



Role of Core Self-Evaluation Personality Trait and Individual Beliefs in Predicting Technology Acceptance Model 3 (TAM3)

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ABSTRACT

Purpose: This study attempts to empirically investigate the adoption of 3G/4G LTE technology in Pakistan.

Methodology/Design: The data was collected using a structured questionnaire from consumers of twin cities of Pakistan. The sample was taken on basis of convenience sampling technique. Initially 700 questionnaires were distributed among the students, out of which 605 completely filled questionnaires were used for data analysis by using SPSS.

Findings: The results for all variables were significant and showed positive relationship among them. The results reveal that core self-evaluation and trust have positive impact on technology acceptance model variables.

Originality/Value: Based on TAM 3 theory the research formulated the theoretical framework, and then investigating the impact of core self-evaluation personality traits and individual belief trust on perceived ease of use and perceived usefulness to elucidate the individual's adoption intention towards 3G/4G LTE technology. More specifically, this study aims to extend the technology acceptance model 3.

Implication: This study is expected to provide better information and understanding of the factors influencing consumer's adoption intention about 3G/4G LTE technology. It provides important implications for the marketers and retailers. Retailers and marketers are advised to observe personality and trustworthiness beliefs of target consumers and carefully judge their intention towards 3G/4G LTE technology. Easy to use and useful technology might have a stronger chance for adoption.

Limitations: This study was limited to university students and to 3G/4G LTE technology.

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INTRODUCTION

In the changing era of world the telecommunication advancement is also on its apex. People want to communicate very quickly in minimum possible time. The cell phone and internet has developed in to essential ingredient in our life. The advancement in smart phones technology and the gradual increase in internet technology and social media usage, the outcome of this development is a result of reliance on cell phone. The telecommunication system is distinctively recognized through its description of different generations. In Pakistan 3G/4G LTE technology launched, recently in 2014. The 3G/4G LTE technology is advancement in the first and second generation of telecommunication technology. The significant feature of 3G technology is the transmission of facts and figures and it is also vary from earlier generations (Zhuang, Xiaoyan & Yan, 2009). The 3G technology consumers can avail speedy internet service, clear voice, fast browsing. The main services that, we can attain from 3G technology such as multimedia, mobile internet and audio and video facility (Zhuang et al., 2009). The 4G LTE technology is comprised of 3G and wireless local area network and may disseminate videos in high resolution.

In the previous study Five factor model of personality trait was examined with TAM (Sriyabhand & John, 2014). Further, the personality traits openness to experience, neuroticism, personal innovativeness and computer self-efficacy was investigated with basic TAM model (Oostrom, Linden, Born & Molen, 2013). Emotional stability, extraversion, openness, computer anxiety,

Computer self-efficacy and trust was tested with TAM (Behrenbruch, Söllner, Leimeister & Schmidt, 2013). The relationship of four personality traits emotional stability, extraversion, conscientiousness and openness to

experience have also been tested with TAM and it is recommended that an innate development of this study would be to examine the impact of personality constructs on TAM in actual scenario in which consumers use technology in real sense (Svendsen, Johnsen, Almas-Sorensen, & Vitterso, 2013). In another study the personality traits openness, neuroticism, agreeableness, conscientiousness and extraversion (Big Five Model) with TAM, and it was also suggested for future research to see the influence of other personality traits that can be effectively observed in the framework of determining other predictors of technology acceptance model (Devaraj, Easley & Crant, 2008).

The current study fills the research gap by developing the relationship between four personality traits called Core-Self-evaluation trait (i.e. self-esteem, self-efficacy, locus of control and neuroticism) and technology acceptance model. In the model of TAM 3 there was self-efficacy and external control, we add two more traits i.e. neuroticism and self-esteem for making another personality trait core self-evaluation that is never been tested before with TAM. In our model the control beliefs are extracted from TAM 3 model. So the present study is also the extension of TAM 3 model. In conclusion, the foundation of technology acceptance model i.e. theory of reasoned action, clearly embraces personality traits as an external variable influencing human expectations and beliefs (Fishbein & Ajzen, 1975).

As in individual general beliefs we considered trustworthiness with its six dimensions. In previous study trustworthiness influence on TAM is seen but as single construct, sub dimensions were not considered (Ayeh, 2015). In another study perceived company trustworthiness with its sub dimension i.e. integrity, benevolence and competence was taken with TAM (Koufaris & Hampton-Sosa, 2002). So in this study we

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investigated trustworthiness with its six dimensions holistically with TAM.

