Examining the Impact of Privacy, Security, and Trust on the TAM and TTF Models for E-commerce Consumers : A Pilot Study

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***Abstract*—This paper examines the impact of privacy, security, and trust (PST) on the Technology Acceptance Model (TAM) and Task-Technology Fit (TTF) model for consumers of e-commerce. The findings of this pilot study were drawn by designing a structural equation model (SEM) on the impact of privacy, security, and trust (PST) on TAM and TTF models for consumers of e-commerce. The population for this pilot study was university academics and the data was analyzed using SPSS and WarpPLS software. Findings indicate that *privacy* has a significant influence on perceived usefulness, while *Security* and *trust,* have a significant influence on the perceived usefulness and perceived ease of use. Moreover, perceived usefulness has a significant influence on the behavioral intention to use, which in turn has a significant influence on the actual use. Similarly, the TTF model has a significant influence on perceived usefulness and perceived ease of use, but it does not have an influence on the behavioral intention to use.**

Keywords—privacy; security; trust; TAM; TTF model

I. INTRODUCTION

In the 20th century, e-commerce (electronic commerce) gained popularity [1] in our daily activities such as business, communication, personal life, and shopping. Online shopping is a popular way of communicating with consumers because of the large amount of merchandise available to consumers and numerous business opportunities that exists. Consumers of online shopping encounter unique features, namely, uncertainty, anonymity, and potential opportunism. Online customers are required to share their personal information, including financial information while facing the risk of firstly, dubious websites that may not match the products and services described and second, damage during the delivery process control [2]. The open nature of e-commerce is a medium of transacting that creates an additional risk to online consumers in terms of privacy, security, and trust [3].

According to [4], today most websites are not effectively focusing on privacy, security, and trust as required by e-consumers. *Privacy* refers to the environmental control that can determine security of online shopping and the control of secondary use of information [5]. Researchers [6] and [7] argued that e-consumers are deeply concerned about misuse of their personal data via illegal collection and dissemination of such information. Similarly, [8] also argued that e-consumers are concerned with two main privacy issues, that is, personal information and credit card details which are used by unauthorized or authorized persons without ones consent or knowledge. Furthermore, the study also indicated that sometimes one's email IDs and correspondence are accessed unlawfully for unknown purposes. *Security* refers to "the protection of data against accidental or intentional disclosure to unauthorized persons, or unauthorized modifications or destruction" [9]. According to [10], e-consumers' security embraces two issues namely, data and payment security. The data security is a protection of personal identity and information, namely, contact number, income, etc. whereas the payment security will relate to issues around use of credit card information. Trust refers to "the willingness of a party to be vulnerable to the actions of another party, based on the expectation that the other will perform a particular action important to the trust or, irrespective of the ability to monitor or control that other party" [1]. In e-commerce, trust is an online consumer's belief and expectancy of characteristics for online sellers [11]. It is argued in [11] that three dimensions can influence the information of trust, namely, ability, benevolence, and integrity. According to [12] *ability* consists of competence, experience, legal institution, and knowledge. *Benevolence* consists of attention, empathy, belief, and

acceptance. Finally, *integrity* consists of fairness, fulfilment, loyalty, honesty, dependability, and reliability.

II. Problem Statement

Consumers are reluctant to shop online because of the lack of faith that exits between consumers and businesses [13]. [14] reports that while on the one hand a large number of benefits are available for consumers, on the other hand, consumers are exposed to cyber risks. Cyber risks, namely, online fraud, phishing attacks, and identity theft usually results in consumer loss of personal data or money. According to [15], a total of 75% of Internet users are uncomfortable to do online shopping which requires sending personal or credit card information via the Internet. In [16] it is stated that the reasons for not shopping online are lack of security, lack of physical contact, uncertainty about product quality and distrust of retailers. In the Kingdom of Saudi Arabia, a total of 42% online shoppers did not feel secure while shopping online [17]. Presently, many users are avoiding online shopping since users are deeply concerned about privacy and security [18]. While privacy is noted as a critical reason for consumers not wanting to buy online,[19] argued a lack of trust as the primary reason for consumers not engaging with online shopping. For online shoppers trust is one of the most cited reasons that consumers do not want to purchase from online vendors [20]. In Malaysia, online consumers are not as yet confident enough to trust e-commerce transactions [21]. Numerous studies have been conducted on eCommerce, but little research has been found on computing academic staff – a subset of the general eConsumers – in relation to eCommerce adoption. Hence this study examines the impact of privacy, security and trust on the TAM and TTF model for computing academic staff.

