Citizen Adoption of Digital-Government whistleblowing system initiatives in Ethiopian: A validation of the Technology Acceptance Model (TAM) in Whistleblowing Systems success

Yelkal Mulualem Walle[1, 2]

[1]Department of Computer Science, Sudan University of Science and Technology, Khartoum, Sudan
[2]Department of Information Technology, University of Gondar, Gondar, Ethiopia
yelkalmulualem@gmail.com

ABSTRACT- Digital Government whistleblower initiative has been applied in governmental organizations of Ethiopia to tackle unlawful activities in public services. This study explores how the Technology Acceptance Model (TAM) and Digital Government whistleblower initiative would positively impact the Ethiopian government, despite the cultural differences within the country. This study developed a successful model of the Ethiopian Digital Government whistleblower system to assist Ethiopians with more efficient and cost-effective whistleblowing operations. Data was collected using a survey applied to a sample of 554 citizens and data analysis involved linear regression statistical technique (SPSS). The results showed that the core constructs of the TAM have strong influences on user-intention towards Digital Government whistleblowing system. Also, information quality and whistleblowing system quality were the significant determinants of the perceived usefulness of whistleblowing services. In addition, findings suggest that whistleblowing system quality is a factor that influences their behavior toward the use of Digital Government whistleblower system.

Keywords*: Ethiopia; Whistleblowing System; Digital Government; Technology Acceptance; Technology Adoption.*

المستخلص ـ تم تطبيق مبادرة الحكومة الرقمية للمبلغين عن المخالفات في المؤسسات الحكومية في إثيوبيا لمعالجة الأنشطة غير القانونية في الخدمات العامة. تستكشف هذه الدراسة كيف يمكن لنموذج قبول التكنولوجيا (TAM) ومبادرة المبلغين عن المخالفات الرقمية للحكومة التأثير بشكل إيجابي على الحكومة الإثيوبية، على الرغم من الاختلافات الثقافية داخل البلد. طورت هذه الدراسة نموذجًا ناجحًا لنظام المبلغين عن المخالفات الرقمية للحكومة الإثيوبية لمساعدة الإثيوبيين في عمليات الإبلاغ عن المخالفات أكثر كفاءة وفعالية من حيث التكلفة. كما تم جمع البيانات باستخدام مسح تم تطبيقه على عينة من 554 مواطنًا، كما تضمن تحليل البيانات تقنية إحصاء الانحدار الخطي (SPSS) . أظهرت النتائج أن البنية الأساسية لـ TAM لها تأثير قوي على نية المستخدم تجاه نظام الإبلاغ عن المخالفات الرقمية للحكومة. كما أن جودة المعلومات وجودة نظام الإبلاغ عن المخالفات كانت من العوامل المهمة التى ادت للفائدة الملحوظة لتحسين خدمات الإبلاغ عن المخالفات. بالإضافة إلى ذلك، تشير النتائج إلى أن جودة نظام الإبلاغ عن المخالفات هي عامل يؤثر على سلوك المبلغين تجاه استخدام نظام الإبلاغ عن المخالفات.

INTRODUCTION

Digital Government uses digital technologies, such as mobility, social media, big data, analytics and cloud to drive deep reform of services, processes, and technologies; and to embrace good government principles and achieve policy goals [20]. From a technical perspective, the Digital Government is a government of new digital technologies to enable the business to flourish, increase citizen engagement, and drive economic growth and to make public institutions more inclusive, effective, accountable, and transparent [13].

Most specifically, digital technology transforms government information and services' one-way street into a two-way relationship in which individuals, enterprises, and governments are actively engaged with each other [14]. Sadly, the diffusion process in developing countries remains sluggish. The difference between second and third world nations in digital technology diffusion may be due to socio-economic differences that impede digital technology access.

Digital Government is a profound element in the modernization of any government, acting as a means of improving transparency, accountability, and good governance; engage citizens and make public services more as efficient and as effective as possible through the use of digital technologies [20] [1]. The use of digital technologies in government is transforming today's societies and economies. It offers a great opportunity for governments to engage much more deeply with citizens and significantly enhance the quality of service delivery [20].

Effective and operational Digital Government facilitates better and more responsive, efficient, effective and equitable delivery of public service to all people, promotes productivity among public servants, building public trust and ensuring a greater public sector transparency and accountability, encourages the participation of citizens in government, and empowers all citizens. Furthermore, Digital Government can play a significant role in building efficient, inclusive and transparent institutions to support policymaking and service delivery [30]. It helps to enhance economic competitiveness, economic growth and job creation, forge new levels of engagement and trust, and greater efficiency and productivity for public and private sector organisations [20].

Digitally enabled whistleblowing system enables employees, third party suppliers, and citizens to report malpractice and unlawful or unethical behavior within the workplace [15] [2]. Digital technologies offer a great opportunity to the government to design a scalable and flexible whistleblowing system and future-proof whistleblowing service to the customers - enabling citizens and businesses to access whistleblowing services and information as efficiently and as effectively through digital technologies. However, the widespread failure of Digital Government whistleblowing projects suggests that Digital Government also creates delusional hope.