The basic model of TAM and its extended models specially TAM 2 and TAM 3 consist of perceived ease of use and perceived usefulness placed in the middle and behavioral intention was placed before the actual usage variable. Numerous researches have showed that the actual usage is the chief predictor in adoption of technology (Raman, 2011; Pynoo et al., 2012; De Smet et al., 2012; Tarhini et al., 2013). On the other hand, many researches verified that when technology is at beginning stage to adopt in a society, consumer's choice to accept or adopt the particular technology is deliberated behavior that is adequately revealed by behavioral intention (Chau & Hu, 2002; Ramayah et al., 2002; Al-Queisi, 2009; Zacharis, 2012). A very recent article tested technology readiness index (TRI) derived from TAM3 model in USA and Chile and found that four attitudes towards technology such as innovativeness, optimism, insecurity and discomfort were significantly related to technology acceptance behaviors. Authors suggested that personality factors such as personality variables such as neuroticism, openness to experience, agreeableness and conscientiousness may be tested to predict technology acceptance in non-western cultures (Rojas-Méndez, Parasuraman, & Papadopoulos, 2017). To accomplish the objectives of this study, the subsequent research questions will be addressed.

1. Is there a significant relationship between individual general belief i.e. trustworthiness and trust?
2. Is there a significant relationship between individual control belief i.e. core self-evaluation and perceived ease of use?
3. Is there a significant relationship between individual control belief i.e. core self-evaluation and perceived usefulness?
4. Is there a significant relationship between perceived ease of use and behavioral intention?

5. Is there a significant relationship between perceived usefulness and behavioral intention?

LITERATURE REVIEW

Technology Acceptance model

Considering the improved perspective regarding growth and evolution of technology acceptance model, a concise explanation of philosophy and approach which led and affected its emergence is needed (Maranguni & Grani, 2014). When the technology penetrating consumers' routine life; there was an increasing requirement for understanding the cause of acceptance and rejection of certain technology. The presumption making to describe and forecast these choices were based in the arena of psychology (Maranguni & Grani, 2014). The two theories i.e. theory of Reasoned Action (TRA) together with theory of planned behavior (TPB) (Ajzen & Fishbein, 1980; Ajzen, 1985) illustrates the foundation of Technology Acceptance model (TAM).

Perceived Usefulness, Perceived Ease of Use and Behavioral Intention (BINT)

Perceived usefulness is defined as "the extent to which individuals have expectation that use of specific system or technology would improve their performance" (Davis, 1989; Sun & Zhang, 2006). Perceived usefulness is an appraisal used to judge the advantages that a person or organization takes by utilization of particular technology (Ndubisi & Jantan, 2003). In prior studies, perceived usefulness was observed that it is positively related with behavioral intention for using computer technology (Guriting & Ndubisi, 2006; Seyal & Rahman 2007; Fagan, Wooldridge & Neill, 2008; Norazah, Ramayah & Norbayah, 2008; Huang, 2008; Ha & Stoel, 2009; Hsu, Wang & Chiu, 2009; Ruiz-Mafe, Sanz-Blas, & Aldas-Manzano, 2009; Tong, 2009; Sudha, Singh

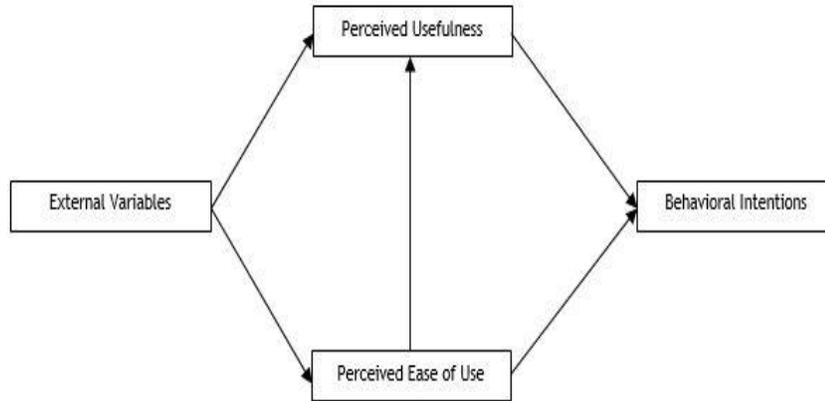


Figure 1: Technology Acceptance Model, Source: Davis et al. (1989)

& Singh, 2010). Perceived ease of use is defined as “the extent to which individuals have expectations that use of definite system would not require exertion” (Davis, 1989). The fundamental construct of technology acceptance model (TAM) is perceived ease of use that is also an appraisal to measure the person’s exertion required for using the particular technology (Ndubisi & Jantan, 2003). There are numerous studies in which perceived ease of use as a determinant for various kind of technology such as study conducted in China for cell phone data services, e-commerce and mainly for latest technologies (Henderson & Devitt, 2003; Wu & Wang, 2005; Wang et al., 2008; Qi et al., 2009; Sun et al., 2009). Behavioral intention is considered as the crucial constructs in psychology and marketing studies and utilized for forecasting of different potential behaviors (Fishbein & Ajzen, 1975). In prior researches behavioral intention is defined as “the individual’s willingness or probability to perform a particular behavior” (Oliver 1997).