III. Aim and Objectives

The aim of this pilot study was to design a structural equation model (SEM) to analyze the impact of privacy, security, and trust to the TAM and TTF model for e-commerce consumers. This aim is achieved through the following objectives:

- To examine the impact of privacy, security, and trust on the perceived usefulness and perceived ease of use to predict the behavioral intention to use and actual use of online shopping;
- To examine the impact of the TTF model on the perceived usefulness and perceived ease of use to predict the behavioral intention to use and actual use of online shopping;

IV. Research Questions

- To what extent does privacy, security, and trust impact the perceived usefulness and perceived ease of use to predict the behavioral intention to use and actual use of online shopping?
- To what extent does the TTF model impact the perceived usefulness and perceived ease of use to predict the behavioral intention to use and actual use of online shopping?

V. Research Hypothesis

- There is no significant effect on privacy, security, and trust on the perceived usefulness and perceived ease of use to predict the behavioral intention to use and actual use of online shopping.
- There is no significant effect of the TTF model on the perceived usefulness and perceived ease of use to predict the behavioral intention to use and actual use of online shopping.

VI. Theoretical Frameworks

Technology Acceptance Model (TAM) was developed to predict computer–usage behavior and it is widely used to explain users' acceptance of Information Technology (IT) including e-commerce [22]. The major determinants/constructs are defined as perceived usefulness and perceived ease of use. The perceived ease of use affects users' acceptance of technology mainly through perceived usefulness [23]. Furthermore, perceived usefulness and perceived ease of use predicted web use of work-related tasks [24]. In [25] it is argued that TAM predicted individual purchasing behavior online and perceived risk affects the perceived usefulness. TAM was very effective to evaluate online shopping at a particular "virtual" store [26] and it also predicted attitude toward online shopping [23].

TTF (Task-Technology Fit) model suggests that technology adoption depends in part on how well a new technology fits the requirements of a particular task [27]. According to [27], non-routineness ("I frequently deal with ill-defined business problems") and job interdependence ("The problems I deal with involve more than one business function") are dimensions of tasks that matters for their domains. In e-commerce, the use of TTF is related to how well consumers feel web technology fits a task [27]. A comination of both models (TAM and TTF) have shown efficacy to adopt technology in a workplace. Therefore, a combined single model is always a superior model as compared to individual TAM or TTF models. .

VII. Literature Reviews

A. Perceived Usefulness

[28] claimed that perceived usefulness (PU) linked to utilitarian and hedonistic values, and their attitudes and behaviors are correlated with customers intention to shop online. PU of a system can strongly affect the voluntary or mandatory acceptance of a person [29], and it has a significant effect on the e-consumer loyalty desire [30] for a low price. A variety of merchandise and brands can lead consumers toward buying clothing items at an online store as compared to the old fashioned store [31].

B. Perceived Ease of Use

Perceived ease of use (PEOU) refers to the system having a less or minimal effort to use [17] and it has a direct effect on PU and behavioral intention [32]. In a study by [33] (as cited in [34]) they used focus groups to identify the satisfaction related

to online shopping. The study found that as the result of consumer perceptions, convenience (ease of use), variety of goods, web design, and financial security contributed to customer satisfaction. Stated differently, customers see the Internet as a way to shop effectively and efficiently.

