“Does Emotional Intelligence Impact Technology Adoption?” : A study on Adoption of Augmented Reality

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Abstract

The study makes several contributions to not only the adoption literature by examining the influence of Emotional Intelligence (EI) and Big-Five traits on adoption of Augmented Reality (AR) but also given its utility in both industry and research, it contributes to the interesting inter-disciplinary domain of psychology, information systems, and human behaviour. A quantitative based approach using a sample of 275 respondents was undertaken. It is found that emotional intelligence influence both perceived ease-of-use and perceived usefulness. They in turn influence intention to use. Another important observation is that personality traits (openness and agreeableness) have a significant moderating effect on the relation between attitude and intention to use AR. This research will help academicians and executives working on the adoption of AR in various sectors ranging from retail industry to the education sector. The originality of this study is that it explores the impact of EI on the acceptance of AR and helps in extending the literature in interdisciplinary research.

Keywords:

Augmented Reality, Big Five Personality Traits, Behavioural Intention, Emotional Intelligence, Human Computer Interaction

1. Introduction

In the last few years, augmented reality (AR) has evolved from the shadows of science fiction or those large head gears in laboratory settings to much effective and smaller Google glasses (Huang and Peli, 2014) and Pokémon Go (Clark and Clark, 2016). A recent study by Pedersen and Simcoe (2012) demonstrated how potential users' expectations for augmented reality can be utilized for broadening human computer interface (HCI) innovation. Now-a-days, AR is being used in various personal information systems, like, wearable computing, entertainment, education sector and even medical systems (Krevelen and Poelman, 2007; Wrzesien et. al., 2011) apart from industrial and military usage (Julier et al., 1999). Even though Gartner's Report (2016) placed AR on the trough of disillusionment, the expected revenue growth of AR by 2022 will be approximately USD 117.40 billion (AR Reports, 2016). Despite the highly fragmented AR market in India, expected revenue growth will be at the rate of 55.3% during 2016 – 2021. Since the majority of AR use cases are related to personal information systems, individual's personality or emotional intelligence (EI) is likely to affect its' adoption. While there are multiple studies related to the technical dimensions of AR, very few have stressed on the factors that influence acceptance of AR. Hence, there is a need to explore factors that can enhance AR experiences and related marketing strategies.

AR has gained significant popularity in recent times. Through this study, the researchers attempt to explore the association between EI and adoption intention, a concept neglected particularly in the Indian market. Additionally, studies have not explored the moderating effect of personality traits on the relation between attitude and intention. The limited research on the

influence of both EI and personality features in the adoption literature makes this study even more interesting. This study has utilized the Big Five Personality Traits model which projects five personality traits, namely, conscientiousness, extraversion, neuroticism, openness and agreeableness. Additionally, this empirical study attempts to unearth if and how EI can impact the adoption of AR. The study makes several contributions in inter-disciplinary domain of human psychology, behaviour and information systems.

2. Theory and prior research

In the initial years, technological innovations were mainly used in task-oriented devices. In recent times, various advanced innovative technologies have been developed that merge the virtual and real worlds together. Craig (2013) defines augmented reality (AR) as a "medium in which digital information is overlaid on the physical world that is in both spatial and temporal registration with the physical world and that is interactive in time". AR brings together the physical and virtual environments together (Javornik, 2016; Scholz and Smith, 2016). Over the years, AR has been researched and applied in varying aspects ranging from tourism (Jung, Chung and Leue, 2015), museums (Jung and tom Dieck, 2018), retailing (Rese, Baier, Geyer-Schulz, and Schreiber, 2017) and in other aspects (Javornik, 2016). Previous marketing researchers mainly worked on acceptance of AR devices (Kang, 2014; Rese, Schreiber, and Baier, 2014; Huang and Liao, 2015), the insights of AR-based advertisements (Sung and Cho, 2012; Yaoyuneyong, Foster, Johnson, and Johnson, 2016), help in AR design (Scholz and Smith, 2016), consumer responses AR-based media services (Javornik, 2016), post-usage examination of experiences (Kim and Forsythe, 2008), and effect on purchase motives in garment shopping (Schwartz, 2011). Schwartz (2011) in his study on online shopping found that the potential of AR lies in providing customers with better real time product experience. This can help in decreasing churn rate and increase in lead conversion

rate. However, an emotional connection helps to create a long-term relation (Morrison and Crane, 2007; Mugge, Schoormans, and Schifferstein, 2009; Mahapatra and Mahapatra, 2010).

With the advancement of human-in-the-loop factors for better experience, the need to include psychological factors in various sectors has increased. Ruiz-Ariza, Casuso, Suarez-Manzano, and Martínez-López (2018) analyzed the effect of Pokmon GO on intellectual and mental performance and EI in Spanish adolescents between 12 and 15 years. Emotion-enabled AR applications have the emotion layer integrated into them using a Software Development Kit (SDK) and Cloud-based Application Program Interface (Cloud API) (Martinez and Cruz, 2005). It is used to develop emotional awareness by measuring the emotional and facial expressions of the surrounding individuals and cross referencing it with the available emotion database. These programs analyze the subtle facial expressions to identify human emotions (Parker, Taylor, and Bagby, 1993; Whalen et al., 1998; Fox, 2002; Pessoa, 2005). Companies like Affectiva are already having working products like "Emotion SDK and API". Emotion recognition will give rapid feedback on how the person in view is feeling and this will the help the person to make decisions by taking into consideration of the emotional factor. This process is more likely to help individuals to grow their emotional intelligence to reduce social barriers and increase empathy (Saklofske, Austin, Rohr, and Andrews, 2007; Adams and Anantatmula, 2010).

Another psychological model, the big-five personality traits, is widely used by researchers (Digman, 1990; Goldberg, 1990). The personality traits has five dimensions, namely, 1) extraversion, defined as " a personality that depends on building up relationships with others—those that possess this personality, tend to be assertive, like to socialize, and make acquaintances with other people easily"; 2) agreeableness, meaning "having an accommodating personality—those that have this personality are more likely to be cooperative, warm, and reliable"; 3)

conscientiousness, which defines "a reliable personality—people with this personality are responsible, nice and orderly, stern at work and self-disciplined"; 4) emotional stability, meaning "a personality that enables a person to cope with any tension —those with this personality are calm, self-confident, and emotionally stable"; and 5) openness, which means "an open-minded person with an interest in new things—people with this personality is sensitive, responsive, creative, and curious" (John, 1990; Costa and McCrae, 1992).