Developed countries such as Denmark, Australia, Republic of Korea, US and UK are still leading the world in the field of Digital Government [31] and whistleblowing systems. The digital age holds the promise of new and powerful weapons in the arsenals of developing countries wrestling against fraud and corruption challenges. On the Sub-Saharan African, literacy rates are still below 30% and digital technology penetration is the lowest in the world.

Considering the above context, Digital Government whistleblowing platforms that offers an outlet for more active governance to citizen and business involvement in government whistleblowing process would have much less cultural impact than they would in developed countries. Therefore, the impact and implications of Digital Government whistleblowing initiatives in developing countries need to be examined.

Technology Acceptance Model (TAM) explains how users adopt and use new technology b   y evaluating the factors that influenced the decision to accept a new technology [6]. TAM is probably one of the most widely cited models in the field of technology acceptance. Despite a large amount of research in this area, few studies have applied the TAM to Digital Government implementation in African countries [22] [18]. However, there is no study uses the TAM model to explain and predict user acceptance on whistleblowing systems in Sub-Saharan African Countries. It is necessary to develop and establish empirical support for the TAM in explaining citizens. The purposes of this study are two-fold. First, while prior research on the TAM and Digital Government focuses on developed countries, this study focuses on Digital Government whistleblowing systems in developing countries like Ethiopia, and how TAMs' impacts Digital Government whistleblowing systems success and the country's developmental aspiration. The paper examine whether the environment influences the impacts that the TAM model can have for Digital Government whistleblowing initiatives, despite cultural differences. Second, this study examines the various factors affecting the intentions of Ethiopian citizens to use Digital Government whistleblowing systems and surveys a sample of citizens in Ethiopia. The findings of this study can be repeated and extended to other sub-Saharan African countries to build a comprehensive picture of critical factors affecting citizen acceptance of Digital Government whistleblowing systems.

Theoretical Background
Digital Government whistleblowing initiatives in Ethiopia
As in many other parts of the world, there are signs that corruption and fraudulent activities taking roots and causing certain problems in Ethiopia as well [24] [34]. Corruption remains a huge challenge in Ethiopia. Transparency International data shows that Ethiopia was ranked 96 out of 180 countries, with a score of 37 on the scale where 100 means very clean and 0 means highly corrupt on the 2019 Corruption Perception Index [36].

While the causes of corruption are varied, the research shows that the tools often suggested to combat corruption include expanded use of whistleblowing [25]. Considering a key objective of e-governance in attaining transparency is in government procedures, Ethiopian government expands its whistleblowing service to its agencies

as a part of its Digital Government strategy. Federal Anti-Corruption Commission (FACC) of Ethiopia expand its services to provide ethics and anticorruption training and information on online platforms to expand the reach of the same and increase awareness among the public [17].

It also provides a service to register and track complaints online and to protect the identity of the informant/whistleblower - an e-Service for Complaint Registry, Tracking and Witness Protection. The commission uses DARS which is a software for asset registration & Case management system. The service provides a mechanism to receiving tips off and register; giving protection to witnesses and whistle blowers (if necessary).

Ethiopian Government Offices, ministries and agencies, provides its own corporate whistleblowing channels to fight fraudulent activities. A notable example is Ministry of Mines and Petroleum (MoMP) provides whistleblowing toll free call help lines or hot-lines free call center 6038 to combat fraudulent activities within mine sector including allegations of corruption/ issues involving the approval of mining, trades, reconnaissance, exploration and retention licenses [19].

This free hotline provides anonymous and confidential whistleblowing reporting service to all citizens of the country related with mining sector. Another notable example is Ethiopia Federal Police Commission. The commission has e-Service which provides both informational and transactional services. The service provides "Inform Us" platform to receive any complains at the federal government levels from all citizen across the country [11]. Another whistleblowing service is from Ethiopian food and drug authority (www.fmhaca.gov.et-service). It allows the citizen to report any drug-related problems, adverse drug reactions, product quality problems, and medical errors. Additionally, the authority provides free call center 8482 and pharmacovigilance@efda.gov.et reporting channels as an optional to report unlawful activities [12].

In devolved countries such as the United States of America, United Kingdom, Canada and Germany, Digital Government whistleblowing services enabled citizens/employs to perform whistleblowing functions, such as reporting misconducts to ensure that serious crimes committed by a person in a senior position, to obtain up-to-date whistleblowing information's and following the cases [2] [28]. Compared to the western countries, an African countries of Ethiopia is experiencing substantial obstacles to establish and perfecting its corporate whistleblowing system. Thus, it is important to investigate factors that affect the citizens' acceptance of digitally enabled whistleblowing systems to help the Ethiopian government design and implement better whistleblowing systems.

Technology Acceptance Model (TAM)

Since its introduction, many researchers use TAM as a framework to explain a variety of human behaviors in the IT adoption context - how users adopt and use new technology [6] [22] and to evaluate numerous different technologies, including email, voice mail, and areas beyond a single technology, such as e-schools, e-health diabetes self-management and mobile library application [22]. TAM shows basic connections flowing in a series of beliefs, attitudes, intentions, and behaviors. When analyzing the actual use of an individual's system, most research concentrate on factors that affect the intention of the individual when adopting the system [22].