C. Privacy

It can be argued that privacy is the boundary control process where an individual can define with whom they communicate and what type of communication they do. Consumer privacy is an important dimension for online shopping – unauthorized secondary use of personal information, can have disastrous effects. The study [35] reports that privacy is considered a main bump in the road for the expansion of e-shopping. In the same study it was found that more than half of the respondents declined to register at a website or shop online because of a privacy policy that is too complicated or unclear. Similar findings from [36] were revealed, based on a model which was concerned with individual consumer privacy and its relationship with a behavioral intention while doing online transactions. [37] revealed that as the privacy concern rises, consumers are likely to provide incomplete information to websites, notify the ISP (Internet Service Provider) about unsolicited mail, and request for the removal from lists. In earlier studies, privacy concerns were related to the four dimensions, namely, information privacy, bodily privacy, communication privacy, and territorial privacy [38]. It seems that females are more concerned with privacy as compared to their male counterparts [38].

D. Security

Security can be defined as an online institutional status on its payment system and the consumer's perceived extent of risk involved [39]. Similarly, a study by [40] defined security as a complex concept and in e-commerce it is an event that can destroy, modify, waste, deny or disclose information, and reduce the efficiency of data and network resources. A studyby [41] indicated that security influences consumers' trust and they are concerned about credit card fraud. Furthermore, the study also indicated that if a website's protection for consumers is increased then security would be enhanced. Security is one of the most important issues for consumers with regard to online purchasing[42]. In e-commerce, security relates to two aspects, namely, uncertain underlying technological infrastructure and unreliable users of the system. [43] noted in their research that the Internet is not an environment which is secure for online shopping, but security must be utilized and considered by the online website in order to protect customers' data. However, they further indicated that online websites are the most vulnerable for attacks by hackers.

E. Trust

Trust plays a significant role for online sellers and it can have a positive adoption affect on an e-consumer [44]. In e-commerce, consumers' trust is a multidimensional construct that includes three elements which are institutional trust, interpersonal trust, and dispositional trust [44]. *Institutional trust* refers to individual's trust in institutions, like laws in a society or for e-commerce, the technology itself [11]. *Interpersonal trust* refers to an individual's trust for a specific party or trustworthiness for a third party, such as an e-vendor, a newspaper publishing an article that is concerned about an e-vendor, or a friend that gives a recommendation with regard to an e-vendor [20]. *Dispositional trust* is endogenous or to develop during the life experiences [45] and it is important for using e-commerce. Studies conducted by [46] revealed that trust is an important factor in buyer-seller relationships and online purchase intention in e-commerce. Online trust includes consumer perception of how a website can deliver on the expectation, how believable the website information is, and confidence level in the site channel [2]. [47] stated that "online trust is one of the key obstacles for vendors succeeding on the internet medium. A lack of trust is likely to discourage online consumers from participating in e-commerce". The study by [48] affirmed that sufficient trust is needed to place an order online when a customer submits their financial information and other personal information online. Research results by [49] points out that higher degrees of consumer trust can lead to higher degrees of purchasing intentions of consumers. Research by [50] on the measurement of consumer acceptance of e-shopping found that shopping enjoyment and trust plays a crucial role to adopt consumer e-shopping.

VIII. METHODOLOGY

This pilot study was conducted in May 2016 at a public university in South Africa . In this pilot study, a questionnaire adapted from [27] was used. Additional questions were added to the questionnaire, where appropriate. Permission was granted on May 25th, 2016 from [27] in order to use their questionnaire. Academic staff members from two departments, namely, Computer Science Education and Information Systems and Technology, were requested to complete the questionnaires. A small sample of academic staff members participated voluntarily in the pilot and were assured that their names would be anonymous. Once reliability and validity of the questionnaire is confirmed, a much larger study will be conducted. Data were captured on the SPSS and MS Excel. SPSS (23.0) Software was used to analyze the descriptive statistics. In order to study the relationships of variables from both models, (TAM and TTF) structural equation modeling (SEM) was used to determine what combination of variables will ensure a best fit model. SEM is a statistical technique that combines elements from multivariate models, namely, regression analysis, factor analysis and simultaneous equation modeling. SEM can account for less than perfect reliability of the measured variables which is suitable for applications in the social sciences where measurement error and uncertain causal conditions is common.WarpPLS (5.0) was used to analyze the structural equation modeling (SEM).

