Integrating Document Workflow Management System in the Business Processes of a Public Institution

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ARTICLE DETAILS

ABSTRACT

With a quest to automate and improve the efficiency of trade co-ordination, the Botswana's Ministry of Trade and Industry (MTI) introduced an Electronic Document and Records Management System (EDRMS). The EDRMS in this particular context is the Document Workflow Management System (DWMS) whose focus is to manage the timely and effervescent processing of documents. In order to successfully integrate the EDRMS into everyday business processes, there need to understand the cardinal factors that influence adoption and uptake of the DWMS by the Record Officers, Action Officers and all the people who are involved in the document management value chains at MTI. This is not to ascertain that other non-individual factors such as organisation context are less important in influencing successful integration of DWMS into business processes. Using the modified Unified Theory of Acceptance and use of Technology (UTAUT) as a theoretical framework, this paper presents findings from a research which aimed to investigate the factors influencing adoption and usage of the DWMS and therefore its integration into the MTI's everyday business processes. Largely supplemented by an interpretivist paradigm, this research is largely positivist. With a response rate of 86.7%, this research utilised a census survey approach and used a questionnaire as the main data collection instrument. Four major constructs from the UTAUT model accounted for the 55% variance in explaining behavioural intention to adopt DWMS. This research espoused that contextual setting (organisational and individual) influences the uptake and adoption of DWMS and therefore proposes a conceptual adoption framework which can further guide theory and practice.

1. Introduction

The increased adoption and utilisation of Information and Communications Technologies (ICTs) the world over has pressed upon organisations in the public sector of Botswana to integrate ICTs in their business processes. Aiming to manage electronic documents (e-Documents), the Ministry of Trade and Industry (MTI) is implementing the Document Workflow Management System (DWMS). This paper investigates the key factors that influence individuals (Action Officers, Records Officers, etc.) at MTI to adopt and use the DWMS. The thesis of the paper is that individuals are the main agents of change who are the main players to integrate ICTs in their everyday activities and have the power to utilise or shun the recommended ICTs.

Arguably one of the key antecedents to successful integration of ICTs in public business processes is a local adoption of technology which happens at the individual levels. Local adoption of technology is determined and defined by individual's perceived value to their person well-being and the effort expectance to achieve their day-to-day chores. Local (individual) and global (institutional) determine the degree of integration of a technology into a given business process [1, 2]. It has been documented that failure in integration of ICTs in business processes mainly culminate from poor adoption by the perceived users [3, 4].

The desire to understand the cardinal factors influencing the successful integration of DWMS, a form of EDRMS and a custom-made ICT platform, is accentuated by the fact that Botswana is aggressively pursuing utilisation of ICTs in many of its public business value chains. The Botswana government is implementing ICT systems such as the following: Student Loan Management System (SLMS) at the Department of Tertiary Education and Financing; the Tribal Land Information Management System (TLIMS) at Tlokweng and Ngwato Land boards; and the Land Inventory for Tribal Land Boards of Botswana (LYNSIS) which have intermittently suffered underutilization [5,6]. Understanding the factors influencing integration of DWMS at MTI may serve as a blueprint for other departments in the Botswana public sector and similar public-sector contexts.

2. INVESTIGATING ICT ADOPTION AND INTEGRATION

Researchers and practitioners have long been investigating the factors that influence adoption, synthesis, integration and usage of newly-introduced technology. Some of the key frameworks and models include the Technology Acceptance Model the Theory of Reasoned Action, Theory of Planned Behaviour, Diffusion of Innovation, Technology Acceptance Model, the Unified Theory of Acceptance and use of Technology (UTAUT) model and the Diffusion of Innovation (DOI) model [7-9]. There are many studies that have utilised the aforementioned models and frameworks and their description are abundant in literature [10-13].

This research used the modified UTAUT model owing to its comparatively huge predictive power, it is a synthesis of 8 technology adoption models thereby bringing together many measurable constructs, explains over 70% of variance user intention, has proven validity and reliability stability as evidenced in several studies, and its evidential usage in many developing world contexts such as Saudi Arabia, Kuwait, Qatar, Jordan, Uganda, etc [14,15]. Although seemingly comprehensive, the UTAUT omits other independent measurable constructs definable by culture and context [16]. The modified UTAUT below, which is the measurement guide in this study does not incorporate the moderating factors 'experience' and 'voluntariness' as these are insignificant to this context and this particular study. The modified UTAUT is shown in Figure 1 on the next page below.