A general model of TAM is depicted in Figure. 1. TAM is based on the belief "that perceived ease of use and usefulness can predict attitudes toward technology" [16]. Davis (1989) defined perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance" and perceived ease of use as "the degree to which a person believes that using a particular system would be free of effort" [29]. Perceived usefulness of a technology and perceived ease of use of a technology combine to establish an attitude about the technology, affecting decisions as to whether the technology should be adopted.

This study explores the relevance of TAM in the Digital Government enabled whistleblowing setting in Ethiopia and focuses on how Ethiopians behave differently, and exhibit different levels of acceptance, than other Digital Government users.
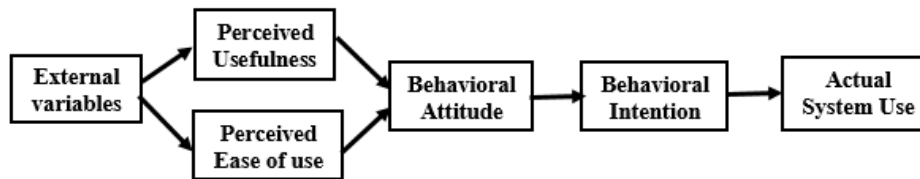
Figure 1. The Technology Acceptance Model (Adopted from [6])

Research's [9] indicates that digital technologies are playing an increasingly vital role in the daily lives of people in Africa, revolutionizing work and leisure and changing the rules of doing business. They are providing unprecedented opportunities for governments, enabling them to radically transform their complex bureaucracies to become more agile, citizen centric and innovative [1]. Ethiopia has displayed immense economic progress over the decade with bright prospects for the future. Efficient and effective governance is one of the key drivers for sustainable economic development and digital technologies are a valuable tool to meet the good governance goals [17].

Lam & Harcourt in 2019 [18] suggested that Digital Government whistleblowing initiatives services includes information for whistleblowing activities, government whistleblowing reporting forms and services, whistleblowing policy information, whistleblowing reporting mechanisms, raising awareness of whistleblower protection, and submission of comments to government officials. The citizens find it difficult to organize themselves, coordinate their actions - whistleblowing, monitor public policies and influence public decisions in the absence of Digital Government strategy that encourages citizens' participation by being citizen oriented [4]. Those successful operation of Digital Government whistleblowing initiatives does not depend on the technology, but rather on the people [2] [28].

The e-participation portion of the whistleblowing initiatives of the Digital Government was designed to promote and reinforce the emerging TAM adoption model proposed by Davis in 1989. It was anticipated that there would be a sharing of information between the Ethiopian government and different stakeholders involved in the whistleblowing process of its Digital Government initiative. Thus, this study focuses on the influential factors of Digital Government whistleblowing success from the perspective of Ethiopian's citizens.

Research Hypotheses and Model

TAM explains the motivation of users by three factors; perceived usefulness, perceived ease of use, and attitude toward the use of new technology. TAM asserts that intentions to perform behavior determine actual behavior [6]. Intention itself represents an individual's attitude toward the behavior. Therefore, not only behavioral intention would be contained in TAM but also perceived usefulness and ease of use have considerable impact on attitude of the user, independent variables that can determine or influence potential user' attitudes toward behavioral intention, while the behavioral decisions ultimately dictate whether and how a technology is used [7].

Davis in 1989 [8] indicates that perceived ease of use and perceived usefulness are shaped by external factors unique to the situation and called for further research to consider the role of additional external variables that influence perceived ease of use and perceived usefulness. Two important external variables – information systems quality and information quality – have been consistently found to be influential factors that affect the perceived usefulness and ease of use of IT. Whistleblowing systems quality, subjective norm, and information quality are the three critical external variables repeatedly found to be a significant factor affecting the perceived usefulness and ease of use of the whistleblowing system. Table 1 summarizes the preliminary study relevant to the variables used in the TAM empirical analysis.

A review of relevant literature on the Ethiopian Digital Government systems reveals wide range of digital technology implementations in most government departments and private sectors [17] [8]. When citizens use Ethiopian Digital Government whistleblowing initiatives to look for information or to start a particular administrative whistleblowing procedure, they tend to expect more efficiency and effectiveness when compared

to their expectations of the traditional whistleblowing service counter approach. Citizens will perceive the Ethiopian Digital Government whistleblowing initiatives to be a useful resource if it can help them collect information related to whistleblowing or complete administrative whistleblowing procedures quickly, easily and effectively, and furthermore report unlawful activities anonymously and confidentially [15] [2] [28]. According to [23], information quality, attitude and the subjective norms are important factors on the behavioral intention, a proposition that is supported by TAM. People with a more positive attitude towards IT will possibly be more pleased with the whistleblowing system and will find it more useful [15] [2]. In addition, whistleblowers who consider whistleblowing systems are open to use and believe that the system does not have enough security for anonymous and confidential reporting will avoid using. Therefore, user attitude and whistleblowing system quality is hypothesized to positively affect perceived usefulness and behavioral intention.

