Determinants of Consumers' Intention to Use E-payment System in Shopping Malls in Dar es Salaam, Tanzania: Modified UTAUT Model Approach

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Abstract: *The aim of the study was to determine factors that influence customers' intention to use the e-payment system in Dar es Salaam's shopping malls. Bearing the importance of financial inclusion, there is no doubt electronic payment development will strongly contribute to improving countries competitiveness in many ways. However, despite the growth rate of ICT utilization particularly internet and mobile phones and an exponential rate of online communication and interactions, Tanzania is yet to harness the opportunities for e -payment.*

The study applied the modified UTAUT model to investigate factors that influence customers' intention to use the e-payment system in Dar es Salaam shopping malls. Data were collected from a sample of 460 customers selected from 5 shopping malls in Dar es Salaam and tested against the research model using SEM. The results showed that three factors (Social Influence and Perceived Security and Effort Expectancy) had a significant positive effect on customers' intention to use the e-payment system in Tanzania; Perceived Security being the strongest determinant. Conversely, Perceived Cost was found to have a significant negative effect on customer intention on the use e-payment system in Tanzania.

Keywords: e-payment, UTAUT.

Introduction

Given the importance of financial inclusion, there is no uncertainty that electronic payment system development will intensely make a contribution to cultivating countries' effectiveness in different ways (Kamulegeya, 2010). Modernizations in the payment business have been directed to superior financial presence globally, where electronic payment service suppliers assist in facilitating payment transactions into the official financial system even in the exclusion of traditional bank accounts. This idea/position has also been reinforced by the World Bank which recommended that electronic payment is vital for economic progress (World Bank, 2014). Fast developing and spreading digital stages, including electronic payment, can offer all the mechanisms to raise financial inclusion at the desired scale. The World Bank suggests that security, transparency, speed, and cost efficiencies can be facilitated by an electronic payment system (World Bank, 2014).

An extensive drift in the direction of a globalized market has extended more the need for countries to be equipped with a competent system of payment to nurture all-inclusive efficiency to the whole economy and offer meaningful cost saving (Chou *et al.,* 2004; Humphrey *et al.,* 2001; Kim *et al.* 2010). The redistribution of assets used for manually or semi-automatically

processing payments (which intensively use more assets) will be easily achieved with the use of efficient payment systems like an electronic payment system. As such, businesses, consumers, and other stakeholders, including the government, are required to transfer to e-payment to realize the named economic benefits (Humphrey *et al.,* 2006).

Tanzania is among the countries that are named as a cash payment based country (BOT, 2016). Furthermore, the World Bank delineated that 59 percent of adults in developing economies, inclusive of Tanzania, do not have an official bank account. This situation makes it harder to alleviate inequality and spur economic growth in these countries (World Bank, 2014). However, on the report of Audiencescapes survey of Tanzania, which was executed in July 2010 by the Tanzania Communications Regulatory Authority (TCRA), the application of the Internet has evidently grown in Tanzania at the rate of 4 percent annually (Oreku *et al.,* 2013). With this increased speed of ICT application, mainly the internet and mobile phones, an exponential rate of online dealings and communication among the general populace is observed. However, with the enormity of businesses on the internet, Tanzania is yet to exploit the opportunities for optimal financial advantage (Oreku *et al.,* 2013). One area which is underutilized to take advantage of the sprouting ICT sector is the improvement of the payment system. Therefore, it is the researcher's quest to study the factors that influence customers' intention to use the e-payment system in Tanzania.

Few studies have explored the causes of low intention to use and adopt e-payment. These studies showed patchy evidence, but in addition, most of them intensively applied Technology Acceptance Model (TAM), whether in its original state or modified (Oreku *et al.,* 2013; Makame *et al.,* 2014). This research extended this position by studying the factors that influence consumers' intention to use the e-payment system in Tanzania using the Unified Theory of Acceptance and Use of Technology modified model (UTAUT).