The questionnaire consisted of nine sections, namely, *demographics* (e.g., age, gender, experience, designation, department, faculty, highest qualification, Internet facilities at home, and ICT facilities at home), *perceived usefulness (*e.g., the Internet enables me to accomplish shopping quickly, the Internet makes it easier to shop, the Internet is useful for shopping activities), *perceived ease of use* (e.g., difficult to

learn how to use the Internet for shopping, took a long time to learn how to use the Internet for shopping, confused when to use the Internet for shopping), *intention to use* (e.g., very useful to use the Internet for shopping in addition to traditional methods, very desirable to use the Internet for shopping in addition to traditional methods, better to use the Internet for shopping in addition to traditional methods, Internet for shopping activities is a good idea, like using the Internet for shopping activities), *actual use* (e.g., Internet used for shopping activities, different online shopping places visited in a month, monthly time spent for online shopping activities; average use of Internet for online shopping activities), *Task-technology fit* (e.g., product information easy to maintain on product website, product information is either obvious or easy to find out, product information quickly and easily accessible from a website, product information used is accurate enough, online product information is up to date and sufficient, online product information is readable and understandable, online product information at website is adequate to carry out tasks, online product information is stored in many forms and it is hard to know how to use), *privacy* (e.g., e-commerce generates privacy issues for business transaction, e-commerce generates privacy issues for personal information and its use), *security* (e.g., e-commerce generates security threats for transaction attacks, e-commerce generates security threats for misuse of financial information or with the personal information), and *trust* (e-commerce generates trust, belief in the system, that is begin to trust the system even though did not design the system; e-commerce generates trust in a specific party for beneficial goods and services, that is, begin to trust the quality of goods and services; and e-commerce generates trust in the competency of individuals, that is begin to trust own technology competences when using e-commerce).

IX. Results

A. Demographics

Table I shows that half of the academic staff members are between 41-50 years and a total of 71% staff members are male. More than half of respondents have Internet facilities at home and some of the staff members (14.3%) are using four devices at home.

TABLE I. Demographics

Age	31-40 (14.3%)	41-50 (50%)	Above 50 (35.7%)		
Gender	Female (28.6%)	Male (71.4%)			
Teaching Experience	1-3 yrs (14.3%)	7-9 yrs (7.1%)	10-12 yrs (14.3%)	13-15 yrs (7.1%)	Over 15 yrs (57.1%)
Designation	Lecturer (71.4%)	Senior Lecturer (7.1%)	Associate Professor (7.1%)		
Department	Computer Science Education (64.3%)		Information Systems & Technology (35.7%)		
Faculty	Education (71.4%)		Law and Management Studies (28.6%)		
Highest Qualification	Bachelor's Degree (35.7%)		Master's Degree (21.4%)	Doctoral Degree (42.9%)	
Internet Facilities at Home	Yes (78.6%)		No (21.4%)		
ICT Facilities at Home	• Desktop Computer (14.3%) • Laptop/Notebook Computer (21.4%)		2 Devices (e.g., desktop computer, laptop/notebook computer, a tablet device (iPad), smart phone) (28.6%)		
	3 Devices (e.g., desktop computer, laptop/notebook computer, a tablet device (iPad), smart phone) (21.4%)		All 4 Devices (e.g., desktop computer, laptop/notebook computer, a tablet device (iPad), smart phone) (14.3%)		

