]. Citizens demand the use of ICT, motivating public administration institutions to provide online services [3] that require technological support.

Public institutions generate documents that need to be managed in an effective and timely manner, requiring information systems [4] and technological tools to provide efficient citizen-oriented services [5]. In addition to technological support, leadership at the highest level is required, as is the support of senior management [6] The intensive use of the internet in public institutions has resulted in significant progress in terms of resource savings [7].

DMS has become an important means of digital transformation in organisations because they reduce paper usage, increase the speed of specific processes, reduce business costs and support sustainability activities in organisations [8]. Organisational maturity has a significant impact on GDS usage throughout all phases of their lifecycle [9].

In Peru, in accordance with the digital government policy, institutions must implement a Document Management System (DMS) with Digital Signature technology. The DMS has functionalities that capture, receive, use, manage, maintain and dispose of electronic records; this removes the need to manage paper documents and analogue records [10]. However, the adoption of such technology implies its maximum exploitation (use).

In this regard, despite their increasingly widespread use in the public sector, many DMSs are not mainstreamed, incompletely used [5] [11] [12], or, due to being new to the organisation, require a learning period [13]. According to [14], there are numerous cases of failed or partially successful implementations of DMSs in all areas of business information solutions. There is also a resistance to the use of these systems in some developing countries [11].

Additionally, as an emerging concept, relatively little research has been conducted on the usage of DMSs; as such, there is a need to determine the factors that contribute to the reduction of failed DMS implementations [14]. This highlights the importance of analysing behavioural intention towards DMS use. The individual dimension is relevant to technology adoption studies as it provides of means focusing on the behaviour and characteristics of individuals using the DMS [15].

Several models, theories and frameworks related to technology adoption have been developed [16], including the Technology Acceptance Model (TAM) [17], the Theory of Planned Behaviors (TPB) [18] and the Unified Theory of Acceptance and Use of Technology (UTAUT) [19]. The TAM model is among the most widely accepted [16], integrating constructs, perceived usefulness (PU) and perceived ease of use (PEU) to determine the adoption of a technology [17]. This paper aims to contribute to the scientific literature by studying the influence of TAM constructs on the intention to use a DMS based on a literature review of articles concerning DMS adoption.

The article contains six sections including this introduction. Section 2 presents related work. Section 3 presents the methodology used. Section 4 presents the results. Section 5 discusses the results. Finally, section 6 presents the conclusions.

2 Background

The TAM allows explanation and prediction of the acceptance of new technologies by an organisation [17]. It has been used by various authors to propose conceptual models, which are diagrams that show a set of relationships between factors that are believed to impact or lead to a target condition [12]. Mosweu et al. [5] reported that the factors influencing the adoption and use of technology are determinants for its successful deployment or the implementation of information systems in the public sector. A schematic of the TAM model is shown in Figure 1.

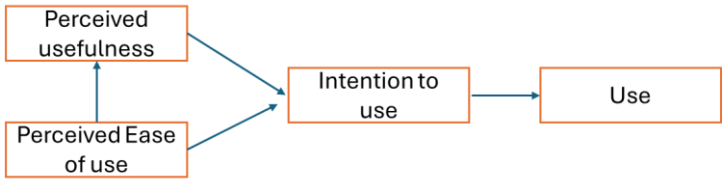

Fig. 1. Schematic of the Technology Acceptance Model (TAM).

Intention to use or adoption is an important factor in determining the success of the system as it signifies the users' intention to act. Document processing is among the most important and high-impact public services in Latin America and the Caribbean, providing a channel of communication between the state and its citizens [2]. The implementation and use of the DMS has been encouraged by different governments because it improves record management and increases the efficiency of business processes, leading to higher user satisfaction [20] through transparency and reduced operating costs.

The DMS includes software that allows different types of documents in PDF format to be digitally signed. Likewise, “it has an administrator module, a manager and access control module, which allows for the generation of multiple views and the attachment of different types of files, such as videos, audios, images, spreadsheets, etc.” [21].

Other terms for similar systems have also been used in previous literature. The Electronic Document Management System (EDMS) enables the creation and use of electronic documents to facilitate workflow [4]. The DMS is a software-based system that enables organisation-wide document capture, editing, digital archiving and retrieval, thereby reducing the use of paper.

The TAM model has been used to evaluate the performance of employees using an Electronic Document Records Management System (EDRMS) in public institutions. The results of a recent study using the TAM model [22] to examine the performance of employees of a public entity using an EDRMS showed that they experienced no significant relationship between perceived ease of use and actual use, but that there is an influence of perceived usefulness on actual use of the system; this actual use has a strong impact on employee performance and modern work cooperation.

The results of another study using the TAM model in conjunction with the information system success model to measure the performance of workers using

EDRMS [23] supported that perceived ease of use and perceived usefulness have a positive influence on employee performance. TAM has also been applied to assess the adoption of EDMS technology, specifically as a tool to improve productivity and efficiency by university stakeholders [24], whose results show a correlation between TAM constructs and EDMS adoption.