The Unified Theory of Acceptance and Use of Technology (UTAUT)

There are different research models that have been developed to define user acceptance of technological information. Among the earlier models developed to determine the behavior of computer usage include the Technology Acceptance Model (TAM). According to this model, behavioural intention and attitude of the users of information technology are predicted by two constructs, namely perceived usefulness (PU) and perceived ease of use (PEOU) (*Davis et al.,* 1989).

Venkatesh *et al.* (2003) developed a model known as the unified theory of acceptance and use of technology (henceforth UTAUT) which is utilized to discover the enthusiastic application of technology. The UTAUT hypothesis originated from a broad-spectrum amalgam and homogenization of the following eight theories; Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), Motivational models, Theory of Planned Behaviour (TPB), Combined TAM and TPB, Innovation Diffusion Theory, the model of the Personal Computer Utilization and Social Cognitive Theory.

As claimed by the UTAUT, performance expectancy, effort expectancy, social influence, and facilitating conditions, are the four constructs that affect the intention and use of technology (Gholami *et al.,* 2010; Venkatesh *et al.,* 2003).

The model used in this study is based on the UTAUT to study the factors that influence consumers' intention to use e-payment technology in Tanzania. The ability of the UTAUT model to clarify 70 percent of the variation in the original paper in utilization desire of technology which is superior to the eight preceding models validates the use of this model (Venkatesh *et al*., 2003). Different studies have been carried out and remodeled on the foundation of the UTAUT model to obtain variables that tally to the setting of their study. The remodeling of UTAUT has taken three forms which include UTAUT application, UTAUT integration and UTAUT extension (Venkatesh *et al*., 2016). This study focused on the determinants intention to use electronic payment/adoption of electronic payment and not on the use of electronic payment. The latter led to exclusion of facilitating condition since it directly affects the use of electronic payment system. Therefore, in this propounded model extension, there are two (2) peripheral variables attached to the UTAUT model; Namely, Perceived Security and Perceived Costs. The two variables are important factors in the study of electronic payment system and e-commerce (Chitungo and Munongo, 2013; Dass and Pal, 2011; Huang and Cheng, 2012; Maroofi *et al.,* 2012) in most of the developing countries because of the economic status, literacy level, and exposure of most individuals (Masinge, 2010).

Literature review

Performance Expectancy
According to Kamal (2012), an imagined belief that one's adoption and use of technology will lead to performance improvement on the job is referred to as performance expectancy. Performance expectancy is the users' belief that the performance of technology to be supreme in terms of improving efficiency, output, and quality of work. With such a belief, the adoption of such technology becomes of significance, and the opposite is true (Kamal, 2012). Low-performance expectancy of technology from the probable users implies low adoption or resistance of such technology.

H1: Performance Expectancy has a significant positive effect on the intention to use the electronic payment system

Effort Expectancy
Effort expectancy can be referred to the comfort and ease by which individuals adopt and employ technology for their jobs (Jung *et al.* 2007). When a technology requires less intellectual effort to use and apply, adopters will take it on with ease. After all, less effort is required to learn, apply and use it. Conversely, if too much effort must be devoted to learning, using, or executing such technology, the level of resistance is likely to be high.

H2: Effort Expectancy has a significant positive effect on the intention to use the electronic payment system.

Perceived Security
Security is a set of processes, devices and computer programs to authenticate the source of information and ensure the integrity and privacy to avoid the problems of the data and the network (Huang and Cheng, 2012). Security responds to how the electronic payment system can shield customer settlements. View of security is affected by many elements including clear and open declarations that security is effortlessly established by customers and technical guard of users' privacy anxieties against outsiders (Maroofi *et al.,* 2012). Furthermore, security is

similarly related to regulatory and legal protection perceived by customers (Huang and Cheng, 2012).

H3: Perceived Security has a significant positive effect on the intention to use the electronic payment system.

Perceived Cost
Cost can be defined in numerous ways but in the perspective of this study it is described as the level at which an individual trust that using e-payment would cost money (Chitungo and Munongo, 2013). The transactional cost in the practice of provision charges, network charges for conveying communication traffic and device costs are some of the costs (Chitungo and Munongo, 2013). According to Masinge (2010), low-income people have low purchasing power and are price sensitive. Nonetheless, Micheni *et al*. (2013) postulate that if consumers perceive that the cost of electronic payment is acceptable the adoption and use will be easier. The financial cost has an adverse effect on the intention to use electronic payment (Dass and Pal, 2011).

