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Research Article

Adoption of E-Government in Developing Countries: A Case of Zimbabwe

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Abstract: *Even though there is a large amount of literature on the determinants of e-government adoption and use of digital services in developed countries, there is a dearth of e-government adoption literature in developing countries in general, and Zimbabwe in particular. This study used Technology Adoption Model (TAM) to look at how cultural factors influence the acceptance of e-government services in developing countries, using Zimbabwe as the case study. We adopted a survey research design and collected data from 500 respondents using a structured questionnaire. While the factors that slow the acceptance, adoption and use of e-government services in Zimbabwe are numerous, our results show that various cultural dimensions influenced people's intent to use e-government services. The key contribution of our study is that the adoption and acceptance of e-government services is greatly influenced by cultural values of the end users and recipients of that technology. Based on our key findings, we recommend that technology start-up companies, software developers and government must consider the cultural values of different spaces and regions in the country when developing and deploying e-government services.*

Keywords: *E-government services, Technology Acceptance, Technology Adoption, Cultural dimensions*

INTRODUCTION

E-government contributes to the achievement of the 2030 Agenda for Sustainable Development Goals (SDGs) by ensuring that all people have access to sustainable, inclusive, and equitable public services. E-government also drives innovation, improves service delivery and enhances the development of solutions to numerous public governance issues. Everyone, regardless of their location or social status, could have access to e-government and its capabilities. Accordingly, the adoption of E-government is inevitable given the increasing demand for digital services. Nevertheless, the determinants of e-government adoption differ significantly across countries, levels of government, sectors and departments. Studies (Ingrams *et al.,* 2018; Khalil & Al Nasrallah, 2014; & Dwivedi *et al.,* 2012) concurred that financial resources and level of economic development are the most important deciding factors influencing e-government adoption, followed by social related aspects of the local citizenry including culture, education and access to technology among other considerations. However, we argue that while we understand the adoption of E-governance from world trends there is need to account for the influence of specific cultures. While the adoption of E-government has reached sophistication in developed countries, the same cannot be said in the case of developing nations. This study focused on culture as a vital determinant of the adoption of e-Government in developing countries, using Zimbabwe as the case study. This article provides a background, research questions, theoretical framework, methodology, and synthesis of the reviewed literature, discussion of results, conclusions, implications and recommendations.

BACKGROUND

The results of the 2020 Survey by the United Nations' Department of Economic and Social Affairs show a significant increase in e-government adoption in many geographic regions, countries, and cities (UN DESA, 2020). The same survey reported that data-centric services have increased since the advent of the novel coronavirus pandemic. However, this increase was not uniform across countries and cultures. According to recent research by universities and academic institutions, acceptance and usage of E-Government services is very low and still in its infancy stage in most developing countries (Jaber, 2016), with Zimbabwe being no exception. As a result, institutions must consider the factors that influence and determine the use of e-government services. After an initial trial period, most countries, particularly those in developing countries such as Zimbabwe, discontinue their e-government services. As a result, the causes of discontinuation or failure must be identified and addressed. The most important influencing factors are financial resources and GDP, followed by socio-economic qualities of the local people, such as education, affluence, and access to technology, and political concerns, such as elected officials' involvement. Although many studies in this area have shed light on critical factors influencing e-government service adoption and success, these studies have

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concentrated heavily on socio-political factors (Jaber, 2016). To date, there has been a small number of studies that have focused on the adoption and acceptance of E-government services while taking cultural factors into account in various locations. According to Warkentin et al. (2002), culture can enhance or inhibit the adoption of e-government adoption, because culture influences how people act. The importance of studying the relationship between culture and adoption of technology, particularly e-government, has been highlighted in extant literature (AL-Shehry et al., 2006; & Warkentin, et al., 2002). Literature on technology acceptance and adoption has also revealed that culture is a key determinant of technology acceptance (Leidner & Kayworth, 2006).