The whistleblowing system is by measuring service quality. Pamungkas, Ghozali & Achmad in 2017 [11] defined whistleblowing system quality as the consistency shown in the overall performance of the system and evaluated by the perceptions of whistleblowers. It has a significant influence on the perceived usefulness of individual users. Since citizens are anonymous in the engagement of Digital Government, the whistleblowing system's quality becomes an "electronic storefront" where the first experience is made. If a citizen perceives a whistleblowing system to be of high quality, that citizen will be more likely to use whistleblowing systems to disclose information or access other whistleblowing services [15] [35] [26].

Subjective norm (or social influence) was hypothesised to have a direct effect on Perceived ease of use, perceived usefulness and behavioural intension [2] [23]. Schepers & Wetzels in 2007 [23] indicate that subjective norm has a significant influence on perceived usefulness and behavioral intention to use. Venkatesh in 2000[2] clarified why the subjective norm has a direct effect on intention. Citizens may choose to conduct a behavior even though they are not in favor of the behavior or its effects if they believe that one or more significant referents think they should, and are encouraged enough to comply with the referents.

As measured by citizens, information quality (IQ) usually affects their satisfaction and perceived usefulness. User perceptions of the importance of a whistleblowing system were used by [12] to determine the quality of whistleblowing [21].

The applications of Digital Government whistleblowing initiatives in Ethiopia promises to enhance whistleblowing services to citizens not only by improving the whistleblowing process and management of whistleblower cases, but also by redefining the traditional concept of a 'speak up' culture that values employees and citizens. With the emergence of whistleblowing system, the country of Ethiopia could combat fraud, unlawful activities and uncovering financial irregularities, Ethiopia could rise to higher levels of social, economic, and political development. This research introduces the following hypotheses based on the theory of TAM [16] and the research model with the hypothesis and their respective links are shown in Figure 2.

H1: Subjective norm has a significant effect on perceived ease of use.

H2: Subjective norm has a significant effect on perceived usefulness.

H3. The whistleblowing systems quality of Digital Government systems positively affects the perceived usefulness of using the digital technologies in reporting misconducts.

H4. The information quality of whistleblowing systems positively affects the perceived usefulness of using the Digital Government whistleblowing systems.

H5. The perceived ease of use of Digital Government whistleblowing systems positively affects the perceived usefulness of using the digital technologies to report misconducts.

H6. The perceived ease of use of Digital Government whistleblowing system has a positive effect on user attitudes toward the use of Digital Government whistleblowing system.

H7: Perceived usefulness use has a positive effect on users' attitude towards Digital Government whistleblowing system.

H8. User attitude on using the Digital Government whistleblowing system positively affects behavior intentions.

H9. The perceived usefulness of the Digital Government whistleblowing services has a positive effect on user behavior intentions.

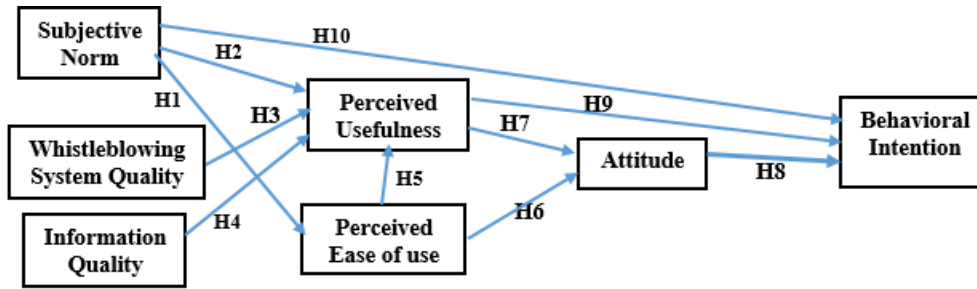**H10:** Subjective norm has a significant effect on behavioural intension.

Figure 2. TAM Model in Digital Government Whistleblowing Systems.

Research Methodology

Based on the above research framework, we carried out a series of personal interviews with three Ethiopian Digital Government officials from the Ministry of Innovation and Technology, two anti-corruption officials from Federal Ethics and Anti-Corruption Commission of Ethiopia and one professor from University of Gondar to determine the validity of the proposed research model.

Based on analysis of relevant literature and the feedback obtained from our interviews, we have developed the first version of a survey questionnaire. Next, with comprehensive pre-testing by ten scholars and government officials with considerable experience in operations of Digital Government whistleblowing programs, we refined the questionnaire. Pre-test results indicate that the elements for the questionnaire were comprehensive. Table 1 shows the definitions of different variables as well as the questionnaire items used in the research model and their sources.

A five point Likert scale with anchors of strongly disagree to strongly agree was used to measure each item of the other constructs in this study.

Study Sample and Descriptive Analysis

This research focuses on people who use Digital Government whistleblowing systems to report misconducts in their work place. Respondents were employed people in governmental organizations and institutions who, because of their career, were identified as having greater than average access to the internet or other digital technologies to access whistleblowing systems. This ensures that the respondent sample represents the population of interest in Ethiopia's uses of Digital Government whistleblowing systems.