H4: Perceived Cost has a significant negative effect on the intention to use the electronic payment system.

Social Influence
In accordance with the old saying, the old birds teach the young ones how to fly, is relevant here. Social influence from elders, friends, top management buy-in/support, and parents highly influences the intention to adopt, and the actual adoption of, technology. Social influence offers self-assurance to new consumers of the technology of its worthiness and significance; therefore, new users will easily buy in to adopt it (Vannoy and Palvia, 2010). According to Kulviwata *et al*. (2009), the intention to accept high-tech innovations, as being positively affected by social influence, is confirmed.

H5: Social Influence has a significant positive effect on the intention to use the electronic payment system.
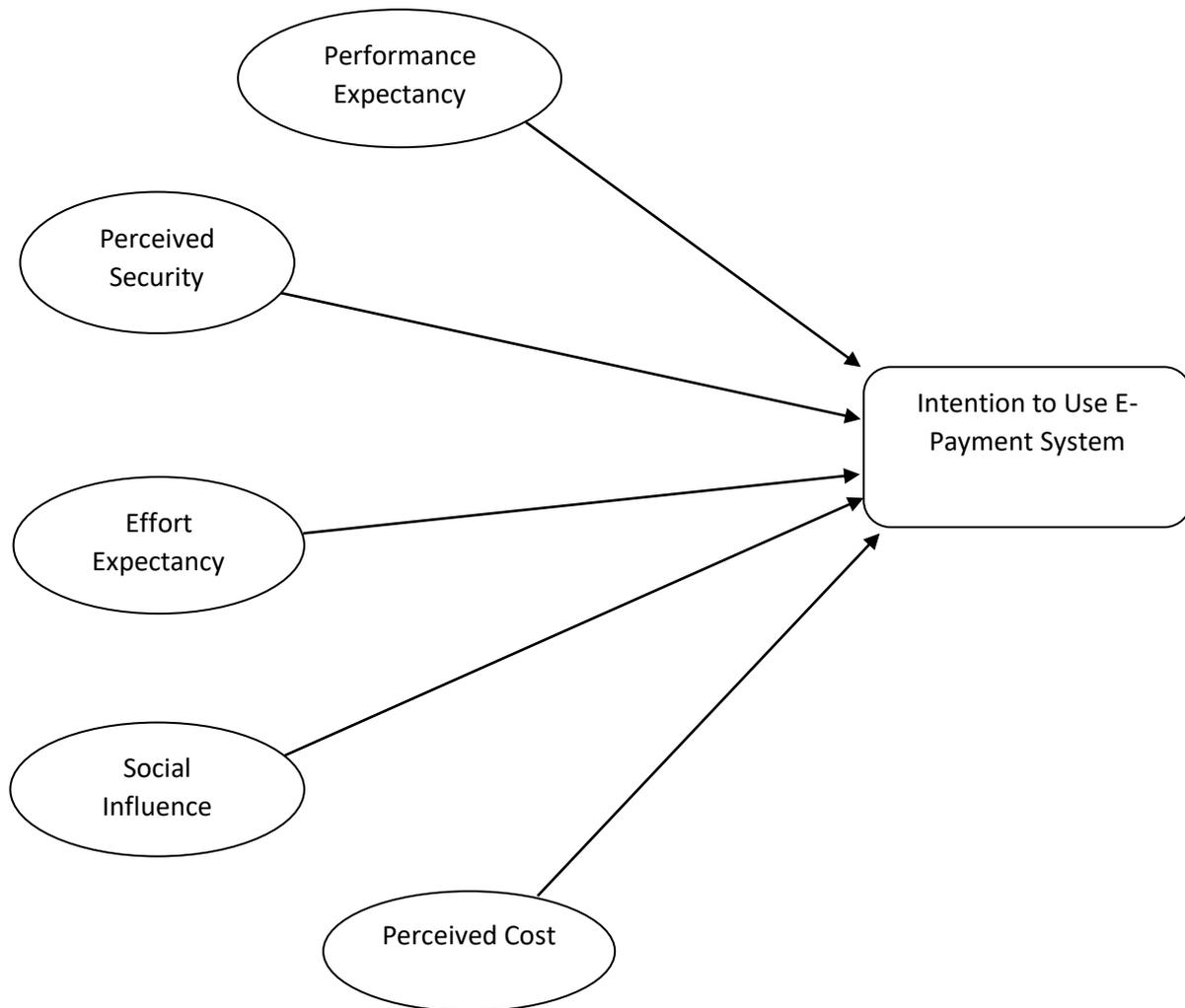
Figure 1: A Model of Factors Influencing Consumers' Intention to Use E-Payment