Technology Acceptance Model 3 (TAM 3)

The technology acceptance model (TAM) over the time requires to develop or expands its extent by adding new constructs for acquisition of latest

technology acceptance (Venkatesh & Davis, 2000). This entails that the TAM may be extend by using situation related variables when applicable for latest technology. The basic technology acceptance model developed in to TAM 2 (Venkatesh & Davis, 2000), the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003) and TAM 3 (Venkatesh & Bala, 2008).

Trust

Trust is defined as “the buyer’s belief that the seller will behave benevolently, show competency and integrity towards buyers or customers” (Pavlou & Fygenson, 2006, p. 127). To increase customer intentions toward buying of products, trust belief play a significant role (Ajzen, 1991). Trust has positive impact on perceived ease of use and perceived usefulness (Pavlou, 2003). The rationale behind the influence of trust on perceived ease of use is based on transaction cost theory (Hallegatte & Nantel, 2006). With higher trust in the new technology, the less struggle consumer has to make to examine particulars of technology to judge benevolence of technology provider. In case of trusted technology, way of use, accessing the technology, and consumer practices greater

ease of use. The influence of trust is relating to perceived usefulness is linked with the credibility side of trust.

Core self-evaluation (CSE)

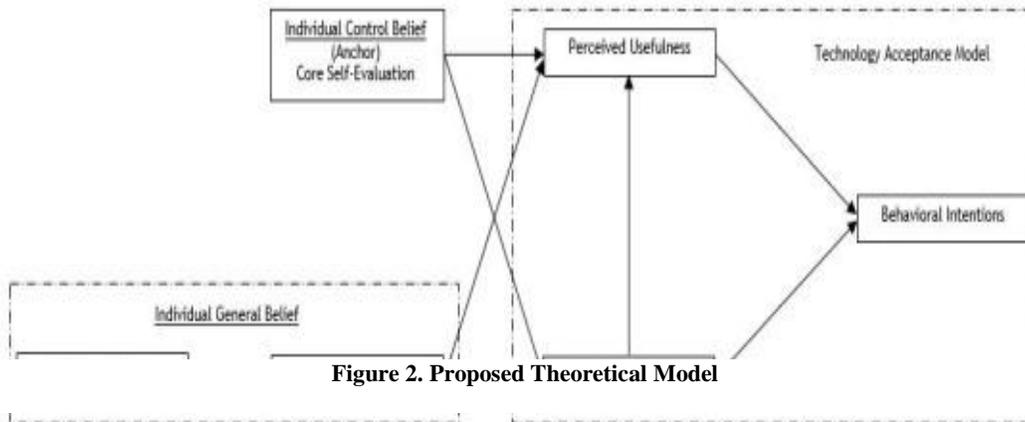
The theory of core self-evaluation is originally identified in 1985 and conceptualized as “the assessment of particular states that are influenced by many basic considerations” (Packer, 1985). Core self-evaluation is stated as a “person’s unintentional, core assessments regarding him/her self and their capabilities” (Judge, Locke, & Durham, 1997). The notion of core self-evaluation has been found associated with different organizational variables. For instance literature shows a positive link among CSE and job satisfaction (Judge, Bono, Erez & Locke, 2005; Judge, Van Vianen & De Pater, 2004; Bono & Judge, 2003; Judge, Heller & Mount, 2002; Erez & Judge, 2001; Judge, Bono, & Locke, 2000; Judge, Erez & Bono, 1998; Judge, Locke, Durham & Kluger, 1998). In previous study the personality traits derived from technology readiness index (TRI) had an impact on technology acceptance (Parasuraman, 2000; Walczuch et al., 2007). In the theory of reasoned action (TRA) personality is considered as the exogenous variable, Thus TAM which is

grounded on TRA revealed personality as external factor (Ajzen & Fishbein, 1975; Agarwal & Prasad, 1999). It was recommended that anchors that predict perceived ease of use are anxiety, self-efficacy, perception of external control and playfulness (Venkatesh & Bala, 2008).