Ever since the invention of computer related technologies, scientists have been working on understanding the influential factors affecting individual's behaviour while accepting innovations. Even though, there are several other theories and approaches to understand adoption dynamics, the Technology Acceptance Model (TAM) still continues to receive widespread attention from researchers (Davis, 1989; King and He, 2006). TAM is deeply grounded in behavioural studies related to attitude and usage intention (e.g., Theory of Reasoned Action) and psychological studies on behavioural regulations and changes (e.g., Social Cognitive Theory) (Davis, 1989; Davis, Bagozzi and Warshaw, 1989). TAM states that intentions is decided by both perceived ease-of-use (hereby referred to as PEOU), defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, Bagozzi and Warshaw, 1989), and perceived usefulness (henceforth referred to as PU), defined as "the degree to which a person thinks that using a particular system would enhance his or her job performance" (Davis, Bagozzi and Warshaw, 1989). Over the last few decades, TAM and the other extensions (TAM2, UTAUT, etc.) are used by various academicians and industrialists in various contexts for their application-specific flexibility. In this paper, researchers have used TAM framework since it effectively captures users' behavioural intention undoubtedly adds value to many research works (Williams,

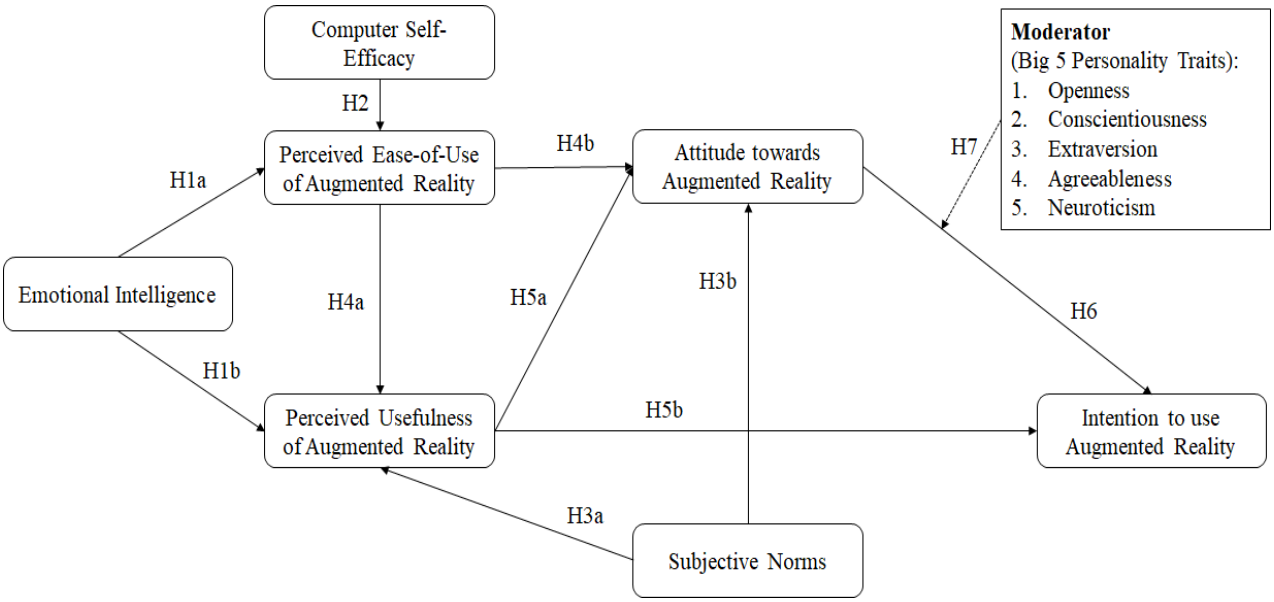
Dwivedi, Lal, and Schwarz, 2009; Dwivedi et al., 2016; Sabi, Uzoka, Langmia, and Njeh, 2016; Huang, Zhang, and Liu, 2017).

The TAM is used to understand the adoption of several technological innovations (Wu, Lan, and Lee, 2011). Yusoff et al. (2009), found a psychological quality in the association between technology acceptance and computer self-efficacy. Computer self-efficacy, defined as "confidence demonstrated by individuals in making the right choice of action necessary to meet specific requirement in situation that will lead to maximum benefit from the use of computer resources" (Yusoff et al., 2009), has been used in this study as an antecedent of technology acceptance and PEOU (Hill, Smith, and Mann, 1987; Compeau and Higgins, 1995; Hsu, Wang, and Chiu, 2009; Zhang et al., 2017; Jeong and Kim, 2017). The advancement in technologies and the diffusion of internet and technological innovations led to development of innovative strategies (Hong, Thong, and Tam, 2006). Kurbanoglu, Akkoyunlu, and Umay (2006), states that the success lies not only on acquiring expertise, but also in using the skills well.

3. Proposed Model and Hypotheses Development

The conceptual model has been adapted from TAM. The moderators are adapted from the Big Five Personality Traits framework. The conceptual model is shown in Figure 1. The dependent factors extracted from TAM are PU, PEOU, attitude, and behavioural intention (Davis,1989). The moderators adapted from Big-Five Trait model are openness, conscientiousness, agreeableness, extroversion, and neuroticism (John, 1990). The independent factors include subjective norms (Cheng and Chen, 2007), computer self-efficacy (Gong, Xu, and Yu, 2005) and emotional intelligence (Petrides and Furnham, 2006).

Figure 1. Proposed research model (Source: Adapted from by John (1990), Cheng and Chen (2007), Gong et al. (2005), Davis (1989), and Petrides and Furnham (2006)).



3.1 Emotional Intelligence (EI)

Recognizing human emotion will enable the AR device to provide rapid feedback on how the person is feeling and this will the help in effective operations. Over the years, a lot of researchers have worked on emotional intelligence as a trait that affects human behavior (Petrides and Furnham, 2004; Kulviwat, Bruner, Kumar, Nasco, and Clark, 2007; Petrides, Pita, and Kokkinaki, 2010). Since in the past researchers have shown that people with high emotional intelligence will find a service to be more easy to use (Gohm, Corser, and Dalsky, 2005; Qualter, Gardner, and Whiteley, 2007; Riggio, 2010), we propose that:

H1a: EI will be associated with PEOU of AR.

Similarly, researchers in the past have seen that people with high EI will get to understand what services are useful and which services are not (Salovey, Stroud, Woolery, and Epel, 2002; Petrides,

Frederickson, and Furnham, 2004; Extremera, and Fernandez-Berrocal, 2005; Qualter, Gardner, and Whiteley, 2007). They can then influence others in the vicinity to adopt services which they feel are useful. Thus, we propose:

H1b: EI will be associated with PU of AR.

3.2 Computer Self-Efficacy

Earlier researchers have found that the main factors that affect an individual's view of whether a technology is easy to use or is difficult are: self-efficacy (computer or internet), anxiety (computer or information), perceived enjoyment, usability, and intentions (Davis, 1989; Venkatesh, 2000; Barranis, 2011). System characteristics and ease of usability aid to use of new innovations. Barranis (2011) also stated that the ease-of-use of technologies including technological characteristics and support affect human decisions. According to Davis (1989) understanding and gaining confidence from a particular activity or technique will enhance the capacity of a person and hence will improve performance. Thus, a person's self-efficacy will affect his/her decisions regarding new technologies like AR-enabled devices. Hence, this study proposes:

H2: Computer self-efficacy has a positive influence on perceived ease of use of AR.