Methodology

The targeted population was customers doing their purchases in shopping malls located in different places in Dar es Salaam. The shopping malls were selected since they attract customers with different demographic attributes like gender, age, income level, and education level. Thus, these customers are the best representatives of the population of this study. Five malls were chosen using the convenient sampling method. These malls were Baraka plaza mall, Mlimani city mall, Quality center mall, GSM mall Msasani, and Dar es Salaam free market mall. Communication was priory made to the management of the selected malls to propagate the intention of the research; that it was only for academic purposes, and that the identity of the respondents would be treated with utmost confidentiality. Mall Intercept Survey was used for providing the questionnaire to customers. Data collection was covered in a month period which involved interviewing each customer passing the interview line after every 45 minutes, from Mall entrance from 10:00 am to 08:00 pm. Each questionnaire was individually handed, and directives were specified to each participating shopper before filling the questionnaire.

Two versions of the questionnaire were prepared. The first version was prepared in English, and the second was a translation of the English version. Considering the effect of missing data, normality, the strength of factor loadings and sensitivity of Chi-square to a small sample, a large sample of 460 copies of the questionnaire was used for analysis. The sample size selection is supported by the study of Wolf *et al.* (2016) which states that a sample size of 30 to 460 is acceptable. The data was analyzed using Statistical Packages for Social Science (SPSS) version 25 with an extension of AMOS software.

Measurement of Variables

This research borrowed a research tool established by Venkatesh *et al.* (2003) which employs a five-point Likert scale varying from 1 (strongly disagree) to 5 (Strongly agree). The questionnaire was re-formulated and improved to meet the framework of the current study.

Performance Expectancy (PE)	PE1	I would discover e-payment beneficial in my transactions.
	PE2	Using e-payment will assist me to complete payment transactions more rapidly.
	PE3	Using e-payment will push up my productivity.
Effort Expectancy (EE)	EE1	My interaction with the e-payment system would be simple and comprehensive.
	EE2	It would be effortless for me to become competent at using e-payment system.
	EE3	I would find the e-payment system easy to use
	EE4	Studying to maneuver e-payment system is going to be easy for me.
Perceived Security (PS)	PS1	I would use e-payment if Technical protection of my privacy is guaranteed.
	PS2	I would use e-payment if security statements are easily found and easily understood.
	PS3	I would use e-payment if it is supported by the government and Central Bank regulations.
Perceived Cost (PC)	PC1	I think the electronic payment supporting device costs are expensive.
	PC2	I think it is expensive to access and use e-payment.
	PC3	I think the transaction fee of e-payment is expensive.
Social Influence (SI)	SI1	Individuals (family/relatives/friends) who inspire my behavior will consider that I should use e-payment.
	SI2	Individuals (family/relatives/friends) who are significant to me will consider that I should use e-payment.
	SI3	The important people (family/relatives/friends) support the use of e-payments.
Intention to use the electronic payment system (IU)	IU1	I aim to use the e-payment system in the future.
	IU2	I anticipate I will use e-payment in the future.
	IU3	I plan to use e-payment in the coming times.

Rating scale description: 1. Strongly disagree 2. Disagree 3. Neither agree nor Disagree 4. Agree 5. Strongly agree.