Trustworthiness

Trustworthiness as a variable has been studied broadly in the discipline of organization behavior, business moral codes, societal relationships and e-commerce (Mayer et al., 1995; Lee & Turban, 2001; Caldwell & Jefferies, 2001; Belander, Hiller, & Smith, 2002; Bews & Rossouw, 2002; Gefen, 2002; Chong, Yang & Wong, 2003). Trustworthiness is defined as the estimated assessment that a person is reliable for trust (Brenkert, 1998). In the study of organizational behavior, trustworthiness defined as “the behavior that help the probability that firm will perform in the favor of their workers” (Mayer et al., 1995).

In recent times, trustworthiness has been found as significant determinant for effectual leadership through comprising one element of transformational leadership (Trottier et al., 2008). Trustworthiness has been also seen as a



determinant of absenteeism, performance and turnover (Harrison et al., 2006). Moreover, according to resource theory trustworthiness may be acknowledge as interchange source which makes the scope of shared relationship and supports in developing trust (Foa & Foa, 1980; Mayer & Davis, 1999; Mayer et al., 1995)

Hypotheses Testing

- H1: Trustworthiness has positive impact on trust.
 H2: Core self-evaluation has positive impact on perceived usefulness.
 H3: Core self-evaluation has positive impact on perceived ease of use.
 H4: Trust has positive impact on perceived usefulness.
 H5: Trust has positive impact on perceived ease of use.
 H6: Perceived ease of use has positive impact on perceived usefulness.
 H7: Perceived usefulness has positive impact on behavioral intentions.
 H8: Perceived ease of use has positive impact on behavioral intentions.

METHODOLOGY

The data collected for current study by floating questionnaire to 700 university students personally and online. The questionnaires were distribute among students in major cities of Pakistan and for collecting data convenience

sampling technique was used. 605 complete questionnaires were included in final study. The study is quantitative and cross sectional in nature.

Measures

The first construct is core self-evaluation personality trait. This construct is determined by four diverse but correlated dimensions and these are self-esteem, self-efficacy, locus of control, and neuroticism. The scale of self-esteem has 10 items and was adopted from Rosenberg (1965) and the scale showed high reliability with Cronbach's alphas value ranging between 0.83–0.88.

The scale of self-efficacy has 8 items and was adopted from Chen, Gully and Eden (2001) and the scale showed high reliability with Cronbach's alphas value ranged 0.85-0.90. The scale of locus of control has 8 items and was adopted from Spector (1988) and the scale showed high reliability with Cronbach's alphas value ranging between 0.75–0.84. The scale of neuroticism has 12 items and was adopted from Eysenck, Eysenck, and Barrett (1985) and the scale showed reliability with Cronbach's alphas value ranging between 0.80-0.85. The scale of trustworthiness has 4 items and was adopted from Morgan and Hunt (1994). The scale of trust has 4

Table 1. Summary of all Measures

Variables	Instrument Authors	No of items
Self esteem	Rosenberg (1965)	10
Self-efficacy	Chen, Gully and Eden (2001)	8
Locus of Control	Spector (1988)	8
Neuroticism	Eysenck, Eysenck and Barrett (1985)	12
Trustworthiness	Kumar et al. (1995)	4
Trust	Podskoff et al. (1990)	4
Perceived ease of use	Venkatesh and Bala (2008)	4
Perceived Usefulness	Venkatesh and Bala (2008)	4
Behavioral Intentions	Venkatesh and Bala (2008)	3

Table 2. Demographic Variables Profile

Demographic	Category	Frequency	Mean (S.D)	Skewness	Kurtosis
Gender	Male	321	1 mode (0.50)	0.12	-1.99
	Female	284			
Age (In years)	21-25	45	2.90 (1.11)	0.33	-0.66
	25-30	203			
	31-35	186			
	36-40	108			
	Above 40	63			
Education	Intermediate	118	2.44 (0.94)	-0.09	-0.93
	Bachelor	177			
	Masters	234			
	Above Master	76			

items and was adopted from Podskoff et al., (1990). The scale of perceived ease of use has 4 items and was adopted from Venkatesh and Bala

(2008). The scale of perceived usefulness has 4 items and was adopted from Venkatesh and Bala (2008). The scale of behavioral intention has 3 items adopted from Venkatesh and Bala (2008).