3.3 Subjective Norms

Subjective norms or social norms refers to the perceived societal pressure that influences a person engaging in the activity of purchasing a product with augmented reality. Some personality traits intensify the effect of peer deviance on individual deviance (Fielding, McDonald, and Louis, 2008). Researchers have found that social norms mainly originate from various cultures or religions present in society (Yang and Jolly, 2009). These social norms mainly from family members, peers and friends from society or social media affects an individual's decision (López-

Nicolás, Molina-Castillo, and Bouwman, 2008; Teo et al., 2012). In previous years, a lot of researchers have shown that subjective norms and PU can be associated (Dishaw and Strong, 1999; Venkatesh and Davis, 2000; Legris, Ingham, and Collerette, 2003; Kim, Kim, and Shin, 2009). Thus, we propose:

H3a: Subjective norm has a positive relationship with PU of AR.

Researchers have found the influence of subjective norms on a person's decision taking ability (Fielding, McDonald, and Louis, 2008). Synodinos, Price, and Bevan-Dye (2017) also found that subjective norms and attitude impact intentions to accept AR-enabled mobile-based games. Hence, this study supposes:

H3b. Subjective norm has a positive influence on attitude towards AR.

3.4 Perceived Ease-of-Use (PEOU) of AR

PEOU refers to the degree measuring whether an innovation can be perceived easy or difficult to comprehend (Wu and Wang, 2005). Zhu, Lin, and Hsu (2012) have found that PEOU signifies the "degree to which an individual accepts that using certain technology would be effortless and hassle free". According to Davis, Bagozzi, and Warshaw (1992), PEOU indicates that the user will feel at ease while using a new technology and he/she need not find it too complex. Thus, this study hypothesizes:

H4a. PEOU of AR has a positive relation with PU of AR.

Scholars from all over the world have explored the role of PEOU in the adoption and usage of technological innovations (Segars and Grover, 1993; Keil, Beranek, and Konsynski, 1995; Karahanna and Straub, 1999). These studies along with many other studies have found that PEOU has either a direct or indirect influence on usage intentions in varying contexts, like, mobile phones

(Ziefle, 2002), wearable technologies (Lee, 2009), etc. Davis (1989) has shown that PEOU is related to attitude towards technology usage. Additionally, it was seen in the study by Ross and Harrison (2016) that PEOU directly affected the attitudes towards AR and hence the intention to AR enabled apparel purchase. Hence, we propose:

H4b: PEOU of AR has a positive influence on attitude towards AR.

3.5 Perceived Usefulness (PU) of AR

Researchers (like, King and He, 2006) have found PU impacts adoption intention. Daugherty, Djuric, and Leckenby (2017) also noted AR print ad was preferred because customers felt AR technology to be informative, novel, and effective. Similarly, Ross and Harrison (2016) found that consumers' psychology and attitude are influenced by the usefulness and ease of use that augmented technology brings in the apparel business. Sung and Cho (2012) saw that interactivity and ease-of-use (informativeness) influences consumers' attitude towards a product. Hence, this study proposes:

H5a: PU of AR positively influences attitude towards AR.

Apart from the influence of PU on attitude, extant literature also states that PU has some direct influence on behavioural intention (Davis, 1989; Venkatesh, 2000; Williams, Dwivedi, Lal, and Schwarz, 2009; Dwivedi et al., 2016; Sabi, Uzoka, Langmia, and Njeh, 2016; Huang, Zhang, and Liu, 2017). Hence, PU can also influence the adoption of AR. Hence, we propose:

H5b: PU of AR positively affects attitude towards AR.

3.6 Attitude towards AR

TAM framework states that the users' attitudes affect their usage/continuance intention towards new technologies (Davis, 1989; Davis, Bagozzi and Warshaw, 1989; Kuo and Yen, 2009; Puschel, Mazzon, and Hernandez, 2010). A positive attitude means a better likelihood of adoption while a negative or moderate attitude towards AR will reduce the intention to use the AR service. Researchers (Ha and Stoel, 2009; Wojciechowski and Cellary, 2013) have found that a positive attitude (enjoyment) influences people to not only use technologies but also spread a positive word-of-mouth. Thus, we propose:

H6. Attitude towards AR has a positive relationship with intention to use AR.

3.7 Moderator: Big Five Personality Traits

Personality, captured by the individualistic stimulus in different situations is defined as the pattern of individual characteristics that differentiates one another (Phares, 1997). Personality is generally a consistent and stable human trait (White, 2022). Researchers have found that personality traits influence adoption behaviour of consumers (Shih and Fan, 2013; Aydın, 2019). To address whether personality traits affect AR adoption, Preece, Rogers, and Sharp (2015) found that interactive technologies that meet can capture individual customers' characteristics result in better adoption.

Although TAM has been used widely in technology adoption studies, its interaction with personal traits of individuals is understudied. Keeton (2008) had found that people portraying extraversion, openness or agreeableness were more keen to accept new technologies. Kim, Choi, Park, and Yeon (2016) also found extraversion-introversion traits influences technology usage. Openness describes a person's quest for new experiences and knowledge (McCrae, 1987). Earlier researchers have associated openness with deep learning (Barrick, Mount, and Judge, 2001;

Chamorro-Premuzic, Furnham, and Lewis, 2007; Terzis, Moridis, and Economides, 2012). AR will provide new experiences and hence, people having high openness score, will find AR useful. Additionally, people with high openness will find AR easy-to-use. People open to change want to try new and diverse things. Conscientiousness describes cautious but determined persons (George and Zhou, 2001; Devaraj, Easley, and Crant, 2008). Conscientious people will find it easy to use AR. Conscientiousness is related to users' goal seeking behaviour (McCrae, 1987; Payne, Youngcourt, and Beaubien, 2007; Terzis, Moridis, and Economides, 2012). Hence, it is assumed that conscientious people will enjoy using AR. On the other hand, extravert people want to use newer innovations for gaining societal status. Extrovert people are social and outgoing (Rosen and Kluemper, 2008; Watson and Clark, 1997). Payne et al. (2007) added that extrovert people can be associated with goal learning orientations. Thus, extroverts will find AR more useful and ease to use (Devaraj et al., 2008; Terzis, Moridis, and Economides, 2012). Agreeableness defines the character traits, like, kind, considerate, and helpful (Terzis, Moridis, and Economides, 2012). Neuroticism defines people who are anxious and depressed. Previous research studies have found a negative impact of neuroticism on technology usage (Devaraj et al., 2008; Terzis, Moridis, and Economides, 2012). However, earlier studies have not examined the moderating effect of each personality trait on the relation between attitude and intention. Thus, this study proposes:

H7: There is a significant moderating effect of (a) openness; (b) conscientiousness; (c) extraversion; (d) agreeableness; and (e) neuroticism on the relationship between and attitude and intention to use AR.