E-governance is not just a vital aspect in modern societies; it is also proving to be the basis for good governance in democratic and open societies that rely on technology for most of its communication (Rabaai et al., 2015). On the other hand, usage of information systems is widely evident in many applied disciplines including governance (Ali et al., 2009; & Davison & Martinsons, 2003). The fact that embracing of technology varies from one context to another suggests that culture influences the decision to or not to adopt e-governance. Scholars have discovered a significant relationship between cultural factors and the adoption of ICT (Erumban & De Jong, 2006; & Zhang & Maruping, 2008), IS (Twati, 2008), and IT (Srite & Karahanna, 2006). Extant literature also indicates that a person's cultural background influences their technology adoption as well as its use (Hofstede, 1980). These relational dynamics has prompted the view that cultural factors should be included in technology acceptance models (Park et al., 2007) because culture influences how people use information systems. Proponents of this view are convinced that cultural background has a significant bearing on how people adopt and use technology (Hofstede, 1980, & Davis, 1989) yet this research areas has not been fully explored. In developing countries in general and Zimbabwe in particular, there is inadequate literature to explain how culture influences the adoption of e-governance. This gap in knowledge has prompted us to conduct this study where we posed the following questions.

Research Questions
- What are the global trends in e-government services adoption?

- What are the cultural factors that influence adoption of e-government services in Zimbabwe?

Literature Review
The literature on culture and technological acceptance is reviewed in this section. A description of the underlying theory follows first. After that, there is a debate of culture and how it influences technology acceptance.

THEORETICAL FRAMEWORK
Technology Acceptance Model (TAM)
This study adopted the Technology Acceptance Model (TAM) which was developed by Davis (1989) who adapted it from the Theory of Reasoned Action (TRA) by Ajzen (1980) and Theory of Planned Behavior (TPB) by Ajzen (1985). This model was chosen as the theoretical framework for this study because it is one of the most prominent and popular models used to predict the usage and acceptance of information systems and technology by individual users (Surendram, 2012). To put it another way, TAM was designed specifically for modeling user acceptability of information systems and determining the extent of technology adoption at the individual level. TAM has two constructs: perceived usefulness (PU) and perceived ease of use (PEOU), which establishes a user's attitude toward using a particular technology, which determines behavioral intention to use technology. The degree to which a person believes that using a particular system would improve his or her job performance is defined as perceived usefulness (PU) (Davis, 1989). The idea behind Perceived Usefulness is that people will use or not use a system to the extent that they believe it will help them execute their job better. According to Davis (1989), perceived ease of use refers to a user's perception of the amount of effort required to use a system or the degree to which a user believes that utilizing a system will be simple. In other words, perceived ease of use refers to how little effort a potential user expects from the target technology (Davis et al., 1989). Perceived usefulness (PU) and perceived ease of use (PEOU) are also linked; perceived ease of use has a direct impact on perceived usefulness. According to Peter and McLean, ease of use is a metric of system quality, which is why some researchers include ease of use as a measure of system quality. Ease of use is a metric of system quality this explains why some researchers include it as a measure of the system quality. Fig 1 below shows Davis (1989) Technology Acceptance Model.
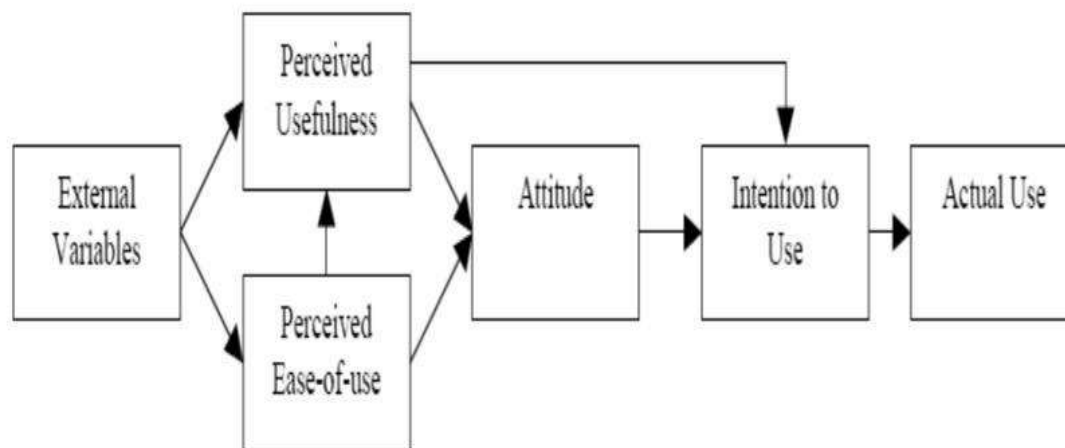
Figure 1. Technology Acceptance Model (TAM)
Source: Davis (1989)