B. Structural Equation Modeling (SEM)

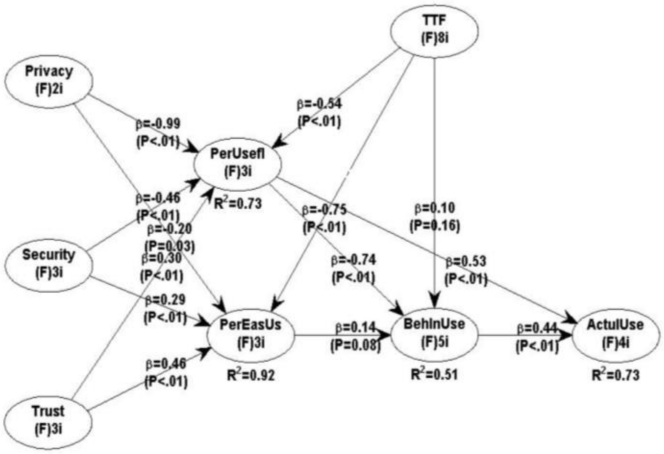

Fig.I. Structural equation modeling (SEM) on the impact of privacy, security, trust to the TAM and TTF model for e-commerce consumer

B1. Impact of Privacy, Security, and Trust on the Perceived Usefulness and Perceived Ease of Use

Figure I shows that privacy has a significant influence on perceived usefulness with values of $\beta = -0.99$ and $p =< .01$, but on the other hand, privacy does not have significant influence on the perceived ease of use since the p value is not $< .01$. In the case of security, it has a significant influence on the perceived usefulness and perceived ease of use with values of $\beta = -0.46$ and $p =< .01$ and, $\beta = 0.29$ and $p =< .01$ respectively. Finally, for trust, it has a significant influence on perceived usefulness and perceived ease of use with values of $\beta = 0.30$ and $p =< .01$ and, $\beta = 0.46$ and $p =< .01$ respectively. Based on the analysis of Figure 1, it is concluded that trust has a higher significant influence on perceived usefulness and perceived ease of use.

On the other hand, privacy has the lowest significant influence on perceived usefulness and perceived ease of use respectively. Nevertheless, perceived usefulness has a significant influence on the behavioural intention to use with values of $\beta = -0.74$ and $p =< .01$ followed by actual use for online shopping with values of $\beta = 0.53$ and $p =< .01$. Interestingly, Figure I shows that perceive ease of use does not have a significant influence on the behavioural intention to use with values of $\beta = 0.14$ and $p = 0.08$. Thus, the behavioural intention to use does have a significant influence on the actual use with values of $\beta = 0.44$ and $p =< .01$.

B2. The Impact of the TTF model on Perceived Usefulness, Perceived Ease of Use, and Behavioral Intention to Use

Figure I shows that TTF model has a significant influence on the perceived usefulness and perceived ease of use with values of $\beta = -0.54$ and $p =< .01$ and, $\beta = -0.75$ and $p =< .01$ respectively. However, the TTF model is not having a significant influence on the behavioural intention to use because it has a p value $< .01$. Based on the analysis of Figure 1, it is concluded that the TTF model has a higher influence on perceived usefulness followed by perceived ease of use and behavioural intention to use. Furthermore, Figure I has also shown that the behavioural intention to use has a significant influence on the actual use for online shopping with values of $\beta = 0.44$ and $p =< .01$.

C. Model Fit and Quality Indices

A model is measured through convergent and discriminant validity [51]. Convergent is accessed through three steps, namely, questions reliability, constructs reliability, and variance extracted using constructs. On the other hand, the discriminant is accessed by looking at correlations . Table II shows the ten fit index items to display how good the model is.