3. RESEARCH METHODOLOGY

The principal data collection tool was the questionnaire with both open and closed-ended questions and informed by the modified UTAUT model. Measurement items include: effort expectancy; performance expectancy; facilitating conditions and social influences. The major respondents were Action Officers and Records Officers from the headquarters of MTI in Gaborone, Botswana. The positivist research philosophy, supplemented by the interpretivist paradigm informed the study design. With a sample of 61, it was important that the research resort to a census. The response

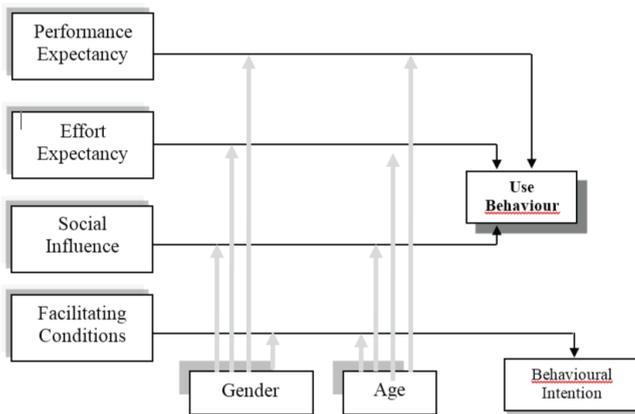rate was 87% which was adequate as per research fundamentals [17,18].

Figure 1: Proposed Research Model: Modified UTAUT Model [9]

All the statistical data in this study was subjected to preliminary testing for normality, correlation, reliability and validity. Normality testing was done using the Kolmogorov-Smirnov and Shapiro-Wilk tests which showed that the data followed Gaussian Normal Distribution [19]. Table 1 below presents the multivariate normality testing procedure to test for normality.

Table 1: Tests of Normality

	Kolmogorov - Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Behavioural intention	.422	53	.000	.598	53	.000
Effort expectancy	.288	53	.000	.824	53	.000
Performance expectancy	.290	53	.000	.830	53	.000
Facilitating conditions	.327	53	.000	.787	53	.000
Social influences	.258	53	.000	.859	53	000

a. Lilliefors Significance Correction

As shown in Table 1, the data is highly significant, p<0.05. Correlation analysis showed that the measurable constructs (performance expectancy, effort expectancy, facilitating conditions and social influences) were all correlated with each other with p>0.05 which showed statistical insignificance.

4. RESULTS

In order to obtain different perceptions on each of the measurable constructs, participants were asked to indicate what they think on each of the factors:

a) **DWMS Effort Expectancy (EE):** regarding effort needed to use the DWMS – 52 (98.1%) indicated that it was easy against 1 (1.9%) who remained neutral. On whether interaction with DWMS was clear and understandable – 52 out of 53 (98.1%) answered in the affirmative with only 1 (1.9%) respondent answering otherwise. All respondents agreed that it was easy to develop skills to use DWMS.

b) **Extent of DWMS Performance Expectancy (PE): Users of** DWMS felt that the DWMS would enable them easily accomplish tasks, help reduce time spent on doing routine tasks, and would make their job easier.

c) **Extend of DWMS Facilitating Conditions at MTI**: User support was readily available for users who face difficulties in using DWMS.

d) **The Impact of Social Influences on the Adoption of DWMS:** Almost half of the respondents 24 (45.2%) agreed that influential people thought it was important to use DWMS in their everyday business processes. However, 25 (47.3%) disagreed while 4 (7.5%) remained neutral.

e) **Behavioural intention to adopt DWMS:** with regards to behavioural intention, 37 (74%) had intentions to use DWMS in the future; 3 (6%) did not have any intentions to use DWMS while 10 (20%) remained neutral. This shows that the future application of DWMS at MTI is bright.