Culture and Technology Acceptance

According to Fandy (2000) and our observations from the reviewed literature, several studies have been conducted concentrating on the transfer of information technology to developing nations, but little research has been done to investigate how culture and values affect technology acceptance and use. Furthermore, the limited research conducted to determine the impact of cultural values on technology acceptability (Sunny et al., 2019), was conducted at the national level rather than at the individual level. As a result, the impact of cultural values on individual adoption of technology, particularly in e-government services, has received little attention. According to Ooi & Tan (2016), studies on the impact of cultural values on individuals are scarce and frequently overlooked. As a result, the current study looks into the impact of individual cultural values on the adoption and acceptability of e-government services in Zimbabwe. Technology acceptance and adoption are heavily influenced by cultural factors (Baptista & Oliveira, 2015). Im et al. (2011); & Park et al. (2007) concur that cultural characteristics should be included in acceptance models since culture influences how people use information systems. This thinking stems from the belief that cultural values play a moderating role in technology acceptance (Srite & Karahanna, 2006).

The term culture is derived from the Latin word cultural, which means among other things, to tend, cultivate or till (Boas, 2010). The true meaning of the term culture is still debatable because of its fluidity. Culture, according to Hofstede (2001), is defined as patterns of explicit and implicit behavior acquired and transmitted through symbols, knowledge, experiences, beliefs, values, attitudes, meanings, hierarchies, religion, notions of time, roles, spatial relations, universe concepts, material objects, and possessions that a group of people acquire over generations through individual and group striving. Looking at these dimensions of culture, it is apparent that culture cannot be neglected if technology is to be accepted successfully in any community because culture bears profound influence on how human beings perceive. According to Akour (2006), neglecting cultural differences can hinder technology acceptance and raise the level of risk of failure to do so and this is the reason why nowadays information technology researchers pay special attention to culture and its effects on technology acceptance. Sriwindono & Yahya (2012) further argue that, to date, cultural factors have not been prominent in the study of technology acceptance especially in developing countries and Zimbabwe is one of them. Literature indicates that for the last thirty years, there have been several studies which have been conducted to illustrate the relationship between cultural factors and the uptake of technology (Hofstede 1980; Tse & Kangaslahti 2004; & Barton, 2010). These studies clearly show that one's cultural background has a considerable impact on one's ability to adopt and utilize technology.

Collins (1999) emphasized the importance of culture in shaping how individuals accept, use, and react to technology, particularly the internet. According to Hansen et al. (2012), culture and technology are linked in two dimensions: the first is that culture creates the environment in which a particular technology will be implemented, and the second is that culture is shaped and influenced by the new attributes and possibilities that technology introduces, as well as the new technologies themselves.

RESEARCH MODEL AND HYPOTHESES

This study was underpinned by a combination of TAM and Hofstede's (1980) cultural moderators. Hofstede (1980) created a theory of cultural differentiation, which has been widely used in cross-cultural research, especially through comparing cultures in different countries and even at the individual level (Reisinger, 2009). This cultural framework is a full model based on national culture samples that has been

widely used and referenced to by a range of studies in a number of sectors (Soares et al., 2007). Figure 2 shows the research model for this study, which is based on the literature review and theoretical foundation. The TAM model is the most extensively used paradigm for examining users' attitudes toward technology and their intentions to use it (Mailizar et al., 2021). For Teo (2010), TAM is effective in understanding users' behavior when it comes to using computing technology because it presents a very comprehensive and detailed model for technology adoption and utilization. As a result, we considered that TAM was the most appropriate model for this study which focused on