4. Research Methodology

4.1 Design

This study is explorative and probabilistic in nature. Hence, a quantitative based approach has been used. A questionnaire-survey based empirical study helps in verifying the proposed associations statistically (Zhang and Yuk, 1998). A convenience sampling technique was used to collect data since convenience sampling helps in selecting respondents who can provide topic-specific rich information (Creswell, 2014). An online Google form was shared with few top ranked MBA and Engineering college faculties across India by email and WhatsApp with the request to share it among students who know and understand augmented reality and ask them to fill the form. The participants are graduate and post-graduate students in India. A screening question was kept to enquire whether the respondents have some knowledge about augmented reality. Only when they selected "Yes" they could proceed to the main questionnaire. The main questionnaire contained two sections: the first section captured few demographic details of the respondents, while the second section mainly focused on gaining the respondent views on the different constructs used in this study.

4.2 Sample Statistics

Table 1 presents the sample statistics. 340 respondents were contacted out of which 291 responded (response rate: 85.59%). Due to missing data and data issues, 16 responses were not considered in the analysis. Out of the 275 respondents, 110 are female (40%) and the majority of the participants are between the age group 18-22 (80%). Hence, the data mostly contains the views of millennials.

Table 1. Sample Statistics

Total participants (276)	**Frequency**	**Percentage (%)**
Gender:		
Female	110	40%
Male	165	60%
Age (in years):		
18-21	220	80%
22-26	55	20%

4.3 Measures

The measurement items for the different constructs used in this study are adopted from extant literature. The measurement items are presented in Table 2. The scales involved are as follows:

a) Big Five Personality Traits (Openness, Agreeableness, Conscientiousness, Extraversion, Neuroticism) are adapted from the scales presented by John (1990).
b) The scales for "Subjective norms" are adapted from the study by Cheng and Chen (2007).
c) Computer Self-Efficacy scales are taken from the study by Gong et al. (2005).
d) TAM model (perceived usefulness, perceived ease of use, attitude, intention) are captured in the study by Davis (1989).
e) Emotional Intelligence items are adapted from the study by Petrides and Furnham (2006).

The responses for the measurement items were collected on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Face validity was ensured since the items used are adapted from widely cited extant studies, (like, John, 1990; Cheng and Chen, 2007; Davis, 1989; Petrides and Furnham, 2006). Additionally, the content validity was assessed by taking feedback from three academicians. The content validity ratio [based on the formula CVR=(Ne - N/2)/(N/2), where 'Ne' indicates the number of academicians recommending the item as "essential" and 'N' denotes the total number of academicians] was found to be 1 which suggests agreement among the academicians to include the item in the research (Zamanzadeh et al., 2015).

4.4 Data Pre-Processing

After the responses were collected, responses having "Yes" as a choice in the screening question were filtered. The Likert Scale responses were then coded (like, 'Strongly Disagree' as '1', 'Disagree' as '2', 'Neither agree nor disagree' as 3, 'Agree' as '4', and 'Strongly Agree' was coded as '5'). Records having any one missing value in any field was discarded. Thus, 14 responses were discarded. Standard deviation among the items were calculated to ensure that the filled Likert-

scale values are not the same across all measurement items. Due to data issues, two more records were deleted. The final dataset contained 275 records.

4.5 Data Analysis

This study has utilized Partial-Least-Squares Structural-Equation-Modelling (PLS-SEM) using SMART PLS v.4.0.9.2 (Ringle et al., 2022) because distribution assumptions are not imposed by PLS-SEM and it allows users to test complex research models even when the dataset is small (Nawi et al., 2022; Dash, and Paul, 2021). Additionally, SMART PLS is preferred because it can provide an accurate estimation with limited sample size and can also test for moderation effects effectively (Muliyani et al., 2021; Ringle et al., 2022). This study has utilized a two-step approach as suggested by Henseler et al. (2009): First, the measurement model was examined. The internal consistency and reliability of each construct was examined using Cronbach's alpha (CA) and composite reliability (CR) (values should be greater than 0.5) (Hair et al., 2013). Construct validity was examined by checking convergent and discriminant validity. Apart from CA and CR, the Average Variance Extracted (AVE) scores should be greater than 0.5 (Ramayah et al., 2018). For discriminant validity, the square root of each construct's AVE should be more than its correlation with other constructs (Fornell and Larcker, 1981). In the second stage, the structural model was evaluated by examining the path coefficients through PLS algorithm and estimating the p-value using bootstrap approach in SMART PLS with 500 subsamples. All tests were two-tailed, with the assumed p-value<0.1.

5. Results

5.1 Assessing the Measurement Model

The results of the measurement model assessment are presented in Table 2. The measurement items demonstrated good outer loadings (all values>0.5) (Hair et al., 2013). The constructs

displayed good internal consistency and reliability as supported by CA (all values>0.6) and CR (all values>0.78) (refer Table 3). It was also found that all the constructs demonstrated good convergent validity (AVE values>0.5) (Gefen, Straub and Boudreau, 2000). The fact that the off-diagonal values is more than other values in respective rows (bolded in Table 3) (Chin, 2003), indicated good discriminant validity (Yang and Yoo, 2004). All the constructs also conformed to Fornell and Larcker (1981) discriminant validity criterion (refer Table 4). The cross-loading values are presented in Appendix 1. Cross-loadings are not present in the data. Additionally, the Variation Inflation Factor (VIF) (values<5) indicate satisfactory absence of multi-collinearity issues (Gupta, and Shrivastava, 2022).

Table 2. Measurement Items, Factor Loadings, Variance Inflation Factor (VIF)

Measurement Items (Adapted from)	**Factor Loadings**	**R^2**	**VIF**
Agreeableness (John, 1990**)**			
I see myself as someone who…			
AGR1: is helpful and unselfish with others.	0.746		1.607
AGR2: has a forgiving nature.	0.682		1.531
AGR3: is generally trusting.	0.796		1.852
AGR4: is considerate and kind to almost everyone.	0.744		1.438
AGR5: likes to cooperate with others.	0.747		1.457
Attitude towards AR (Taylor and Todd, 1995**)**		0.671	
ATT1: Using Augmented Reality is a good idea.	0.831		1.656
ATT2: I like to use Wearable computing.	0.871		2.223
ATT3: Using Augmented Reality is beneficial to me.	0.898		2.283
Computer Self-Efficacy (Gong et al., 2005**)**			
COM1: I can work out how to use a computer sys-tem without a lot of help from others.	0.761		2.235
COM2: I can learn quickly to use a new computer system.	0.796		2.454
COM3: I feel confident in being able to download information from the Internet.	0.864		4.750
COM4: I does not need to consult manuals to be able to use a computer system.	0.826		4.090
COM5: I feel confident in using Internet search engines.	0.760		2.148
COM6: I rarely need to ask others for help when using computers.	0.575		1.520
COM7: I feel comfortable when I am using the Internet.	0.852		3.239
COM8: I feel confident in my ability to use computers.	0.844		3.129
COM9: I can teach myself how to use a computer system.	0.842		4.553
COM10: I can help others to use a computer.	0.845		4.909
Conscientiousness (John, 1990**)**			
I see myself as someone who…	0.703		