A total of 800 questionnaires were distributed to whistleblowing systems users from October 10, 2019 to October 20, 2019 [10]. A total 610 surveys survey responses were collected; of the 610 questionnaires, 56 were excluded due to being incomplete or being unreadable.

TABLE 1: DEFINITIONS OF THE INDIVIDUAL CHARACTERISTICS (CONSTRUCTS)

Construct	Definition
Attitude Toward Behavior (ATT)	Attitude is the user's willingness to use the system or to mediate an affective reaction between ease of use and usefulness and motive to use the target system. [27]
Perceived Usefulness (PU)	Perceived usefulness is the extent to which a person believes that using a particular application system can improve the quality of his or her job and enhance productivity within the scope of the organization. [6]
Perceived Ease of Use (PEU)	Perceived Ease of Use is the extent to which a person believes that the use of a specific system would be effortless and could be done with a minimum of effort. [6]
Whistleblowing System Quality (WSQ)	Whistleblowing System Quality is an individual's belief about the whistleblowing system quality when she/he wants to report misconduct and look for the update on whistleblowing information on the whistleblowing platform. [15] [35]
Information Quality (IQ)	The information quality of the whistleblowing systems will enable whistleblowers to study the information and look the news through online webpages, TV and radios. [26]
Subjective Norm (Sn)	Subjective norms refer to the idea that an influential person or group of people supports and encourages a particular behavior. Or it is "person's perception that most people who are important to him think he should or should not perform the behavior in question"[33]
Behavioral Intention (Bi)	Behavioral intention is a person's perceived likelihood or "subjective probability that he or she will engage in a given behavior". [6]

TABLE 2: DEMOGRAPHIC DATA OF THE RESPONDENTS

Data	Items	Frequency	Percentage
Gender	Male	376	67.87
	Female	178	32.13
Age	22 – 30	332	59.92
	31 – 40	171	30.86
	>40	51	9.22
Occupation	Government organization	170	30.68
	Government Institutions	384	69.32
Whistleblowing System usage per a week	< 1 time	55	9.93
	1 – 5 times	265	47.83
	5 – 10 times	151	27.26
	> 10 times	83	14.98

The response rate was 76.25% including 90.8% valid questionnaires. To avoid misconceptions, the orientation of the five-point Likert scale was applied uniformly; low scores represented negative settings, while high scores represented for favorable situations.

In order to prevent misunderstandings, the five-point Likert scale orientation was evenly applied; low scores reflected unfavorable conditions, whereas high scores reflected favorable circumstances.

According to the questionnaire results (554), only 32.13 percent of respondents are females while majority of 67.87 percent are males. Most of the respondents (or about 59.92 % of the respondents) were from 22 to 30 years old; 30.86 % were age between 31 - 40 years; only 9.22 % were above 40 years of age. The respondents were engaged in various governmental occupations: 30.68% of them were employed by the government organizations and 69.32 % of them were from public institutions.

Table 2 shows detailed descriptive statistics related to the respondent's characteristics.

Result and Discussion

To ensure the reliability of the measurements used in the analysis, the elements chosen for the designs should reflect the principles of our measurement model in the empiric findings as stated below.

Validation of the Measurement Scales

In order to validate our measurement model, we have undertaken content validity assessments, internal consistency, items' loadings, discriminate, and convergent validity. The content of this survey was based on existing literature and our measurements were built by the adoption of constructs validated by other researchers. Pre-tests were carried out with professionals in the field of Digital Government whistleblowing system in Ethiopia. The final set of 30 items of the questionnaire was selected. Cronbach's Alpha [5], Composite Reliability and item loadings and Average Extracted Variances (AVE) [10] were used to measure internal consistency reliability and reliability of indicators, all exceeding the required reliability and uni-dimensionality criteria.

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}} \quad (1)$$

Where: N = the number of items, $\bar{c}$ = average covariance between item-pairs, and $\bar{v}$ = average variance.

$$\frac{\left(\sum_{i=1}^{p} \lambda_i \right)^2}{\left(\sum_{i=1}^{p} \lambda_i \right)^2 + \sum_{i}^{p} V(\delta)} \quad (2)$$

Where: λ_i = completely standardized loading for the ith indicator, $V(\delta_i)$ = variance of the error term for the ith indicator, and p = number of indicators.

$$AVE = \frac{\sum_{i=1}^{k} \lambda_i^2}{\sum_{i=1}^{k} \lambda_i^2 + \sum_{i=1}^{k} Var(e_i)} \quad (3)$$

Here, k is the number of items, λ_i the factor loading of item i and $Var(e_i)$ the variance of the error of item i.

The computed values (equation (1, 2, and 3)) through SPSS are shown in Table 3. Table 4 provides evidence of the discriminant validity of the item scales used in this study. In all cases, the bolded items in the matrix diagonals, representing the square roots of the AVEs, are larger than the off-diagonal elements in their corresponding row and column, which support the discriminant validity of the item scales.