individual citizen adoption of technology, particularly e-governance services. Although TAM is considered efficient in explaining users' behaviour and intention to use technology, recent literature suggests that there are crucial elements that are still lacking from the model which have a moderating effect namely cultural values. To address this knowledge gap, we employed Hofstede's cultural dimensions to enhance our understanding of individual and situational characteristics that influence the adoption of e-governance services. Figure 2 below shows the research model for this study.
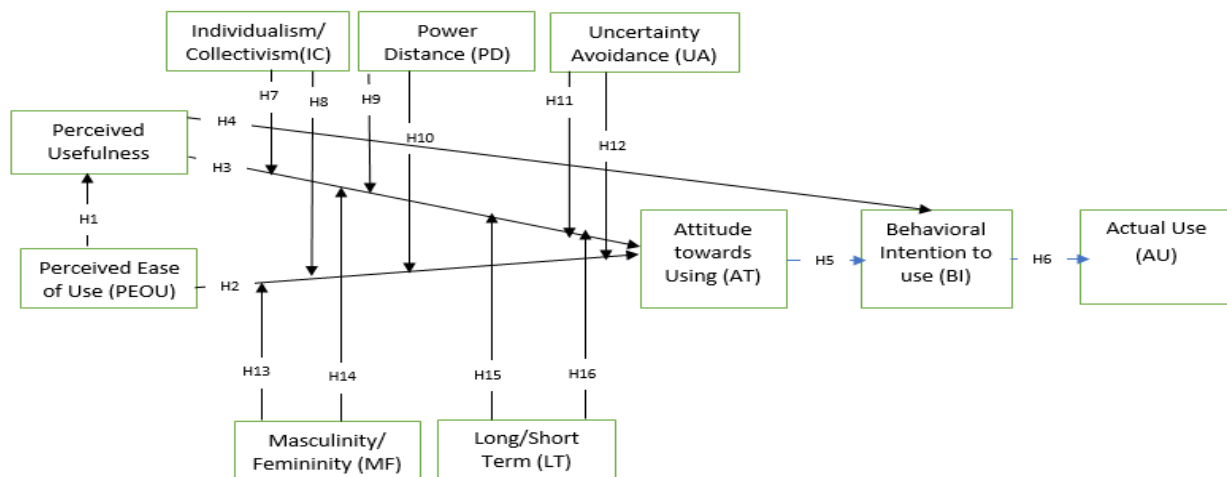

Figure 2. Integrated Culture and Technology Acceptance Model (ICTAM)

Perceived Ease of Use (PEOU)

Lin et al. (2010) defined Perceived Ease of Use (PEOU) in the context of e-government services as the degree to which users perceive that using e-government services will be simple. Previous research has shown that perceived ease of use has a significant impact on perceived usefulness (Binyamin et al., 2019). Furthermore, according to Fokides (2017), perceived ease of use increases attitudes toward using e-government services. Based on previous studies, the following hypotheses were tested.

H₁: Perceived Ease of Use (PEOU) significantly and positively affects Perceived Usefulness (PU) of e-government services.
H₂: Perceived Ease of Use (PEOU) significantly and positively affects Attitude towards using (AT) of e-government services.

Perceived Usefulness (PU)

The extent to which a user believes that using e-government platforms would bring convenience when executing various transactions is referred to as perceived usefulness (Venkatesh et al., 2003). Recent research (Tarhini, 2015; & Martinho et al., 2018) has shown that perceived usefulness (PU) has a favorable effect on attitude. In particular, Martinho et al. (2018) and Scherer et al. (2019) concurred that to a large

extent, PU has positively impact people's attitudes toward e-government adoption. Based on these previous studies, the following hypotheses were examined.

H₃: Perceived Usefulness (PU) significantly influence Attitude (AT) toward using e-government services.
H₄: Perceived Usefulness (PU) positively influence Behavioural Intention (BI) to use e-government services.

Attitude towards Using (AT)

Alsharif (2013) defines attitude as "the overall emotive response to using a system." In their studies which looked at the impact of one's attitude regarding the use of technology on one's behavioral intention, Nassuora (2012); & Jairak et al. (2009) found that one's attitude toward the usage of technology had a beneficial impact on one's behavioral intention. Similarly, Chu & Chen (2016) found that attitude was a strong driver of behavioral intention. Based on these past research findings, we put the following hypothesis to the test.

H₅: Attitude (AT) significantly and positively affects Behavioural Intention (BI) to use e-government.

Behavioral Intention (BI)

TAM support the idea that behavioral intention has a significant impact on technology use (Venkatesh

et al., 2003). This view aligns with findings from previous studies that show that individual behavior is predictable and impacted by individual intention (Yu, 2012). Therefore, according to Chang (2017), BI is a critical aspect in determining a system's success. This study tested the following hypothesis:

H₆: The influence of behavioral intention (BI) on actual use (AU) is positive.

Cultural Values as Moderators

The Hofstede's cultural dimension consists of: (1) power distance dimension, (2) uncertainty avoidance dimension, (3) individualism-collectivism dimension, (4) masculine-feminine dimension, (5) long- term orientation dimensions.