Several authors argue that many systems promoted by the public administration are not fully adopted by system users [1] [12] [25]; this has motivated interest in conducting this research, since the success of DMS implementation is determined by the user acceptance rate.

3 Methodology

This research aims to understand how TAM constructs influence the intention to comply with DMSs. A narrative literature review was conducted, considering articles that contribute to the purpose of the study.

The research question is: What hypotheses have been proposed about the influence of TAM constructs? The databases used were Scopus and EEE Xplore, SpringerLink and Web of Science.

Key terms in the search string were 'electronic document', 'documentary management system', ERMS, EDMS, adoption and acceptance. An inclusion criterion was set such that the articles proposed a model with at least one construct related to TAM and that the hypothesis related to the construct was tested. Exclusion criteria were articles that were not written in English or articles on electronic health records.

A total of 14 studies related to DMS and TAM published during the period 2016–2024 were selected. An Excel spreadsheet was used to extract the relevant information from each selected study. The relevant data included article data, model used, and hypotheses related to the TAM constructs that were accepted.

4 Results

The results of the review show that there are few studies on TAM and DMS. Although TAM was proposed in 1986 [17], it is still use. The TAM is a widely used framework that explains how users come to accept and use technology. In addition to the original factors of perceived usefulness and ease of use, studies have incorporated other constructs from other models or proposed new constructs. It has also been applied to date.

The TAM model has been used by different authors to determine the adoption or use of a technology. Ngafeeson and Sun [26] used the TAM model to determine the factors that influence the adoption of an electronic document workflow system. Ahmad et al. [27] proposed an adoption model for e-government services based on TAM. Hawash et al. [10] proposed a model to study the intention to use ERMS. The results for each of the constructs reviewed are presented in the following.

4.1 Perceived Usefulness

Perceived usefulness is a key construct of the TAM model and is related to users' perception of the usefulness of a technology. Perceived use is specifically related to the user's belief that a particular system can improve their work performance [17]. A study focusing on the adoption of e-services in government [27] found that perceived usefulness had a positive impact on user attitude, user trust and user intention to adopt e-services.

Hawash et al. [10] found that perceived usefulness had a significant relationship with perceived ease of use, trust and behaviour towards the intention to use ERMS. In two studies, Mukred et al. [13] [28] concurred that perceived usefulness positively influences ERMS adoption intention. Ngafeeson and Sun [26] found that perceived usefulness positively impacts the intention to use. Figure 2 presents the hypotheses posed for the perceived usefulness construct.

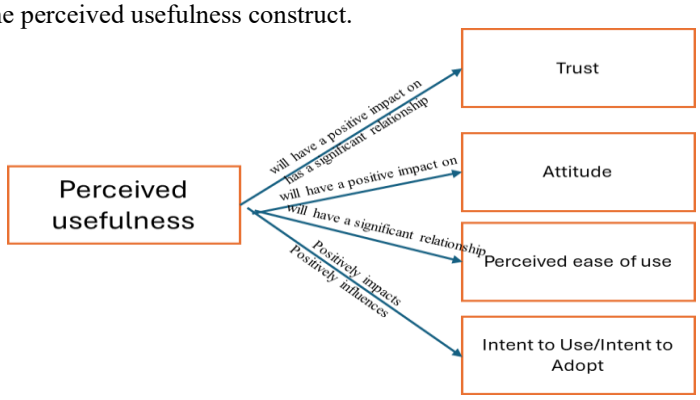

Fig. 2. Hypotheses put forward for the perceived usefulness construct.

In the TAM model, perceived usefulness influences intent to use or intention to adopt and is related to the perceived ease of use construct. The results show that it also has a positive effect on trust and attitude. In the same way, it is observed that two terms are used: intention to use and intention to adopt. It could be said that adoption is closer to intention and use is related to practical interaction with the technology. Likewise, Hawash et al. [10] found that perceived usefulness had a significant relationship with perceived ease of use.

4.2 Perceived Ease of Use

Perceived Ease of use is a construct of the TAM model that is related to the user's perception of the effort required to use the technology. Ahmad et al. [27] argued that perceived ease of use is positively affected by perceived usefulness. Ngafeeson and Sun [26] found that perceived ease of use positively impacts perceived usefulness.

Ahmad et al. [27] considered that perceived ease of use should be positively influenced by trust, and Hawash et al. [10] argued that it has a significant relationship with trust. Ahmad et al. [27] found that it has a positive impact on attitude.

Mukred et al. [28] argue that ease of use positively influences adoption intention, and Mukred et al. [13] found a positive impact on ERMS adoption intention. Ngafeeson and Sun [26] also found a positive impact on the intention to use. Figure 3 presents the hypotheses posed for the perceived ease of use construct.