In scientific studies, one amongst the most important elements includes measuring and relating the variables and revealing causality (if any). In this study, both observable variables and latent variables were used. However, observable variables can be directly measured, while latent variables such as social influence, perceived security, performance expectancy, perceived cost, effort expectancy, and the intention to use electronic payment system cannot be directly measured. In such cases, it is of great value to develop the regression equalities that show endogenous structures (predicted-endogenous) are linked with exogenous structures (predictive-exogenous) (Yılmaz *et al.*, 2006). To benefit from a multivariate statistical analysis approach which has a wide usage area in combining measurement principles (Hair *et al.* 1998), statisticians have developed a very simple and influential analysis technique – the Structural Equation Modeling (SEM) which comprises an amalgamation of multivariate statistical techniques.

SEM has the capacity of making more than one regression analysis at a time because of its: (i) perpetuation from general regression analysis; (ii) ability to combine factor analysis and regression analysis; and (iii) capacity to accommodate nonlinear situations and to perform correlation among independent variables. In addition it measures error inclusion in the model, considers measurement errors that have correlation among themselves, and discloses and tests multiple independent and dependent latent variables relations, each of which is measured with more than one observed variable. Consequently, it was considered that applying SEM, which is an analysis method that can accommodate the stated variables more comprehensively, significantly, and reliably, would contribute to answering the questions as to why electronic payment adoption in Tanzania is still minimum.

Analysis and findings

Reliability Test, Convergent Validity and Discriminant Validity

A reliability assessment is performed to check for the underlying dimension of the success factors generated through factor analysis. According to Hair *et al.* (2010) to establish reliability, the composite reliability (CR) of each factor should be greater than 0.7 (CR>0.7). On the other hand, to establish convergent validity the average variance extracted (AVE) should be greater than 0.5 and CR factor should be greater than AVE factor. Discriminant Validity, Maximum shared variance (MSV) should be less than the average variance extracted (AVE) (Hair *et al*., 2010). Table 1 displays a reflection of the CR, AVE and MSV scores of all the reaction ranking of the factors that influence the intention to use the electronic payment system. All factors show a coefficient that meets minimum scores, indicating that the questionnaire has attained reliability and validity. Therefore, all variables are taken.

Table 1: Coefficients for The Composite Reliability (CR), Convergent Validity (AVE) And Discriminant Validity (MSV) Measurement

	CR	AVE	MSV
IU	0.818	0.601	0.336
PS	0.719	0.553	0.336
PE	0.716	0.566	0.186
EE	0.733	0.510	0.268
SI	0.788	0.554	0.128
PC	0.707	0.549	0.048