Power Distance (PD)

This cultural dimension measures how much less powerful members of a country's institutions and organizations expect and accept unequal power distribution (Hofstede, 2001). People in hierarchical cultures with high power distance values are more concerned with following the beliefs of their superiors or communities and are afraid of disagreeing with them (Hofstede, 1980). Centralization is popular in these societies, hierarchy is perceived as a reflection of fundamental inequalities, and subordinates expect to be told what to do (Hofstede, 2014). If the hierarchy or society approves e-government, other citizens are likely to accept it as well. Therefore, we hypothesize:

H₇: Power distance (PD) moderates the relationship between perceived usefulness (PU) and attitude (AT).
H₈: Power distance (PD) moderates the relationship between Perceived Ease of Use (PEOU) and attitude (AT).

Uncertainty Avoidance (UA)

This dimension measures how threatened individuals of a society are by events that are vague, unknown, or ambiguous (Hofstede, 2001). Because e-government is not well suited to reducing uncertainty compared to face-to-face contacts, cultures with high degrees of uncertainty avoidance are likely to have a low rate of e-government acceptance (Straub et al., 1997). Individuals in high-uncertainty-avoidance civilizations are less likely to employ technology because they are uncomfortable with ambiguity and uncertainty (Zakour, 2004). Therefore, we tested the following hypotheses:

H₉: Uncertainty avoidance (UA) moderates the relationship between perceived usefulness (PU) and attitude (AT).
H₁₀: Uncertainty avoidance (UA) moderates the relationship between Perceived Ease of Use (PEOU) and attitude (AT).

Individualism-Collectivism (IC)

This dimension reveals how a society regards its members as individuals or as members of a group (Hofstede, 1984). Individualism, according to Hofstede, reflects a society in which individual ties are loose, in which everyone is expected to look after himself or herself and their immediate family only. On the other hand, collectivism refers to a society in which people are integrated into strong and cohesive groups from birth onwards, which continue to protect them in exchange for unquestioning loyalty throughout their lives (Hofstede, 2001). Based on this knowledge, we tested following hypotheses:

H₁₁: Individualism/collectivism (IC) moderates the relationship between perceived usefulness (PU) and attitude (AT).
H₁₂: Individualism/collectivism (IC) moderates the relationship between Perceived Ease of Use (PEOU) and attitude (AT).

Masculinity/femininity (MF)

This dimension refers to the extent to which traditional gender roles are differentiated and defined, whether inside businesses or across society. Individuals who are masculine and feminine have opposing and distinct qualities. Masculine individuals value achievement in terms of heroism, assertiveness, ambition, money and material success while feminine individuals determine achievement in terms of close human relationships, consensus, valuing equality, caring for the weak, solidarity, and incentives such as free time and flexibility and quality of life (Hofstede, 2014). Sivakumar (2018) advocates that users high on masculinity seek to maximize the value derived out of using e-government services because they want to get the most out of their experience. Therefore, we hypothesised:

H₁₃: Masculinity/femininity (MF) moderates the relationship between perceived usefulness (PU) and attitude (AT).
H₁₄: Masculinity/femininity (MF) moderates the relationship between Perceived Ease of Use (PEOU) and attitude (AT).

Long-Term Versus Short-Term Orientation (LT)

East Asian countries are thought to be long-term oriented because they score well in this dimension, particularly in terms of savings, perseverance, and adapting to changing circumstances. On the other hand, African countries like Zimbabwe and Mozambique, for example, score poorly on this dimension, implying a short-term orientation (Hofstede & Bond, 1988). These African countries have a high regard for tradition, a low proclivity to save for the future, and a drive to get things done quickly (Hofstede, 2014). For Sivakumar (2018), people with a high long-term orientation demand improved performance, convenience, and speed in mobile farming platforms so that they may complete

their tasks swiftly. Based on these arguments, we tested the following hypotheses:

H₁₅: *Long/Short Term (LT) moderates the relationship between perceived usefulness (PU) and attitude (AT).*
H₁₆: *Long/Short Term (LT) moderates the relationship between Perceived Ease of Use (PEOU) and attitude (AT).*

METHODOLOGY

To obtain data from the intended sample, this study used a standardized research questionnaire written in English to obtain data from the study sample. A group of information systems expert researchers prepared the questionnaire and examined it for content validity. The questionnaire had four sections labelled A, B, C, and D. Gender, age, educational level, and province were among the demographic factors in Section A. Section B dealt with the suggested conceptual framework's direct determinants, Section C with the actual use of e-government services, and Section D with the five cultural variables. The responses were graded on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

A survey research design was used because studies of technology acceptance have traditionally been conducted using survey research. The poll was pilot tested among a group of 60 e-government users, with 15 users from each of Zimbabwe's four provinces: Bulawayo, Masvingo, Harare Metropolitan and Manic land. Scales were found to be reliable and valid based on preliminary evidence. The purpose of the pilot study was to evaluate the questionnaire in terms of clarity, time, and comprehension. All of the participants completed an initial version of the questionnaire, and their evaluations and comments on it aided in its refinement. The final sample size for this study comprised 500 respondents (n=500). Data were collected between April and August 2021 from the aforementioned four provinces.