When AVE is greater than 0.5 of the total variances, convergent validity is defined,

according to [10], and the convergent validity of all six Digital Government whistleblowing factors that we used is verified. Our AVE values ranged from 0.664 to 0.874, over the required threshold, as shown in Table 4. Additionally, a common rule of thumb to indicate convergent validity is that all items should load greater than 0.7 on their own construct, and should load more highly on their respective construct than on the other constructs.

TABLE 3. DESCRIPTIVE STATISTICS OF THE CONSTRUCTS.

Measurement	Items	Loading	Mean	Std. Deviation	Cronbach's Alpha	Composite Reliability	AVE
ATT	ATT1	.914	3.106	1.298	0.983	0.942	0.846
	ATT2	.920					
	ATT3	.925					
PU	PU1	.817	3.41	1.446	0.893	0.854	0.664
	PU2	.711					
	PU3	.906					
PEU	PEU1	.945	2.981	1.213	0.987	0.947	0.858
	PEU2	.945					
	PEU3	.889					
WSQ	WSQ1	.943	3.436	1.449	0.852	0.984	0.874
	WSQ2	.942					
	WSQ3	.955					
	WSQ4	.949					
	WSQ5	.952					
	WSQ6	.851					
	WSQ7	.959					
	WSQ8	.943					
	WSQ9	.914					
IQ	IQ1	.952	2.899	1.19293	0.985	0.971	0.871
	IQ2	.881					
	IQ3	.936					
	IQ4	.942					
	IQ5	.955					
SN	SN1	.889	3.259	1.476	0.833	0.912	0.777
	SN2	.862					
	SN3	.895					
BI	BI1	.924	3.366	1.369	0.973	0.959	0.856
	BI2	.938					
	BI3	.916					
	BI4	.923					

TABLE 4: DISCRIMINANT VALIDITY (INTER-CORRELATIONS) OF THE ITEM SCALES

	SN	WSQ	IQ	PU	PEU	ATT	BI
SN	**0.881**						
WSQ	0.518	**0.934**					
IQ	0.660	0.691	**0.933**				
PU	0.434	0.752	0.616	**0.814**			
PEU	0.705	0.652	0.910	0.595	**0.926**		
ATT	0.690	0.822	0.915	0.620	0.812	**0.919**	
BI	0.721	0.830	0.866	0.631	0.868	0.904	**0.925**

The Structure Model

the structural model mainly involves Estimates for path coefficients (β), Determination of coefficient (R2), and Estimates for total effects [3]. The assessment of the structural model was done using linear regression and individual path coefficients (β) of the structural model interpreted as standardized beta coefficients. According to [32],

Path coefficients should exceed .100 to account for a certain impact within the structural model. Furthermore, path coefficients should be significant at least at the .050 level [32]. Figure 3 shows the structural model results through SPSS. All beta path coefficients (β) are positive (i.e. in the expected direction) and statistically significant (at p < 0.05).

Considering purpose of structural model's is to test the relationships between hypothetical constructs, coefficient of determination (R2) of each construct plays the major role. Researches [3] [32] indicates that R2 values should be high enough to provide the model with a minimum level of explanatory power.

Chin in 1998 [33] finds R2 values of around 0.67, 0.33, and 0.19 respectively to be substantial, moderate and weak. Figure 3 displays the R2 values of this analysis. Perceived usefulness scores value of R2= 0.586, Perceived ease of use scores value of R2= 0.501, Attitude scores value of R2= 0.841 and behavioural intention scores value of R2= 0.904Table 5 displays the total effects on the four predicted constructs based on their Estimates for path coefficients (β). As shown in the above table (table5), ATT (0.552) is the greatest effect on the intention to use Digital Government whistleblowing system.

TABLE 5: STRUCTURAL MODEL EFFECTS OF THE FOUR CONSTRUCTS

	PU	PEU	ATT	BI
SN	-0.050	0.111	0.045	0.13
WSQ	0.644	-0.075	0.485	0.259
IQ	-0.057	0.946	0.070	-0.168
PU		0.007	-0.158	-0.032
PEU	0.251		0.589	0.239
ATT				0.552

The highest ATT effect is PEU (0.589) followed by WSQ (0.485). Besides, WSQ also has a strong effect on both PU and BI (0.644 and 0.259) respectively, and IQ provides the strong effect on PEU with value of 0.946.

Hypothesis Testing
This study is primarily aimed at evaluating the TAM Model in the context of Digital Government whistleblowing system implementation in Ethiopia. The extended TAM model's empirical evaluations were able to pinpoint constructs that would determine the intention to adopt Digital Government whistleblowing system. In predicting the intention of citizens to use Digital Government whistleblowing system, many adoption factors, such as attitudes towards using Digital Government whistleblowing system, are important. Figure 3 depicts the adoption factors for using Digital Government whistleblowing system. All the hypotheses of the analysis have been identified and verified with the findings. The hypotheses and findings are listed in Table 6.

Hypotheses 1 examines the relation between "Subjective Norm" to "Perceived Ease of Use". Subjective Norm is strongly related to Perceived Ease of Use of citizen's in using Digital Government whistleblowing systems (β=0.104; Pb=0.000). Therefore, hypotheses 1 are supported.