Another measure to ensure construct validity was performing Confirmatory Factor Analysis (CFA). The analysis showed promising feedback by displaying high loadings on the hypothesized factors.
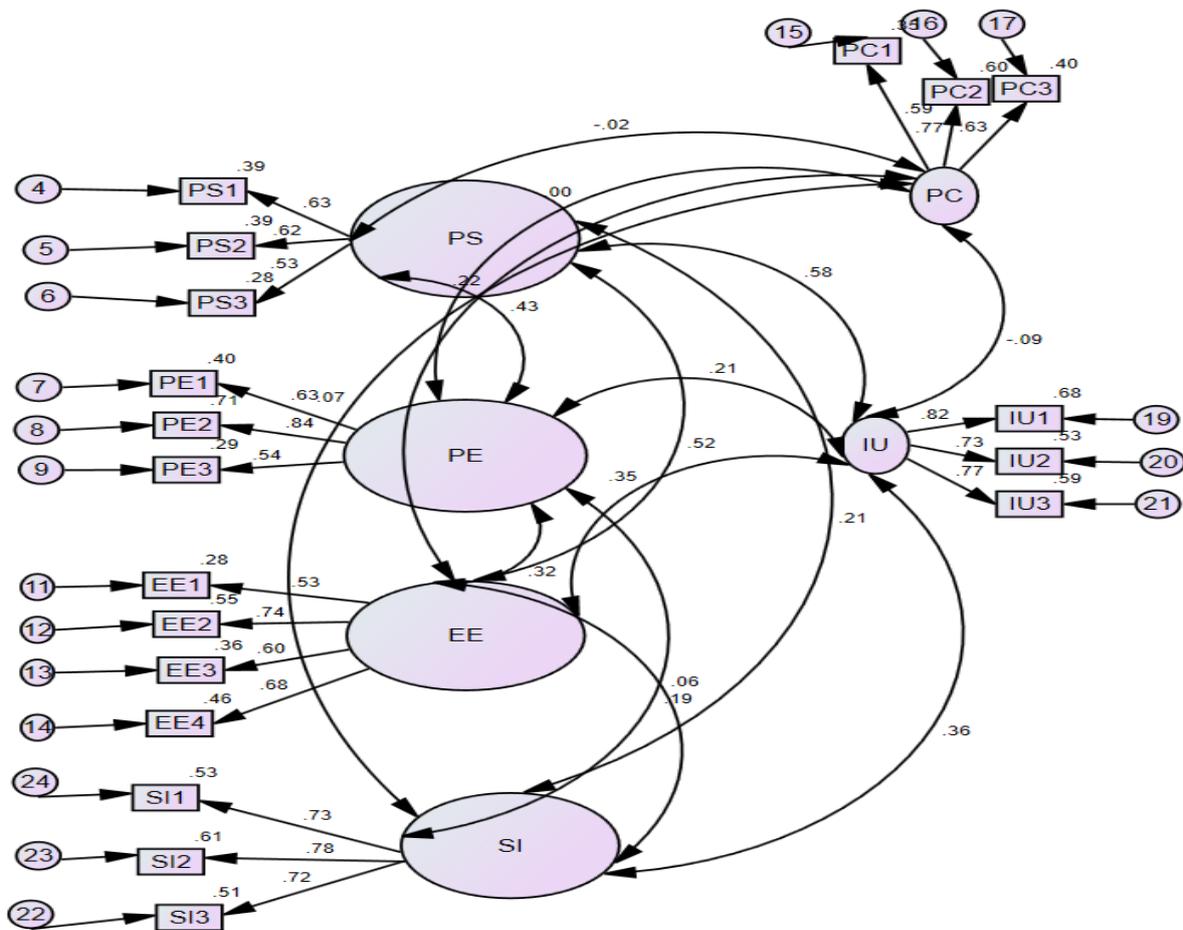

Figure 2: Factor Loadings (CFA)

The purpose of the factor analysis was to show whether the linked elements assembled under the same concept. The lowest factor loading must be 0.500 (Hair *et al.,* 2010). The factor loadings per individual elements are shown in Figure 2. All elements in the study tool loaded well.

Results and Discussions

In the study, two issues were examined: firstly, setting an appropriate model for the factors influencing customers' intention to use e-payment system, and secondly, the effects of the variables taking part in this model were assessed. For model testing, the common five fit indices that are used in testing the appropriateness of the models were applied, and the rates found with their acceptable ranges are given in Table 2.

Table 2: Model Fit Indices

Fit Indices	Calculated rate	Acceptable Rate
χ^2/df	1.77	< 5
GFI	0.948	>0.90
CFI	0.954	>0.90
TLI	0.943	>0.90
RMSEA	0.041	<0.08

When the results in Table 2 are evaluated, all the five fit indices rates are seen to be in acceptable ranges. According to Kline (2005), appropriate indices to include an advocate are the Chi-Square test, the RMSEA, the GFI, the CFI, and the SRMR. Boomsma (2000) has comparable endorsement nonetheless has an additional of the squared multiple correlations of each equation to be reported. Thus, it is unquestionable that the model is a suitable fit for the collected data.

From the given hypothesis, it was found that perceived security construct positively affected intention to use electronic payment which supports the third hypothesis ($\beta = 0.70$, $p < .001$). The results further show that perceived security has the strongest influence on the intention to use electronic payment as compared to other constructs. These results are similar to findings from other scholars (Huang and Cheng, 2012; Maroofi *et al*., 2012; Kim *et al*., 2010). This means that technical reliability and the resistance against attacks is of pivotal importance in influencing customers to adopt electronic payment systems (Kalakota and Whinston, 1997). Furthermore, the technical infrastructure, application, well-defined transaction rules, and legal framework are of profound importance to a customers' intention to use electronic payment system. Despite all these variables influencing intention to use electronic payment systems Romdhane (2005) insists that service providers must assure the prospective customer about the authentication, fraud prevention, confidentiality, divisibility, transferability, duplicate spending prevention, payment privacy, payment anonymity, and payer traceability.