To summarize and identify correlations among variables, the study used a simple regression analysis method. Regression analysis is a statistical technique that uses an equation to express the relationship between two or more variables.

RESULTS AND DISCUSSION

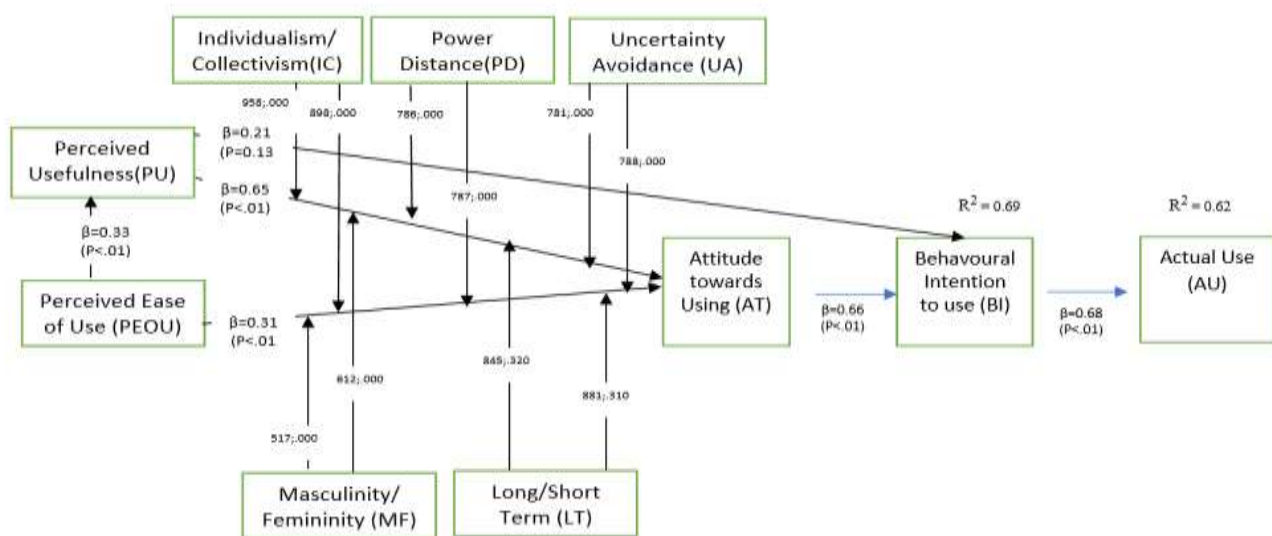A simple regression was used to test the hypotheses and the results are summarized in Fig 3 below:

Figure 3. Structural Model Results

The model explains a 69% of variation in behavioral intention and 62% in use behavior. Perceived ease of use (PEOU) was found to have a statistically positive influence on perceived usefulness (PU) thus supporting hypothesis *H₁*. Perceived ease of use and perceived usefulness were found to have a statistically positive influence on attitude supporting *H₂* and *H₃*. Perceived usefulness was found not to have a positive influence on behavioral intention ($p = 0.139$) thus not supporting hypothesis *H₄*. Attitude was found to have a statistically positive influence on behavioral intention there by supporting *H₅*. Behavioral intention was found to have a statistically positive influence on actual use thus supporting hypothesis *H6*. Individualism/collectivism, masculinity/femininity, uncertainty avoidance and power distance were found to be statistically significant, supporting their moderating effect and hypotheses *H₇, H₈, H₉, H₁₀, H₁₁, H₁₂, H₁₃* and *H₁₄*. The moderating effect of long/short term (LT) was found to be not statistically significant ($R^2 =0.59$), not supporting hypothesis *H₁₅* ($p =0.32$) and *H₁₆* ($p =0.31$). Overall, of the sixteen hypotheses formulated,

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thirteen were supported by the data collected. The theoretical model presented, extended the TAM by incorporating cultural moderators from Hofstede (1980), to explain the acceptance of e-government services. The result of this exercise shows the importance of cultural moderators in improving the explanation of use behaviour in the TAM model.