5. PROPOSED ADOPTION MODEL

In order to ascertain the degree of contribution of variance of each of the factors/constructs to successful acceptance, adoption and usage of the DWMS by the individuals at MTI, R squared values (R^2) of each of the inter-relationships between independent and dependent variables had to be done. Table 2 below articulates the measurement of the R^2 values.

Table 2: Measurement of variance (R^2) on each of the key factors

Dependent Variable	R Square	Independent Variable	Beta	t value	Sig.
Behavioural Intention	0.148	Social Influences	0.081	0.563	0.081
	0.138	Facilitating Conditions	- 0.246	-1.694	0.097
	0.161	Performance Expectancy	0.252	1.764	0.085
	0.103	Effort Expectancy	0.021	0.142	0.887

From Table 2, performance expectancy has the highest predictive power in explaining the variation in the behavioural intention to adopt DWMS, r^2 = 0.161 (16.1% variance) while Effort Expectancy has the lowest predictive power, r^2 = 0.103 (10.3% variance). The model measures Behavior Intention of individuals to utilise DWMS in their every business processes. 'x' represents the independent variables. The linear regression equation is given by: ($y = a + bx_1 + bx_2 + bx_3 + bx_4$) takes the following form:

$BI = 1.660 + 0.019x_1 + 0.251x_2 - 0.205x_3 + 0.053x_4$
where BI = Behavioural Intention; X_1= Effort expectancy; X_2=Performance expectancy X_3=Facilitating Conditions; X_4=Social influences

The regression equation above is used to predict/model the overall impact of each of the key factors that influence DWMS adoption by Action Officers and Records Officers at MTI. The proposed conceptual adoption model is shown in Figure 2.
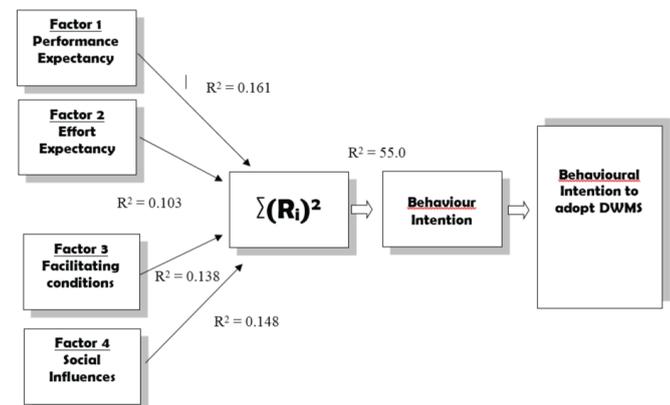

Figure 2: Proposed conceptual model for DWMS integration at MTI

Figure 2 presents the degree of variance (predictive power) on Behavioural Intention to use DWMS by each of the measured variables. Performance expectancy has the highest predictive power (16%) while effort expectancy has the lowest (10%). Observing summation reveals that the total variance from the UTAUT factors is 55%. This means that there are other factors that influence DWMS adoption in the case of MTI. These could explain the short fall in the variance explaining behavioural intention to adopt DWMS by Action Officers and Records Officers.

6. CONCLUSION

The study aimed to investigate the likelihood of DWMS integration into the different business processes at MTI. Using the modified UTAUT as a conceptual lens, the study highlighted some of the key factors that are at the centre of successful integration of DWMS into the MTI business processes. This study recognises the individual as the central agent in influencing eventual adoption and usage of DWMS in different business processes of MTI. The proposed conceptual adoption model articulates the key factors that influence adoption and integration of DWMS at MTI. The model is cardinal to practice and theory as it exposes the weakness in the UTAUT model, which has been a mainstay of technology adoption studies, and highlights the key factors that should be considered when designing individual and/or organisational-level interventions aimed at

facilitating technology integration. The predictive power of 55% variance is adequate for the model to qualify to be used a theoretical and conceptual underpinning.

This study is not mutually exclusive as the following future works are desired:

- Survey a large number of organisations (both private and public);
- Understand the EDRMS implementation strategies and initiatives to understand if a conducive environment is in place for universal utilization of EDRMSs
- Probe the legal, institutional and regulatory policy framework for the mainstreaming of EDRMSs into the business processes of various government departments; and
- Understand the willingness to adopt and use EDRMSs by a large number of employees.

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