CON1: does a thorough job.	0.791		1.358
CON2: is a reliable worker.	0.795		1.509
CON3: perseveres until die task is finished.	0.720		1.495
CON4: does things efficiently.	0.560		1.900
CON5: makes plans and follows through with them.	0.703		1.639
Emotional Intelligence (Petrides and Furnham, 2006**)**			
EI1: Expressing my emotions with words is not a problem for me.	0.658		1.644
EI2: On the whole, I'm a highly motivated person.	0.787		2.111
EI3: I can deal effectively with people.	0.647		1.406
EI4: I feel that I have a number of good qualities.	0.827		2.079
EI5: On the whole, I'm pleased with my life.	0.635		1.579
EI6: I would describe myself as a good negotiator.	0.677		1.748
EI7: I believe that I'm full of personal strengths.	0.779		2.644
Extraversion (John, 1990**)**			
I see myself as someone who…			
EXT1: is full of energy.	0.960		1.857
EXT2: generates a lot of enthusiasm.	0.806		1.945
EXT3: is outgoing and sociable.	0.726		1.927
Neuroticism (John, 1990**)**			
I see myself as someone who…			
NEU1: is relaxed and handles stress well.	0.902		1.444
NEU2: is emotionally stable and not easily upset.	0.678		1.501
NEU3: remains calm in tense situations.	0.815		1.795
Openness (John, 1990**)**			
I see myself as someone who…			
OPEN1: is original and comes up with new ideas.	0.806		2.325
OPEN2: is curious about many different things.	0.808		2.055
OPEN3: is ingenious and is a deep thinker.	0.739		1.796
OPEN4: has an active imagination.	0.804		2.225
OPEN5: is inventive.	0.841		2.696
OPEN6: values artistic, aesthetic experiences.	0.689		1.547
Perceived Ease-of-Use (Davis, 1989**)**		0.333	
PEOU1: Learning to operate Augmented Reality is easy for me.	0.813		2.091
PEOU2: Augmented Reality is easy to perform the tasks I want to do.	0.739		1.381
PEOU3: I don't spend lots of time to learn how to use Wearable computing.	0.635		1.331
PEOU4: Overall, it is easy to use Wearable computing.	0.894		2.540
Perceived Usefulness of AR (Davis, 1989**)**		0.627	
PU1: Augmented Reality can increase my computing workflow.	0.609		1.394
PU2: Augmented Reality can save my computing time.	0.819		1.966
PU3: Augmented Reality can get my computing tasks done.	0.807		1.918
PU4: Augmented Reality can do computing easier than traditional forms of computing.	0.759		1.797
PU5: Overall, I find Augmented Reality very useful.	0.863		2.231
Subjective Norms (Cheng and Chen, 2007**)**			
SN1: Most people who are important to me think that I should use wearable computing.	0.807		1.130
SN2: I have the duty to use wearable computing.	0.710		1.370
SN3: Most people who are concerned with me use wearable computing.	0.719		1.343
Intention (Taylor and Todd, 1995; Venkatesh and Davis, 2000**)**		0.676	
INT1: I will strongly recommend others to use Augmented Reality in the future.	0.900		1.749

INT2: I will be willing (or continue) to use Augmented Realityin the future.	0.918	1.749

Note: AGR=Agreeableness; ATT=Attitude towards AR; COM=Computer Self-Efficacy; CON=Conscientiousness; EI=Emotional Intelligence; EXT=Extraversion; INT=Intention; NEU=Neuroticism; OPEN=Openness; PEOU=Perceived Ease of Use; PU=Perceived Usefulness; SN=Subjective Norms;

Table 3. Measurement Model results— average variance extracted (AVE), Cronbach Alpha (CA), Composite Reliability (CR) and discriminant validity

	CA	AVE	CR	AGR	ATT	COM	CON	EI	EXT	INT	NEU	OPEN	PEOU	PU	SN
AGR	0.800	0.554	0.861	**0.744**											
ATT	0.835	0.752	0.901	0.434	**0.867**										
COM	0.936	0.641	0.946	0.656	0.362	**0.801**									
CON	0.785	0.517	0.841	0.635	0.490	0.590	**0.719**								
EI	0.843	0.518	0.881	0.492	0.548	0.445	0.589	**0.719**							
EXT	0.831	0.699	0.873	0.428	0.299	0.529	0.512	0.657	**0.836**						
INT	0.791	0.827	0.905	0.332	0.768	0.307	0.393	0.452	0.238	**0.909**					
NEU	0.752	0.645	0.843	-0.413	-0.330	-0.510	-0.542	-0.603	-0.629	-0.175	**0.803**				
OPEN	0.873	0.613	0.904	0.711	0.396	0.663	0.574	0.643	0.694	0.315	-0.546	**0.783**			
PEOU	0.774	0.602	0.856	0.340	0.717	0.361	0.439	0.564	0.365	0.555	-0.381	0.453	**0.776**		
PU	0.832	0.603	0.882	0.336	0.752	0.292	0.388	0.591	0.352	0.679	-0.329	0.405	0.662	**0.776**	
SN	0.625	0.557	0.790	0.197	0.576	0.043	0.252	0.384	0.122	0.574	-0.140	0.229	0.401	0.626	**0.747**

***Note:** AGR=Agreeableness; ATT=Attitude towards AR; COM=Computer Self-Efficacy; CON=Conscientiousness; EI=Emotional Intelligence; EXT=Extraversion; INT=Intention; NEU=Neuroticism; OPEN=Openness; PEOU=Perceived Ease of Use; PU=Perceived Usefulness; SN=Subjective Norms;

**Data rounded rounded upto three decimal places

5.2 Assessment of the Structural Model and Hypotheses Results

In Figure 2 the standardized regression values for the paths are shown. The standard deviation, test statistics, and p-values of the paths are shown in Table 4. Based on the p-values, the significance of each hypothesis is summarized in Table 4. The results show that EI positively influences PEOU (β=0.503) and PU (β=0.229) (p<0.001). Also in line with extant literature, we find that PEOU of AR has a significant influence on attitude towards AR (β=0.395) and PU (β=0.378) (p<0.001). Results also demonstrate a significant impact of SN on PU (β=0.362; p<0.001) and attitude (β=0.181; p<0.001). It was also found that the relationships between PU and attitude (β=0.378), PU and Intention (β=0.247), attitude and intention (β=0.657) showed significant results (p<0.001). Thus, hypotheses H1a, H1b, H3a, H3b, H4a, H4b, H5a, H5b and H6 are supported. However, computer self-efficacy had an insignificant impact on PEOU (β=0.137; p>0.1).

The goodness-of-fit indices are shown in Table 5. (Non) Normed Fit Index (NFI or NNFI) is satisfactory. The widely used fit index Standardized Root Mean Square Error (SRMR) shows that the proposed model is supported by data.