Also, security statements influence intention to use electronic payment systems (Miyazaki and Fernandez, 2000). This finding is also sustained by the idea of information asymmetry whereby one of the parties in a business does not have access to all the information required for decision making' (Kim *et al.,* 2010).

Social influence is another construct that has a significant positive influence on intention to use electronic payment system ($\beta = 0.31$, $p < .001$), which supports the fifth hypothesis. and it is the third most influential construct according to this study This finding is consistent with findings from previous studies of Vannoy and Palvia (2010) and Kulviwata *et al. (*2009). These findings signify that the influence of family members, relatives and friends recommendation, use, and support of e-payment system providers will influence them to opt for e-the the payment system.

Effort expectancy is a third construct that indicated a significant positive contribution to customers' intention to use e-payment ($\beta = 0.19$, $p < .001$), supporting the second hypothesis. Logically, if technology involves less intellectual effort to use and apply, adopters will take it on with ease after all, less effort is required to learn, apply and use it. The vice versa could also be true. These findings concur with the finding from the previous studies conducted by Muhayiddin *et al.* (2011), Schierz *et al.* (2010), and Venkatesh *et al.* (2003).

Moreover, perceived cost resulted in a significant negative contribution to consumers' intention to use e-payment (resp., $\beta = - .137$, $p = .023$) which supports the fourth hypothesis, and it is the second influential construct in this study, This result means that an increase in cost will result in a significant decrease in intention to use the electronic payment system. This finding is also in support to the studies conducted by Dass and Pal (2011), Masinge (2010), and Micheni *et al.* (2013) in which it is argued that financial cost has an adverse effect on the acceptance of electronic payment system.

Finally, this study did not find any significant impact of performance expectancy on the customers' intention to use the electronic payment system in Tanzania ($\beta = 0.044$, $p > .05$). There is no sufficient statistical evidence to support the assertion that the degree to which an individual believes that using the electronic payment system will benefit him/her in terms of purchasing power, asset preservation, and self-haven capability, influences his/her intention to use the electronic payment system in Tanzania.

TABLE 3: Parameter Estimate of The Fitted Structural Equation Model

			Estimate	S.E.	C.R.	P-Value
IU	<---	PS	.701	.121	5.792	<0.001
IU	<---	EE	.193	.055	3.529	<0.001
IU	<---	SI	.311	.056	5.552	<0.001
IU	<---	PC	-.137	.060	-2.280	.023
IU	<---	PE	.044	.082	.538	.591