TABLE II. MODEL FIT AND QUALITY INDICES

Fit Index	Model	Recommendation
Average path coefficient (APC)	0.458	P<0.001
Average R-squared (ARS)	0.722	P<0.001
Average adjusted R-squared (AARS)	0.634	P<0.001
Average block VIF (AVIF)	2.120	Acceptable if <=5, ideally <=3.3
Average full collinearity VIF (AFVIF)	429.042	Acceptable if <=5, ideally <=3.3
Tenenhaus GoF (GoF)	0.724	Small >=0.1, medium >=0.25, large >=0.36
Sympson's paradox ratio (SPR)	0.846	Acceptable if >=0.7, ideally = 1
R-squared contribution ratio (RSCR)	0.934	Acceptable if >=0.9, ideally = 1
Statistical suppression ratio (SSR)	0.846	Acceptable if >=0.7
Nonlinear bivariate causality direction ratio (NLBCDR)	0.654	Acceptable if >=0.7

D. Mean and Standard Deviation

Table III shows the different means and standard deviations for the x-axis and y-axis of privacy, security, trust, perceived usefulness, perceived ease of use, behavioral intention to use, and TTF model.

In the case of *privacy*, for online consumers, when mean is 2.79 the standard deviation is 0.89 (x-axis). On the other hand, perceived usefulness and perceived ease of use for online consumers, a mean of 2.29 and a standard deviation of 0.91 followed by a mean of 4.21 and a standard deviation of 0.58 (y-axis). In the case of *security* for online consumers the mean is 2.57 and the standard deviation is 0.94 (x-axis), for the y-axis, the perceived usefulness and perceived ease of use means are 2.29 and 4.21 and, standard deviations are 0.91 and 0.58 respectively. Similarly, *trust* of online consumers, the mean is 2.21 and the standard deviation is 0.43 (x-axis) but on the other hand, for the y-axis, perceived usefulness, the mean is 2.29 and the standard deviation is 0.91. For the perceive ease of use, the mean is 4.21 and the standard deviation is 0.58.

For *perceived usefulness* for online consumers in the x-axis, the mean is 2.29 and the standard deviation is 0.91 and for the y-axis, the behavioral intention to use, the mean is 2.14 and the standard deviation is 0.95. Furthermore, for the online consumers *actual use*, the mean is 2.79 and the standard deviation is 0.80. Similarly, for the *Perceived ease of use* for online consumers (x-axis), the mean is 4.21 and the standard deviation is 0.58 and for the y-axis, the behavioral intention to use, the mean is 2.14 and the standard deviation is 0.95. In the case of x-axis, the *behavioral intention to use* for e-consumer, the mean is 2.14 and the standard deviation is 0.95, but on the other hand, in the y-axis, for the actual use, the mean is 2.79 and the standard deviation is 0.80.

Eventually, in the *TTF model* for online consumers, the mean is 2.14 and the standard deviation is 0.36 (x-axis). For the y-axis, for perceived usefulness, the mean is 2.29 and the standard deviation is 0.91. For the perceived ease of use, the mean is 4.21 and the standard deviation is 0.58.

TABLE III. MEAN AND STANDARD DEVIATION FOR X-AXIS & Y-AXIS

X-axis			Y-axis		
Sub-scals	Mean	SD	Sub-scals	Mean	SD
P	2.79	0.89	PU	2.29	0.91
			PEOU	4.21	0.58
S	2.57	0.94	PU	2.29	0.91
			PEOU	4.21	0.58
T	2.21	0.43	PU	2.29	0.91
			PEOU	4.21	0.58
PU	2.29	0.91	BIU	2.14	0.95
			AU	2.79	0.80
PEOU	4.21	0.58	BIU	2.14	0.95
BIU	2.14	0.95	AU	2.79	0.80
TTF	2.14	0.36	PU	2.29	0.91
			PEOU	4.21	0.58
P: Privacy			S: Security		
T: Trust			PU: Perceived Usefulness		
PEU: Perceived Ease of Use			BIU: Behavioral Intention to Use		
AU: Actual Use			TTF: TTF Model		
SD: Standard Deviation					

E. *P-values Corrlelations*

Table IV shows the p-values correlations among latent variables, namely, perceived usefulness, perceived ease of use, behavioral intention to use, actual use, TTF model, privacy, security, and trust.