Figure 2. The path-coefficients of the relationships studied

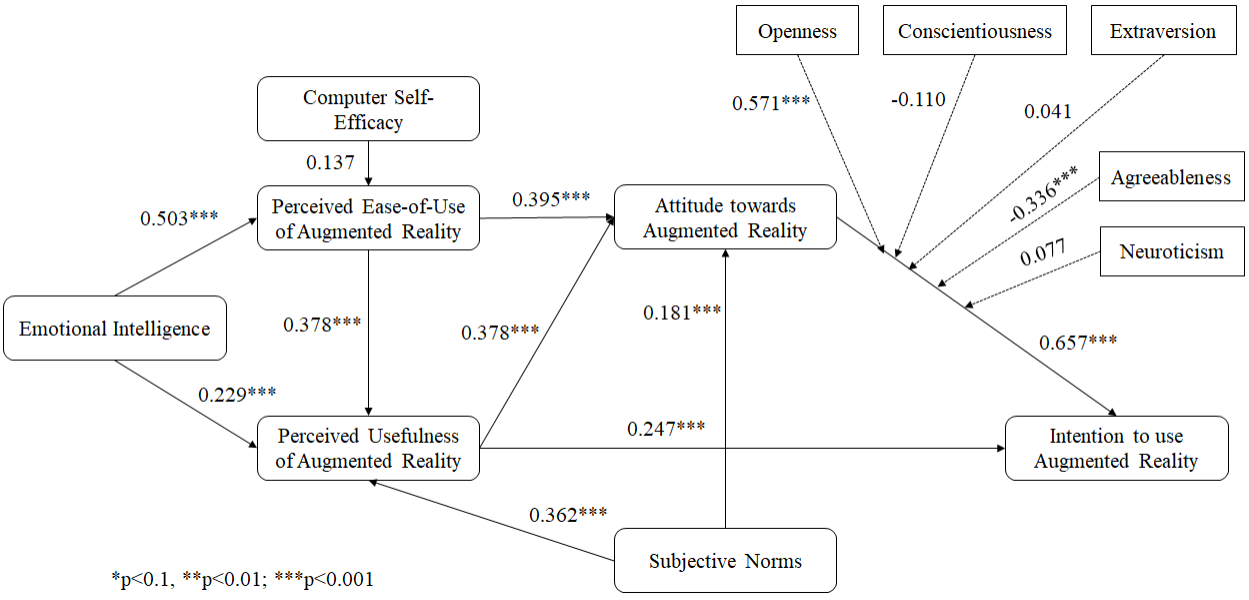


Table 4. Bootstrap results (Standard Deviation, t-statistics, and p-values), hypotheses results

Hypotheses	Paths	Path-Coefficient (β-values)	Standard Deviation	T-Statistics	P-value	Results
H1a	EI→PEOU	0.503	0.096	5.252	0.000	**Accepted**
H1b	EI→PU	0.229	0.063	3.617	0.000	**Accepted**
H2	COM→PEOU	0.137	0.091	1.495	0.135	Refuted
H3a	SN→PU	0.362	0.045	8.633	0.000	**Accepted**
H3b	SN→ATT	0.181	0.046	3.898	0.000	**Accepted**
H4a	PEOU→PU	0.378	0.058	6.548	0.000	**Accepted**
H4b	PEOU→ATT	0.395	0.047	8.402	0.000	**Accepted**
H5a	PU→ATT	0.378	0.043	8.756	0.000	**Accepted**
H5b	PU→INT	0.247	0.065	3.775	0.000	**Accepted**
H6	ATT→INT	0.657	0.065	10.035	0.000	**Accepted**
H7a	OPEN X ATT→INT	0.571	0.090	6.353	0.000	**Accepted**
H7b	CON X ATT→INT	-0.110	0.071	1.563	0.119	Refuted
H7c	EXT X ATT→INT	0.041	0.081	0.514	0.607	Refuted
H7d	AGR X ATT→INT	-0.336	0.081	4.132	0.000	**Accepted**
H7e	NEU X ATT→INT	0.077	0.063	1.213	0.226	Refuted

Note: AGR=Agreeableness; ATT=Attitude towards AR; COM=Computer Self-Efficacy; CON=Conscientiousness; EI=Emotional Intelligence; EXT=Extraversion; INT=Intention; NEU=Neuroticism; OPEN=Openness; PEOU=Perceived Ease of Use; PU=Perceived Usefulness; SN=Subjective Norms;

Table 5. Goodness-of-fit indices.

Measure	Acceptance Level	Calculated Results
Standardized Root Mean Square Error (SRMR)	Acceptable values less than 0.08	0.091
Normed Fit Index (NFI)	Acceptable above 0.5	0.462

5.3 Assessing Moderation Impact of Personality traits

The study has also assessed the moderating effect of each personality trait on the relation between attitude and intention to use AR. It was found that openness (β=0.571) and agreeableness (β=-0.336) have a significant moderating impact on the relation between attitude and intention ($p<0.001$) (refer Table 4). Thus, H7a and H7d are supported by the data. However, the other personality traits, namely, conscientiousness (β=-0.110), extraversion (β=0.041), and neuroticism (β=0.077), did not have any significant moderating impact on the relation between attitude and intention. The significant moderation effects of both openness and agreeableness are depicted by

simple slope analysis in Figure 3 and Figure 4 respectively. Results of the analysis in Figure 3 and Figure 4 show that both openness and agreeableness have a dampening effect on the positive relationship between attitude and intention to use AR. Figure 3 shows that for low openness (i.e., -1 standard deviation above the mean; green line), there is a weaker relationship between attitude and intention (flatter line) than when customers portray high openness (i.e., -1 standard deviation below the mean; red line) (steeper slope). Figure 4 shows that for high agreeableness (i.e., -1 standard deviation above the mean; green line), there is a weaker relationship between attitude and intention (flatter line) than when customers portray low agreeableness (i.e., -1 standard deviation below the mean; red line) (steeper slope). It illustrates that reductions in agreeableness translate stronger into reductions in intention to use AR for customers portraying low agreeableness than for those portraying high agreeableness.

Figure 3. Simple slope analysis showing the moderation effect of openness trait on the relation between attitude and intention.