Table 3. Confirmatory Factor Analysis

Constructs	Items	Outer Loading	AVE	CR	Alpha
Trustworthiness	TWRH1	0.76	0.64	0.88	0.87
	TWRH2	0.92			
	TWRH3	0.88			
	TWRH4	0.62			
CSE Personality Trait	MSESS	0.70	0.58	0.85	0.84
	MSEFF	0.68			
	MLOC	0.86			
Trust	MNEUR	0.79	0.52	0.81	0.81
	TRST1	0.68			
	TRST2	0.57			
	TRST3	0.75			
Perceived Ease of Use	TRST4	0.87	0.75	0.92	0.92
	PEOU1	0.86			
	PEOU2	0.88			
	PEOU3	0.83			
Perceived Usefulness	PEOU4	0.91	0.79	0.94	0.94
	PUSF1	0.84			
	PUSF2	0.88			
	PUSF3	0.93			
Behavioral Intentions	PUSF4	0.92	0.77	0.91	0.91
	BINT1	0.92			
	BINT2	0.90			
	BINT3	0.80			

Note: Average Extracted Variance (AVE); Composite Reliability (CR); Cronbach's Alpha (Alpha)

DATA ANALYSIS

Sample Demographics

Sample is consisted of 605 respondents. Sample statistics showed that 321 were males and remaining 284 were females. 203 (33.6%) participants were from the age group between 25 to 30 years. Most of the participants (i.e. 234 participants) have master level education. Data was normally distributed as Skewness and kurtosis values lies between -2 and 2. Results are shown in Table 2.

Analysis of Measurement Model

To validate the measurement model, reliability, internal consistency, convergent validity, convergent validity and discriminant validity is

evaluated.

Reliability Indicator

The significance of outer model coefficient is assessed through this indicator. In Table-3, outer loadings present the correlation among latent constructs and each of the observed variables.

Internal Consistency (IC)

Internal consistency can be assessed through two criteria of latent variables i.e. Cronbach alpha and composite reliability. Cronbach alpha provide estimation of reliability on the basis of correlation among variables with assumption that all variables are equally reliable. While, composite reliability use the outer loadings to check the internal consistency. Results showed that model is much internally consistent as values are higher than cut off point 0.60 (Ballestar et al., 2015). Results are shown in Table-3.

Table 4: Discriminant Validity-Fornell-Larcker Criterion and Correlation Analysis

Constructs	T-Worth	CSE-PT	Trust	PEOU	PUSF	BINT
Trustworthiness (T-Worth)	0.80					
CSE Personality Trait (CSE-PT)	0.47	0.76				
Trust (Trust)	0.44	0.71	0.72			
Perceived Ease of Use (PEOU)	0.55	0.72	0.62	0.87		
Perceived Usefulness (PUSF)	0.59	0.66	0.66	0.80	0.89	
Behavioral Intentions (BINT)	0.60	0.67	0.58	0.82	0.86	0.88

Note: The off-diagonal values are correlation among latent constructs and bold values are square root of AVE of each latent construct.

Table 5: R² value of Endogenous Variables

Construct	R ² value	p-value
Trustworthiness	-	-
CSE Personality Trait	-	-
Trust	0.20	0.00
Perceived Ease of Use	0.53	0.00
Perceived Usefulness	0.49	0.00
Behavioral Intentions	0.86	0.00

Convergent Validity

Convergent validity is used to check correlation among observed variables of same latent variable. For this purpose, average variance explained (AVE) is measured. Results of AVE are higher than 0.50 that show each latent variable is explaining more than 50% of variance of its observed variables. Results are shown in Table 3.

Discriminant Validity

Discriminant validity measures the difference between the latent variables. Fornell-Larcker criterion is used for discriminant validity. Fornell-Larcker compares the square root of AVE of latent variable with correlation between latent variables. Results showed that square root of AVE are greater than correlations among latent variables. Correlation values are also shown in following Table-4 which demonstrated that all variables have significant correlation with each other.

Analysis of Structural Model

After acceptable results of measurement model, the next step is to evaluate the structural model. For this purpose, R^2 results for endogenous

variables, assessment of structural path coefficients and evaluation of multi-collinearity.

R square values of Endogenous Variables

R^2 shows proportion of variance among latent endogenous variables that exogenous variable explain. In this study, R^2 for behavioral intention is 0.86 and for trust is 0.20 which show high values. Results are shown in Table-5.

Assessment of Structural Model Path Coefficients

Structural model path coefficients represent the relationship among the latent variables. Table-6 presents the path coefficients with their t-statistics and p-values.

Trustworthiness (T-Worth) have significant positive impact on trust i.e. = 0.44, $p < 0.00$ this validating the H1. Core self-evaluation personality trait (CSE-PT) has significant positive effect on perceived usefulness (TAM-PUSF) i.e. = 0.39, $p < 0.00$, this showed that H2 is accepted. In H3, Core self-evaluation personality trait (CSE-PT) have significant positive relation with perceived ease of use (TAM-PEOU) i.e. = 0.60, $p < 0.00$. In H4 results showed that trust is significantly affect perceived usefulness (TAM-PUSF) i.e. = 0.35, $p < 0.00$. Trust have significant impact on perceived ease of use (TAM-PEOU) i.e. = 0.15: $p < 0.00$ that