TABLE IV. P-VALUES CORRELATIONS

	I	II	III	IV	V	VI	VII	VIII
I	**1.000**							
II	0.572	**1.000**						
III	0.008	0.958	**1.000**					
IV	0.898	<0.001	0.225	**1.000**				
V	0.840	0.472	0.897	0.176	**1.000**			
VI	0.461	0.111	0.968	0.154	0.990	**1.000**		
VII	0.901	0.275	0.403	0.752	0.140	0.173	**1.000**	
VIII	0.942	0.870	0.020	0.107	0.320	0.516	0.121	**1.000**
I: Perceived Usefulness			II: Perceived Ease of Use			III: Behavioral Intention to Use		
IV: Actual Use			V: TTF Model			VI: Privacy		
VII: Security			VIII: Trust					

F. *Analysis of the Cronbach's Alpha Coefficients, Composites Reliability Coefficients*

According to [52], for alpha, if the reliability and composite reliability range are 0.70 or greater then it is acceptable. Table V shows the Cronbach's alpha of behavioral intention to use is closer to 0.70 and the remaining are over 0.70. For composite reliability all values have passed the reliability.

TABLE V. P-VALUES CORRELATIONS

	I	II	III	IV	V	VI	VII	VIII
A	0.958	0.919	0.659	0.691	0.810	0.983	0.982	0.766
B	0.971	0.941	0.760	0.779	0.886	0.991	0.988	0.859
I: Perceived Usefulness			II: Perceived Ease of Use			III: Behavioral Intention to Use		
IV: Actual Use			V: TTF Model			VI: Privacy		
VII: Security			VIII: Trust					
A: Cronbach's Alpha Coefficients			B: Composite Reliability Coefficients					

X. DISCUSSION

The ***first hypothesis was rejected*** because *privacy, security and trust* had a significant influence on perceived usefulness. Similarly while *security* and *trust* did have a significant influence on the perceived ease of use, *privacy* did not have a significant influence on perceived ease of use. Also, privacy had a lower impact on perceived usefulness and perceived ease of use. Perceived usefulness and perceived ease of use had a significant influence on the behavioral intention to use and actual use. In addition, perceived ease of use did not have significant influence on the behavioral intention to use. Nevertheless, behavioral intention to use did have a significant influence on the actual use for the online shopping. Similarly, the ***second hypothesis was also rejected*** because the TTF model had a significant influence on perceived usefulness and perceived ease of use. On the other hand, the TTF model did not have significant influence on the behavioural intention to use. Furthermore, the TTF model had a higher influence on

perceived usefulness followed by perceived ease of use and behavioural intention to use. However, the behavioural intention to use had a significant influence on the actual use for online shopping.

For the model fit and quality indices a total of ten dimensions were used: average path coefficients (APC), average R-squared (ARS), average adjusted R-squared (AARS), average block VIF (AVIF), average full collinearity VIF (AFVIF), Tenenhaus GoF (GoF), Sympson's paradox ratio (SPR), R-squared contribution ratio (RSCR), statistical suppression ratio (SSR), nonlinear bivariate causality direction ratio (NLBCDR). Cronbach's alpha showed that most of the items passed the reliability coefficients, but only one of the items was very close to the border line of the reliability test. For the composite reliability all the items had passed the reliability and validity test.

XI. Conclusion and Recommendation

The novelty of this research was designed based on the analysis of a structural equation model (SEM) which indicated that privacy, security, and trust, did influence the TAM and TTF models for e-commerce consumers.This pilot study showed that TAM and TTF models play a crucial role for online consumers. The findings will help developers of online shopping in terms of knowing how privacy, security, and trust, influence the TAM and TTF models for e-commerce consumers. This study will certainly prove positive for researchers and online consumers who are engaged in enhancing the success of online shopping. The limitation of this study was that it was limited to small disciplines with very few staff members. We hope that with a larger number of participants, similar results could emerge.

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