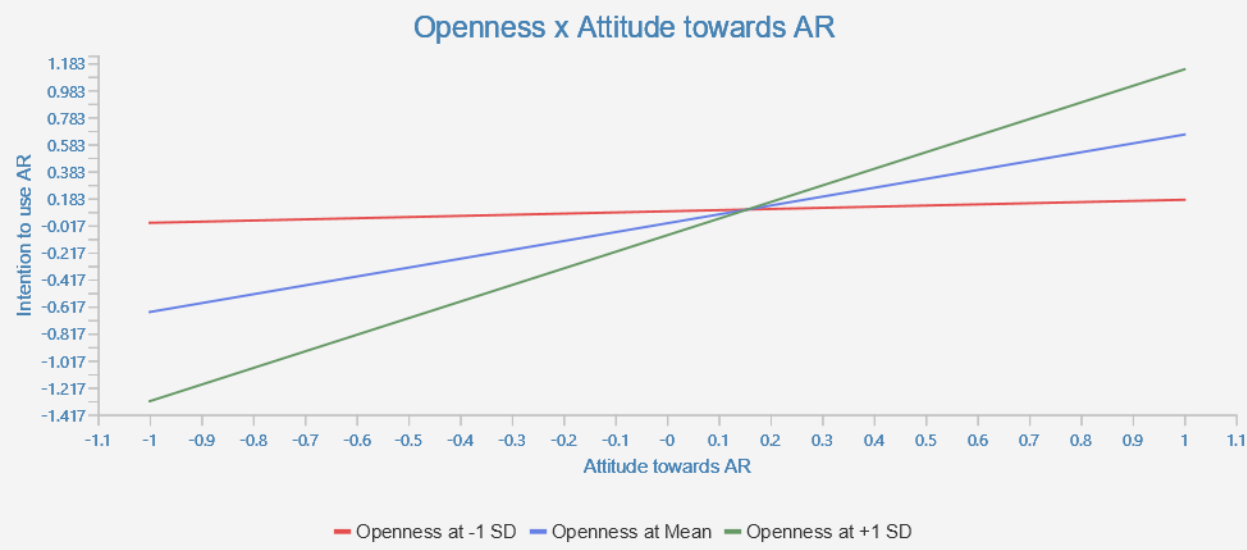
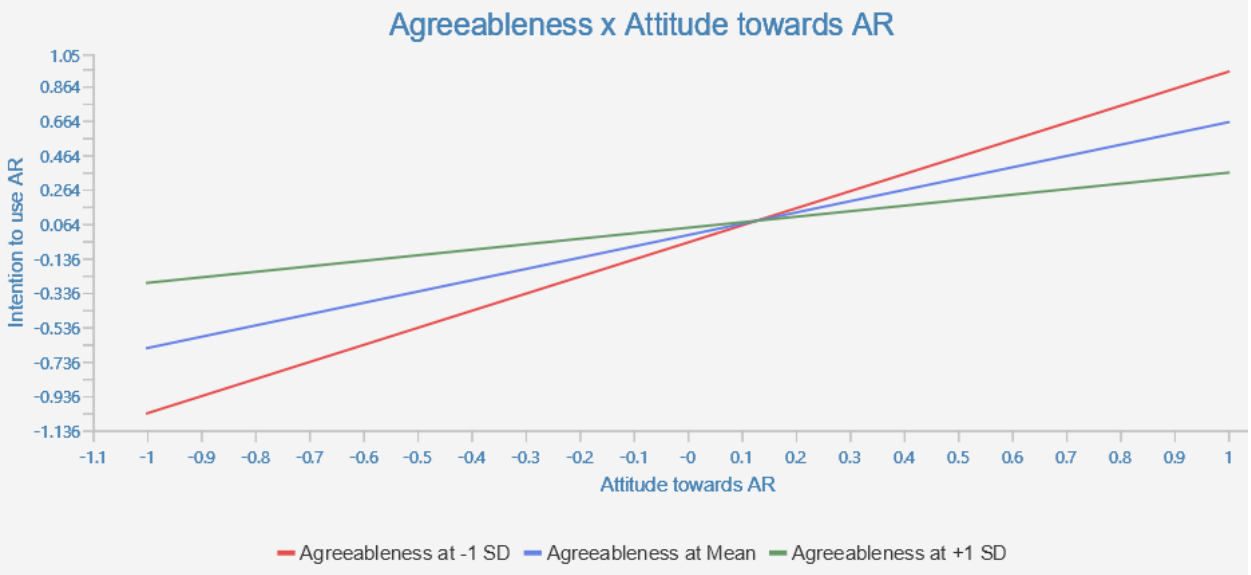


Figure 4. Simple slope analysis showing the moderation effect of agreeableness trait on the relation between attitude and intention.



5.4 Assessing Specific Indirect Effects

Table 6 presents specific indirect effects. In this study, it was found that emotional intelligence has a significant indirect effect on attitude and intention. Additionally, we also found that subjective norms, perceived usefulness, and perceived ease of use have significant indirect effects on intention. It was noted that computer-self efficacy has an insignificant indirect effect on both attitude and intention.

Table 6. Specific Indirect Effects

Indirect Paths (Specific Indirect Effects)	β-value	P values	Significant?
EI→PEOU→PU→ATT	0.072	0.000	Yes
COM→PEOU→ATT	0.054	0.112	No
SN→PU→ATT	0.146	0.000	Yes
PEOU→PU→INT	0.093	0.001	Yes
PEOU→PU→ATT	0.143	0.000	Yes
PU→ATT→INT	0.248	0.000	Yes
COM→PEOU→PU→ATT→INT	0.013	0.166	No
EI→PEOU→PU→INT	0.047	0.006	Yes
COM→PEOU→ATT→INT	0.035	0.115	No
EI→PEOU→PU	0.19	0.000	Yes
EI→PEOU→ATT	0.199	0.000	Yes
EI→PU→INT	0.057	0.014	Yes
COM→PEOU→PU→INT	0.013	0.163	No

EI→PU→ATT	0.087	0.002	Yes
COM→PEOU→PU→ATT	0.019	0.161	No
EI→PEOU→ATT→INT	0.13	0.000	Yes
PEOU→ATT→INT	0.259	0.000	Yes
EI→PU→ATT→INT	0.057	0.003	Yes
EI→PEOU→PU→ATT→INT	0.047	0.002	Yes
SN→PU→ATT→INT	0.096	0.000	Yes
SN→PU→INT	0.095	0.001	Yes
COM→PEOU→PU	0.052	0.138	No
PEOU→PU→ATT→INT	0.094	0.000	Yes
SN→ATT→INT	0.119	0.000	Yes

6. Discussion

The proposed model tested using SEM, found that emotional intelligence has an influence on both the perceived usefulness and perceived ease-of-use of AR and an indirect effect on attitude and intention. The SRMR score 0.091 establishes an overall satisfactory model fit. The conceptual model used in this study and the findings will help future researchers and industrial practitioners. The study found that emotional intelligence has a positive association with perceived usefulness (PU) and perceived ease-of-use (PEOU). This process is more likely to help individuals to grow their emotional intelligence to reduce social barriers and increase empathy (Saklofske, Austin, Rohr, and Andrews, 2007; Adams and Anantatmula, 2010). Additionally, with the advancing human-in-the-loop scenarios, incorporating the emotional intelligence factor will help in improving performance of the devices by identifying human emotions effectively (Parker, Taylor, and Bagby, 1993; Whalen et al., 1998; Fox, 2002; Pessoa, 2005; Morrison and Crane, 2007; Mugge, Schoormans, and Schifferstein, 2009; Mahapatra and Mahapatra, 2010). Subjective norm having an influence on PU and PEOU shows that social pressure influences individual's decision to perform an activity using AR (Venkatesh and Davis, 2000; Fielding, McDonald, and Louis, 2008; Kim, Kim, and Shin, 2009; Teo et al., 2012). However, it is unclear as to how the influence

differs in case of strong ties as compared to weak ties. This can be taken up in future research. The fact that PU, PEOU, attitude to adopt AR, and intention to adopt AR are positively associated is in line with extant literature (Davis, 1989; Venkatesh and Davis, 2000; Williams, Dwivedi, Lal, and Schwarz, 2009; Dwivedi et al., 2016; Sabi, Uzoka, Langmia, and Njeh, 2016; Huang, Zhang, and Liu, 2017).