Hypotheses 2, 3, 4 and 5 explores the impact of "Subjective Norm", "whistleblowing system quality", "Information Quality" and "Perceived Ease of Use" on "Perceived usefulness" to use the Digital Government whistleblowing systems.

It is observed that Subjective Norm, Information Quality and Perceived Ease of Use had no significant impact on Perceived usefulness toward using e-Government at the 0.217, 0.710 and 0.141 significance levels, respectively.

However, "whistleblowing system quality" has a significant impact on Perceived usefulness (β=0.366; Pb=0.000). The greater the Ethiopian government willingness to emphasize on "whistleblowing system quality" the greater will be influenced citizen's perceived usefulness on Digital Government whistleblowing systems. As a result, Hypotheses 2, 4 and 5 are not supported, while Hypotheses 3 is supported.

Hypotheses 6 and 7 examined the impact of "perceived ease of use" and "perceived usefulness" on "attitude" to use digital enabled whistleblowing system. The study shows both Perceived usefulness perceived ease of use has a strong impact on attitude at 0.00 significant level. The positive effects of both PEU and PU on the attitude towards using the Digital Government enabled whistleblowing system was verified, as indicated by the original TAM. Hypotheses 6 are supported.

Hypothesis 8 and 10 explores the relation between "attitudes" and "Subjective Norm" to "behavioral intention" use of digitally enabled whistleblowing systems. Both attitude and Subjective norm are closely related to the behavioral intention of people to use digitally enabled whistleblowing systems at (β=0.808; Pb=0.000) and (β=0.133;

Pb=0.000) respectively. This finding confirms TAM's argument. Nevertheless, there is no significant effect of "perceived usefulness" on "behavioral intention" (β=0.133; Pb=1.28). Hypothesis 9 is therefore not supported.

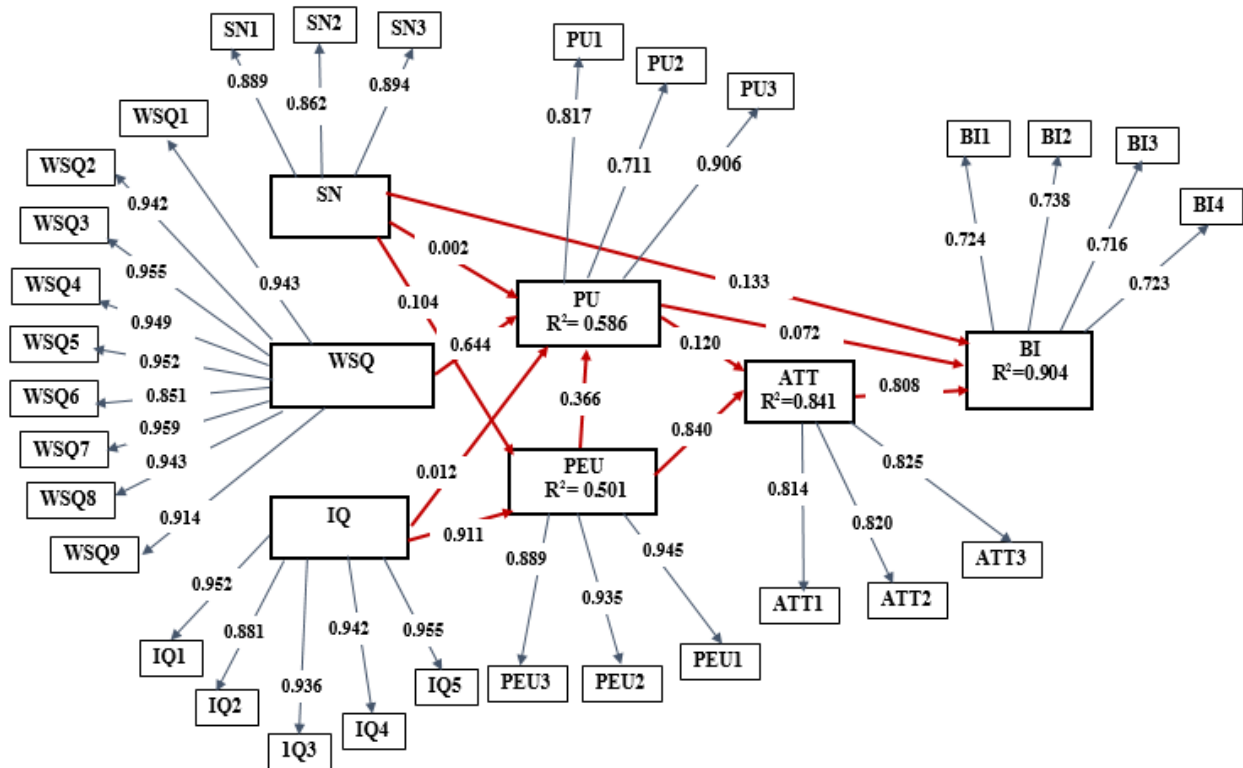**Figure 3: Research Model - Model of TAM in Digital Government whistleblowing system adoption**