SUPPORTED FINDINGS

The model explains a 69% of variation in behavioral intention and 62% in use behavior of e-government services. The model validated the relationships of attitude namely perceived ease of use and perceived usefulness. The positive influence of perceived usefulness on attitude is consistent with previous studies like Jairak et al. (2019) who revealed that perceived usefulness has a positive influence on attitude. The perceived ease of use relationship finding on attitude is consistent with previous studies, such as that of Jairak et al. (2019) who revealed that perceived ease of use has a positive influence on attitude. The attitude relationship finding on behavioral intention is in line with earlier studies which reported that attitude influences positively on behavioral intention with both perceived ease of use and perceived usefulness included Nassuora (2018); & Jairak et al. (2019). The findings on the influence of behavioral intention on actual use are in line with earlier research (Tamilmani et al., 2020).

Cultural Values as Moderators

The research model validated the influence of Hofstede's cultural moderators on different independent variables and dependent variables in the study. Individualism/collectivism had a strong and positive moderating effect on the relationships between perceived ease of use and attitude as well as perceived usefulness and attitude. The effect was found to be stronger for citizens with higher collectivism than for individualistic citizens and this is in line with earlier research findings, such as (Baptista & Oliveira, 2015). On the positive moderating effect of individualism/collectivism on perceived ease of use and attitude, the findings confirmed that respondents with higher collectivism encourage each other to use e-government services which are easy to use, convenient and efficient, which then leads to a higher intention to use e-government. These findings show that the ease of use of the system or platform plays a greater role in the decision to adopt technology for collectivist users. Power distance moderated positively the relationship between perceived usefulness and attitude as well as perceived ease of use and attitude and, again, this is in line with previous research (Baptista & Oliveira, 2015). The reason for the positive moderation could be that the opinions of others, such as government officials and peers, play greater roles in the decision to adopt technology for users with higher power distance cultural values. It could be that citizens with higher levels of power distance were intending to use the technology to comply with their superiors and please them.

Uncertainty avoidance had a positive moderating effect on the relationships between perceived ease of use and attitude as well as perceived usefulness and attitude**.** Baptista & Oliveira (2015) has indicated that people with this cultural characteristic are not averse to taking risks and have a greater acceptance of new innovations, products and services. This could be the reason why it moderated positively on those relationships. This is in line with previous findings, for example (Demenongu et al., 2018) who highlight that low uncertainty avoidance causes low perceived risk in the context of e-government adoption. Long/short term orientation had a negative moderating effect on the relationship between perceived usefulness and attitude as well as the relationship between perceived ease of use and attitude, which is in harmony with previous research (Hasan et al., 2011). This suggests that people with short-term orientation like those in Zimbabwe, focus more on achieving quick results from a system more than the usefulness of that system. This then means that it is important for technology start-up companies to develop e-government platforms that give citizens quick results. Masculinity moderated positively the relationship between perceived usefulness and attitude as well as perceived ease of use and attitude. This advocates that citizens high on femininity seek to have equality and solidarity with regards to the use of e-government services.

LIMITATIONS

The limitation of this study has to do with the size of the sample chosen. The sample did not include all the provinces in Zimbabwe, as the study collected data from four provinces. However, this limitation does not have much effect because the data was collected from the biggest towns in Zimbabwe where the majority of online system users are located.

CONCLUSION

In this study, we examined how certain cultural values influenced the acceptance and adoption of e-government services using survey data collected from four provinces namely Bulawayo, Masvingo, Harare Metropolitan and Manic land of Zimbabwe. The sample size comprised 500 participants spread across the four participating provinces. Participants completed a structured questionnaire that was formulated based on Hofstede's cultural dimensions including power distance, uncertainty avoidance dimension, individualism-collectivism, masculine-feminine and long- term orientation. We found that these cultural variables significantly influence the user's perceived usefulness, ease of use, behavior intention and attitude towards using e-government services. Our study sheds light on how culture influences e-government services acceptance and adoption. Thus, the results of our study add to the ongoing discourse of technology acceptance in general and e-government in particular, by providing empirical evidence on how culture influences people's

decision making with regards to use of e-government services.

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