Table 6: Hypothesis Results and Structural Relationships

Hypothesis	Paths	Path Coefficient	St. Error	t Statistics	p Value	Decision
H1	T-Worth → Trust	0.44	0.05	8.32	0.00	Accepted
H2	CSE-PT → TAM-PUSF	0.39	0.10	3.99	0.00	Accepted
H3	CSE-PT → TAM-PEOU	0.60	0.08	7.33	0.00	Accepted
H4	Trust → TAM-PUSF	0.35	0.10	3.62	0.00	Accepted
H5	Trust → TAM-PEOU	0.15	0.08	1.82	0.00	Accepted
H6	TAM-PEOU → TAM-PUSF	-	-	-	0.12	Rejected
H7	TAM-PUSF → TAM-BINT	0.20	0.10	1.97	0.00	Accepted
H8	TAM-PEOU → TAM-BINT	0.74	0.10	7.49	0.00	Accepted

Notes: Acronyms: trustworthiness, core self-evaluation personality trait, technology acceptance model perceived ease of use, technology acceptance model perceived usefulness, technology acceptance model behavioral intentions

support H5. Perceived ease of use (TAM-PEOU)

have no significant impact on perceived usefulness (TAM-PUSF) i.e. $p > 0.05$ that does not support H6. In H7 results showed that perceived usefulness (TAM-PUSF) is significantly affect behavioral intentions (TAM-BINT) i.e. $\beta = 0.20$, $p < 0.00$. In H7 results showed that perceived ease of use (TAM-PEOU) is significantly affect behavioral intentions (TAM-BINT) i.e. $\beta = 0.274$, $p < 0.00$.

DISCUSSION

The current study stresses the association of personality construct, core self-evaluation and individual general belief i.e. trustworthiness with recognized, implicit framework. Simultaneously, information system study researchers have recommended the potential researches progress far ahead from technology acceptance model. The present research reflects these concepts by resulting the sound literature on personality constructs and trustworthiness with TAM variables as well as extending the technology acceptance model 3. According to the hypothesis the relationship of core self-evaluation with perceived ease of use and perceived usefulness.

The results show that core self-evaluation positively and significantly influencing perceived ease of use and perceived usefulness. Previously, core self-evaluation sub trait self-efficacy as computer self-efficacy has a significant impact on perceived ease of use before using and after using system, and it is also considered as the more dominant predictor of behavioral intention (Venkatesh, 2000). In another earlier study demonstrated that self-efficacy has influence on perceived ease of use, it shows that self-efficacy can enhance perceived ease of use at time consumers consider him/her self-relaxed while using m-commerce technology (Faqih & Jaradat, 2015). Recent study from Pakistani higher education sector developed e-learning adoption model based on TAM and found self-efficacy with regards to computers strong predictor of perceived ease of use (Kanwal & Rehman, 2017). Second sub trait locus of control was also a strong predictor of perceived usefulness in previous studies (Drennan et al., 2005) and people who had strong internal locus of control were expected to have high extent of perceived ease of use (Hsia et al., 2014). Previous study confirms locus of control impact on perceived

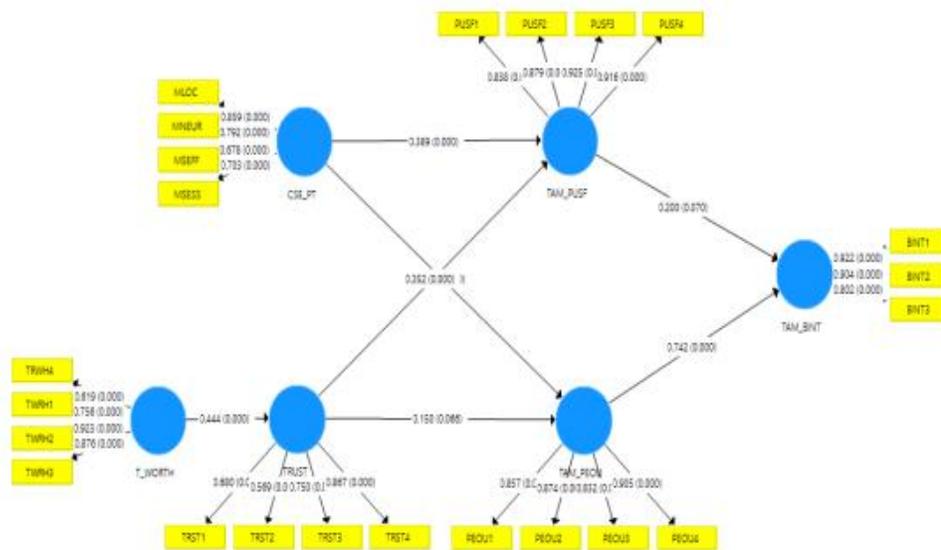


Figure 3: Structural Model

ease of use (Al-Najjar, 2012). Another study from Taiwan found positive impact of locus of control with perceived ease of use and perceived usefulness in mobile adoption of University students (Hsia, 2015). This has also been positively related in the context of mobile app reuse in hospitality industry (Fong, Lam, & Law, 2017).