The standardized regression coefficients with their respective *p*-values for the constructs entered in the model are presented in Table 3 and Figure 3.
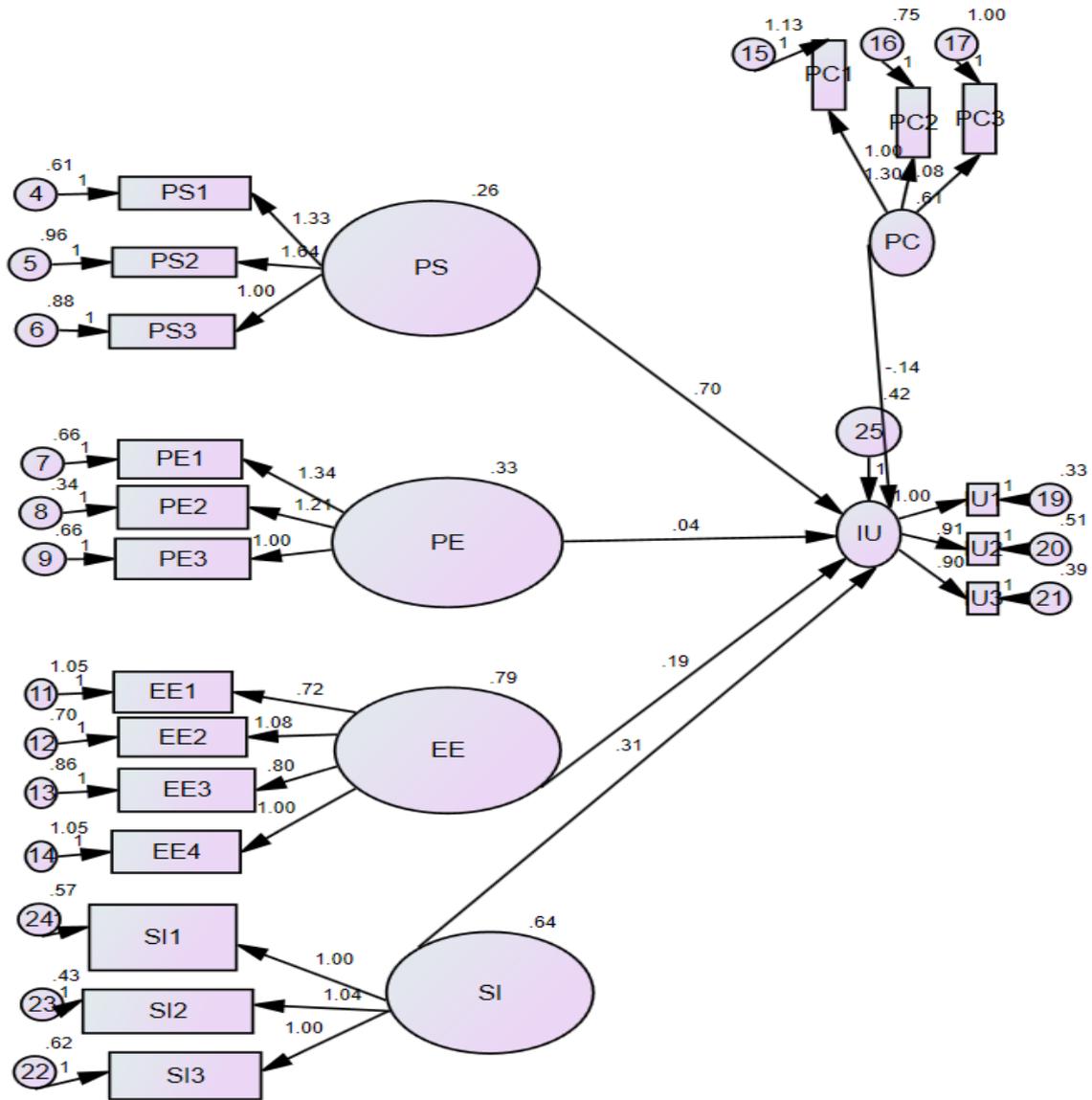

Figure 3: Parameter Estimate of the Fitted Structural Equation Model

Conclusion and Recommendations

The findings of this study suggest that the financial institutions providing e-payment services and technology should make sure that they provide statements that ensure security and technical protection of customer privacy concerns against outsiders are provided (Maroofi *et al.*, 2012). Furthermore, education provision related to regulation and legal issues should be given to customers.

E-payment providers should also provide coaching and awareness to early adopters who are already operating the electronic payment system. The early adopters have the capacity to inspire their colleagues and friends to adapt to use e-payment.

On the other side, electronic payment service providers should strive to keep the cost of electronic transactions as low as possible because it has a negative influence on customers' intention to use the electronic payment system. Electronic payment systems should be simple and easy to use to the customers.

The discoveries of this study add considerably to the mastery of some factors that affect consumers' intention to use e-payment systems in shopping malls. These results will help those who are involved in planning and developing e-payment systems to develop e-payment systems that are relevant and acceptable to customers, with greater concentration on the security and influence of the early adopters to the intended users. This study also gives a room for future studies by including other constructs in the UTAUT model i.e., facilitating conditions, other moderating factors and the actual usage of the electronic payment system. The research dropped actual usage which is directly affected by facilitating condition due to an insignificant group of electronic payment users in Tanzania and therefore lack enough population for analysis.

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