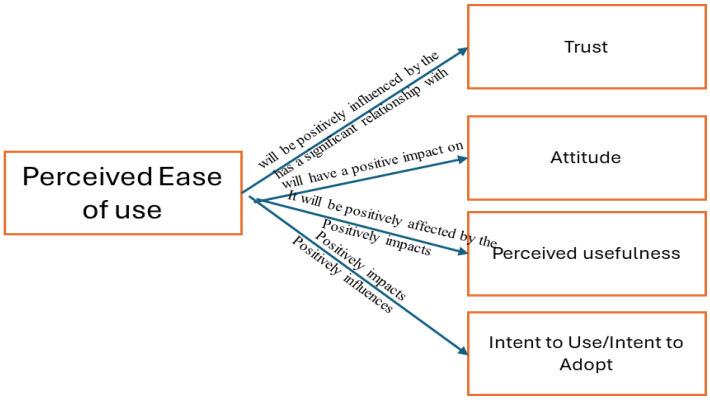

Fig. 3. Hypotheses put forward for the perceived ease of use construct.

4.3 Intent to Use

Intention to use is a construct of the TAM model that is related to the user's predisposition to adopt a technology to perform their function. Mukred et al. [11] argued that adoption intention has a positive and significant influence on decision-making processes.

Mukred et al. [13] found that ERMS adoption intention plays a decisive role in organisational performance. Chaouali et al. [29] found that behavioural intention towards usage positively influences behavioural expectancy. Mukred et al. [13] also found that intention to adopt is significantly related to education productivity. Figure 4 presents the hypotheses posed for the usage intention construct.

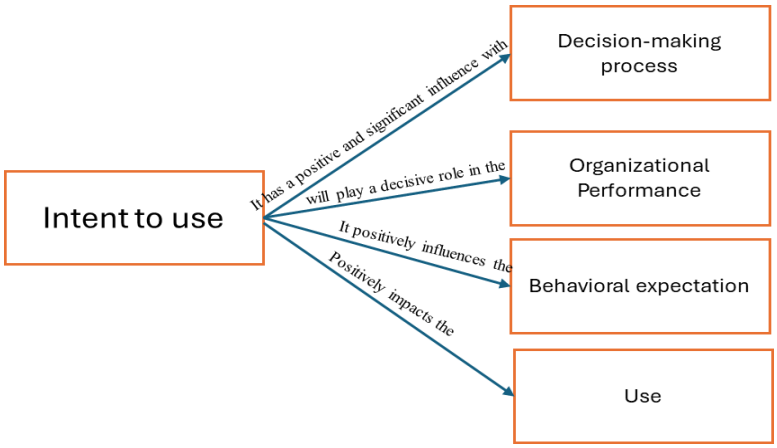

Fig. 4. Hypotheses raised for the intention to use construct.

5 Discussion

Perceived usefulness in the TAM refers to how users perceive the usefulness of a technology. Studies concerning government e-services, such as Ahmad et al. [27], have found that high perceived usefulness is associated with a positive attitude, increased trust and intention to adopt a technology. Furthermore, Hawash et al. [10] highlighted that perceived usefulness influences the ease of use, user trust and adoption behaviour.

Other studies have supported the importance of perceived usefulness in the intention to adopt specific technologies, such as electronic records management systems. Perceived Ease of use, a key construct of the TAM, relates to the user's perception of the simplicity of using a technology. Research has shown that it is positively linked to perceived usefulness, user confidence and user attitude towards the technology. In addition, it has been found to influence the intention to adopt and use technologies, especially in electronic records management systems.

In the TAM, intention to use indicates the user's disposition towards a technology. Research has revealed that this intention positively influences decision-making, actual technology use, organisational performance and educational productivity. Additionally, it has been found to affect expectations and behaviour toward the use of technology.

Likewise, it is noted that the constructs intention to use or intention to adopt are used in the studies, so it is important to distinguish between them. The difference lies in the process, whereas intention to adopt refers to a person's desire to start using a new technology (decision-making process), intention to use refers to the willingness to continue using a technology on an ongoing basis after initial adoption.

Knowing which factors have been reviewed in the various studies allows the researcher to focus on new variables that have not yet been studied.

6 Conclusions

Documentation generated in institutions requires effective and timely management; the DMS has been proposed as a solution. However, despite its promotion in the public sector, few DMSs are widely used. Several studies evaluating the adoption of DMSs have put forward theories and models, including the TAM model, which has been applied in both public and private organisations. In this article, a literature review was conducted related to the use of TAM to explain DMS adoption. A total of 14 studies were considered, showing that perceived usefulness is associated with a positive attitude, increased confidence and the intention to adopt the technology. In addition, perceived usefulness influences the perceived ease of use, user confidence and adoption behaviour. Perceived Ease of use is positively correlated with perceived usefulness, user confidence and user attitude towards the technology. Intention to use positively influences decision-making towards actual technology use, organisational performance and educational productivity.

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