Third sub trait neuroticism has significant negatively impact on perceived usefulness, in previous study this relation is verified (Uffen et al., 2013). Another recent study also found neuroticism negatively to technology adoption (He & Veronesi, 2017), thus results of this study are consistent with literature. The fourth sub trait did not studied before with TAM. So in this study we take these four traits combined and these are known as core self-evaluation and it is significantly associated with TAM. The relationship between core self-evaluation and behavioral intention mediated by perceived ease of use and perceived usefulness respectively are found significantly positive.

Similarly, trustworthiness positively, and significantly influencing perceived ease of use and perceived usefulness. The relationship of trustworthiness with behavioral intention, mediated by perceived ease of use and perceived usefulness is found significant and positive. In previous study that was on knowledge transmit through e-mail, the relationship between trustworthiness and behavioral intention was mediated by perceived usefulness (Sussman & Siegal's, 2003). The results show that perceived ease of use has a significant and positive impact on perceived usefulness. Previous studies also confirm this relationship mentioning that perceived ease of use is the most important predictor of perceived usefulness (Ayeh, 2015). The relationship between perceived ease of use and behavioral intention was found significantly positive. In one previous study this relationship was also found significantly negative (Uffen et al., 2013). There is also significant and positive

relation was found between perceived usefulness and behavioral intention. In earlier studies the direct link was found between perceived usefulness and behavioral intention (Venkatesh et al., 2003; Huh et al., 2009; Casalo, Flavian and Guinaliu, 2010). Perceived ease of use and perceived usefulness have significant positive impact on behavioral intention in the m-commerce context and it is consistent with prior studies results (Wei et al., 2009; Yaseen & Zayed, 2010; Al-Louziandlss, 2011; Abu-Shanab & Ghaleb, 2012; Zarmou et al., 2012; Jaradat & Rababaa, 2013; Nassuora, 2013).

This research contributes to the knowledge of consumers' personality traits i.e. individual control beliefs and individual general beliefs influences on behavioral intention which may offer vital implications specifically to the retailers, marketers and as well as to the consumers. Behavioral intention is generally reviewed in psychological or social aspects. This study has examined the link between individual control beliefs (core self-evaluation), individual general beliefs (trustworthiness) and TAM constructs (i.e. perceived ease of use and perceived usefulness) influences to improve the knowledge related to behavioral intention. Simultaneously, this study contributes in the extension of TAM 3 model. The findings of the research would be useful to enhance understanding of marketers and retailers, regarding consumers' personality trait and general beliefs in accepting 3G/4G LTE technology.

The study findings offer information to the retailers and marketers from which they could construct and enhance appropriate marketing and retailing strategies intended for consumers, to get their interest and bring their behavioral intention. Marketers and retailers are directed to keenly observe personality traits and general beliefs of target consumers and prudently observe the ease of use and usefulness regarding technology.

This research has provided the theoretical foundation and pragmatic relevance of TAM 3 in a unique realm and in a context of developing country Pakistan, where moral standards and culture mainly vary from developed countries in which TAM 3 model was developed and accepted. Most notable for scholars is our significant contribution of this study in the domain of TAM 3 research. The model contributes in the widespread TAM studies by investigating new determinants of perceived ease of use and usefulness. Moreover, this study also contributed in the personality literature and trustworthiness beliefs.

Current research has emphasized on affective dimensions of trustworthiness (i.e. benevolence, integrity, communication, value alignment) and moreover, extends this research by incorporating cognitive dimensions (consistency and competence) (Xie & Peng, 2009). And it is realize that these cognitive antecedents are vital for developing trustworthiness same as affective antecedents. This is considered as the noteworthy theoretical contributions.

Every research study has some limitations and findings of the study may probably affect due to these limitations. Even though this research has accomplished its objectives and presented significant contributions, there were also some limitations that are worth mentioning. Yet, these limitations of study will consider as the direction for future research. First, due to shortage of time we used cross-sectional method to investigate the impact of different factors on consumers' behavioral intention. It is recommended that future studies may use longitudinal method. Second, the study used a survey method to observe the impact of individual control beliefs (core self-evaluation) and individual general beliefs (trustworthiness) on behavioral intention. Third, this study was mainly based on young consumer segment; future studies may consider other population segments. Fourth, the unit of

analysis of this research was consumers of Rawalpindi/Islamabad, consumers from other cities of Pakistan may be the subject of further investigation. Future researches may increase the size of the sample, which will increase the generalization of the results. The other limitation of this research was the use of non-probability convenience sampling technique, which limits the generalization of findings.