TABLE 6: SUMMARY OF HYPOTHESES TESTING

Hypothesis	Relationship	T- Value	P-Value	Results
H1	SN ➡ PEU	10.866	0.000	Supported
H2	SN ➡ PU	-1.237	0.217	Not Supported
H3	WSQ ➡ PU	16.337	0.000	Supported
H4	IQ ➡ PU	-0.372	0.710	Not Supported
H5	PEU ➡ PU	1.731	0.141	Not Supported
H6	PEU ➡ ATT	9.505	0.000	Supported
H7	PU ➡ ATT	-9.163	0.000	Not Supported
H8	ATT ➡ BI	11.417	0.000	Supported
H9	PU ➡ BI	-1.526	0.128	Not Supported
H10	SN ➡ BI	6.978	0.000	Supported

With countries in the world deploying different types of Digital Government whistleblowing system initiatives with the hope to achieve an advanced level of digitally enabled whistleblowing services and enhance the good governance by combating fraudulent activities within the organization and increasing citizen participation in unveiling misconducts and accessibility of whistleblowing services to citizens/employees.

According to [31], the effectiveness of Digital Government initiatives success of Digital Government initiatives depends not only on the support of the government but also on the ability of people to embrace and implement whistleblowing services.

The results of this study show that TAM's key concepts have a significant influence on citizen intentions to use Digital Government

whistleblowing systems. Our empirical results indicate that in the Ethiopian Digital Government whistleblowing systems, WSQ has a positive influence on the PU. Additionally, PEU has a significant impact on the citizen's attitudes to use Digital Government whistleblowing systems. While, attitudes towards the use of Digital Government whistleblowing systems have a major impact on the behavioral intentions of Ethiopian people. In line with previous TAM studies, the key TAM constructs including perceived usefulness, perceived ease of use, attitude towards using, and behavioral intention have a major and influential impact on Ethiopian intention to use Digital Government whistleblowing systems.

The findings, however, do not support the H2, H4, H5, H7 and H9 hypotheses. The perceived usefulness of Ethiopia has a poor relationship with Attitudes and Behavior Intentions. This might be attributed to the incoherent and unreliable nature of electricity and the internet in Ethiopia compared to the Developed world. A factor in failed Digital Government whistleblowing initiatives is Ethiopia's poor government infrastructure including electricity and ICT. Ethiopians find it difficult to access government whistleblowing information's through Digital Government whistleblowing system resources. In certain situations, due to slow internet service, Ethiopians have to wait hours for browsers to connect to a particular website.

Because of problems with internet connections, many Ethiopians tend to use conventional methods to process whistleblowing activities rather than Digital Government whistleblowing systems. Perceived usefulness in developing countries with inconvenient IT infrastructure has no big impact on behavioral intentions and attitudes. The Ethiopian government should implement management systems and web portals on their sites to enhance the perception of Ethiopia's Digital Government whistleblowing systems. Accessibility to information is difficult and users often feel obliged to access Digital Government whistleblowing systems online.

Additionally, Subjective Norm, Information Quality and Perceived Ease of Use have week linkage with perceived usefulness H2, H4, H5. This is because the citizens in Ethiopia is much relying on the security of the whistleblowing system. Mostly the citizens prefer not to "speak up" the unlawful misconducts due to unreliability of the systems and lack of trust from the government whether the whistled information will be used for further investigation by the government. This study reveals that the government of Ethiopia should work to the transparency and accountability on the investigation of whistled information to build the trust of its citizens.

Additionally, this study shows that Ethiopian Digital Government whistleblowing system available online does not provide the information required by Ethiopians and some government web portals are not in place properly. Access to information is difficult, and people are reluctant to use Digital Government whistleblowing system.

Conclusion

This Paper analyzed the factors influencing the adoption and implementation of Digital Government whistleblowing systems in developing nations by using Ethiopia as an example through the use of a TAM. The results showed that the adoption of Digital Government whistleblowing system can be defined in terms of subjective norm, whistleblowing system quality, information quality, perceived usefulness, perceived ease of use, attitude and behavioural intension.

Additionally, the results of this study show that the perceived usefulness and perceived ease of use of Digital Government whistleblowing services are impacted by whistleblowing information quality and subjective norm respectively. However, perceived ease of use was the major factor in determining Ethiopian citizens' attitude towards the adoption of Digital Government whistleblowing services. The result also indicates that attitude in using the whistleblowing system and citizens subjective norm have a strong effect to behavioral intension of Ethiopian citizens to use digitally enabled whistleblowing systems.

This study has several limitations that can be addressed in future research. First, the number of respondents may not represent the perceptions of all citizens of Ethiopia regarding the adoption of Digital Government whistleblowing systems. Second, the investigation on the success of Ethiopian Digital Government whistleblowing systems is relatively new. Therefore, generalizing in this discussion of whistleblowing system users is not concrete, but a good starting point for any

further study. Third, there was no cross-cultural approach to this study, a cross-cultural analysis using a large sample elsewhere needs the proposed model to be more generalized.

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