Future studies may use other sampling techniques to improve the generalization of the results. Data was collected only from the consumers of Rawalpindi/Islamabad due to scarce resources. Future studies may take other geographic location within and outside Pakistan to increase the generalization of the results. The emphasis of this study was adopting 3G/4G LTE technology. Important future direction may be inclusion of intrinsic motivation in development of TAM 3 model as it may serve as important predictor of technology adoption in modern technology. Research suggests implications for intrinsic factors in predicting technology acceptance (Rojas-Méndez et al., 2017). Future research may emphasize inclusion of other technologies. Finally, in this study demographic variable such as age, gender, education, occupation and network was utilized to analyze individual differences among consumer, future researcher is recommended to incorporate other demographic variables to examine consumer's differential effect.

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- SESS4: I am able to do things as well as most other people
- SESS5: I feel I do not have much to be proud of.
- SESS6: I certainly feel useless at times.
- SESS7: I feel that I'm a person of worth, at least on an equal plane with other
- SESS8: I wish I could have more respect for myself
- SESS9: All in all, I am inclined to feel that I am a failure.
- SESS10: I take a positive attitude toward myself.

Self-Efficacy (Chen, Gully & Eden, 2001)

- SEFF1: I will be able to achieve most of the goals that I have set for myself.
- SEFF2: When facing difficult tasks, I am certain I will accomplish them.
- SEFF3: In general, I think I can obtain the outcomes that are important to me.
- SEFF4: I believe I can succeed at most in any endeavor to which I set my mind.
- SEFF5: I will be able to successfully overcome many challenges.
- SEFF6: I am confident that I can perform effectively on many different tasks.
- SEFF7: Compared to other people, I can do most tasks very well.
- SEFF8: Even when things are tough, I can perform quiet well.

Locus of Control (Spector, 1988)

- LOC1: Many of the unhappy things in people's lives are partly due to bad luck.
- LOC2: One of the major reasons of wars is that people do not take interest in politics.
- LOC3: In the long run, people get respect they deserve in the world.
- LOC4: The idea that managers are unfair with employees is nonsense.
- LOC5: I have often found out that whatever is going to happen will eventually happen.
- LOC6: Becoming a success is a matter of hard work; luck has little or nothing to do with it.
- LOC7: When I make a plan, I am certain that I can make them work.
- LOC8: My life is determined by my own actions.

Neuroticism (Eysenck, Eysenck & Barrett, 1985)

- NEU1: I often have mood swings
- NEU2: I feel unhappy without any reason

Appendix: A

Self-Esteem (Rosenberg, 1965)

- SESS1: On the whole, I am satisfied with myself
- SESS2: At times I think I am no good at all.
- SESS3: I feel that I have a number of good qualities

NEU3: I easily get irritable
 NEU4: I easily feel hurt
 NEU5: I often feel fed up
 NEU6: I easily get nervous
 NEU7: I worry quite often
 NEU8: I easily get very tense and angry
 NEU9: I remain worried too long after an embarrassing experience
 NEU10: I often suffer from anxiety and nervousness
 NEU11: I often feel lonely
 NEU12: I am often troubled by feelings of guilt.
Trust (Podskoff et al., 1990)
 TRST1: I am quite confident while using 3G/4G LTE technology.
 TRST2: I have complete faith in 3G/4G LTE technology.
 TRST3: I feel strong loyalty for 3G/4G LTE technology
 TRST4: I would support 3G/4G LTE technology.

Perceived Usefulness (Venkatesh & Bala, 2008)

PU1: Using the 3G/4G LTE technology improves my performance
 PU2: Using the 3G/4G LTE technology my productivity.
 PU3: Using the 3G/4G LTE technology enhances my effectiveness
 PU4: I find the 3G/4G LTE technology to be useful.

Perceived Ease of Use (Venkatesh & Bala, 2008)

PEOU1: My interaction with the 3G/4G LTE technology is clear and understandable.
 PEOU2: Interacting with the 3G/4G LTE technology does not require a lot of my mental effort.
 PEOU3: I find the 3G/4G LTE technology to be easy to use
 PEOU4: I find it easy to get the 3G/4G LTE technology to do what I want it to do.

Behavioral Intentions (Venkatesh & Bala, 2008)

B11: Assuming I had access to the 3G/4G LTE technology, I intend to use it.
 B12: Given that I had access to the 3G/4G LTE technology, I predict that I would use it.
 B13: I plan to use the system in the next few months.

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