Though previous academicians have found big five traits influencing adoption of technological innovations (Barrick, Mount, and Judge, 2001; Chamorro-Premuzic et al., 2007; Terzis, Moridis, and Economides, 2012), studies have not explored the moderating effects of personality traits on the relation between attitude and intention. This study found a significant moderating effect of openness and agreeableness on the relation between attitude and intention to use AR. However, while openness indicates a positive impact, agreeableness indicates a negative impact. This suggests that when customers have openness trait (i.e., when customers are open minded or insightful), the positive impact of attitude on intention to use AR increases as customers' open-minded characteristics increases. However, when customers have agreeableness trait (i.e., customers are more empathetic in nature), the positive impact of attitude on intention to use AR decreases as customers' empathetic characteristics increases. This might be because of the downsides of being more empathetic in nature (Fisher, 2020). Another surprising finding was that computer self-efficacy did not show significant results (H2 was refuted). It can mean that a person rather than believing that AR can enhance his/her performance, he/she would be more influenced by his/her peers or society which is reflected by the positive path-coefficients of subjective norms on PU and PEOU.

6.1 Theoretical Implications

This research adds interesting insights to the adoption literature particularly in the psychology domain. This study can be generalized since for EI, SEM has generated reliable results. Researchers have stated that SEM is capable of producing accurate calculations of statistical (probabilistic distribution) data (Baabdullah et al., 2019).

Second, researchers have examined the influence of emotional intelligence on intention to adopt AR devices which is unique in literature. Capturing emotional intelligence will help to understand how a person can regulate his/her emotions and understand others emotions. Thus, emotional intelligence will help to understand how the person builds relationships and derives satisfaction. This, will help the AR device to provide rapid feedback on how the person in view is feeling and this will the help in effective operations.

Thirdly, this study has examined a model by combining personality factors (big five and EI) and adoption factors (TAM). The integration of two models (TAM and Big Five trait model) along with the other main personality factor, EI, has not been studied previously and hence contributes to relevant literature. Additionally, earlier studies have not attempted at examining the moderating effects of personality traits on the relation between attitude and intention in context of augmented reality. This will help in an effective recognition of human emotions and personality traits by the AR devices which in turn will improve the performance of the AR devices and will lead to an increase in adoption.

6.2 Practical Implications

The practical implications are summarized here. First, the findings that emotional intelligence affects intention decision can help executives in AR-based organizations to make better strategies for increasing the emotional connect of consumers. A combinatorial strategy including factors from big five traits and emotional intelligence will help connect customer better. This study can

help in understanding the effects of emotional intelligence on attitudes and intention towards AR, which in turn can be used in exploring opportunities to reduce occupational stress and increase organizational efficiency. It can also be used in improved decision making strategies.

Second, the findings that openness and agreeableness personalities moderates the relation between attitude and intention to use AR will help service-providers make better designs for building AR systems. Thus the findings of this study will help service providers reduce service gaps that exists by focusing on personality related factors when going for personalization.

Thirdly, this study can help firms working on specially challenged people like, people with autism, etc., to design products capturing the emotional intelligence of people to facilitate emotional judgments. Additionally, since AR is a medium for reducing the gap between reality and virtuality, capturing human emotions will give a completely different and better experience. Finally, this study can help research practitioners in analyzing how big five personality traits and emotional intelligence can be linked with technology acceptance factors for bring out a better adoption model.

7. Conclusion

The growing economic importance of AR has led to researchers look into factors which can improve the rate of adoption of AR. Through this study, the moderating effect of one's personality and the impact of EI on adoption of AR has been analyzed. The results indicate that EI has a positive indirect impact on intention to use. Additionally, it was also found that openness and agreeableness personality traits moderates the relation between attitude and adoption intention. Subjective norms have positive association with PU and attitude to adopt AR. Surprisingly computer self-efficacy had no compelling impact on PEOU. Both PEOU and PU have significant positive impacts on attitude to use AR. This shows that people who value PEOU more, values PU

of the AR enabled device. As AR has the capability to blur the distinctions between reality and virtuality, we feel that this model can help both firms and researchers in future research.

7.1 Limitations and Future Directions

In this study no control and moderating variables are used. In future, researchers can use control and/or moderating variables and find their effect on the proposed model. Another scope for future work is to find the influence of the two social ties electronic word of mouth (eWOM), namely, strong-ties eWOM and weak-ties eWOM separately, on the personality factors. Scholars can also work on extracting the cognitive factors in a longitudinal analysis and find out the change of personality traits over a period of time and see how the adoption patter may change.

This unique study of combined psychological (emotional intelligence and big five traits) and technological factors explored the human psychological factors that influence adoption of AR devices. In future, since augmented reality is going to play an important in everyday life, this study can help practitioners and researchers from various sectors in finding avenues for better targeted marketing.

This study conducted in India through questionnaire survey revealed the positive association between EI and intention. This can be extended in future by conducting this research for different nationalities especially developed vs. developing nations and explore any cross-cultural dimensions that might exist in the adoption of AR.

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Appendix 1. Cross-Loading values

	AGR	ATT	COM	CON	EI	EXT	INT	NEU	OPEN	PEOU	PU	SN
AGR1	0.746	0.261	0.344	0.414	0.382	0.154	0.225	-0.214	0.485	0.216	0.126	0.14
AGR2	0.682	0.256	0.389	0.234	0.24	0.175	0.165	-0.224	0.459	0.161	0.265	0.222
AGR3	0.796	0.301	0.523	0.456	0.326	0.373	0.256	-0.241	0.567	0.204	0.223	0.118
AGR4	0.744	0.324	0.606	0.57	0.336	0.426	0.277	-0.377	0.531	0.268	0.167	0.013
AGR5	0.747	0.438	0.525	0.59	0.503	0.387	0.28	-0.43	0.58	0.373	0.452	0.268
ATT1	0.434	0.831	0.343	0.484	0.564	0.322	0.657	-0.337	0.443	0.612	0.646	0.495
ATT2	0.298	0.871	0.271	0.387	0.399	0.236	0.579	-0.216	0.291	0.567	0.605	0.496
ATT3	0.39	0.898	0.322	0.404	0.458	0.222	0.748	-0.299	0.298	0.677	0.698	0.507
INT1	0.317	0.671	0.265	0.366	0.367	0.165	0.9	-0.096	0.242	0.489	0.535	0.554
INT2	0.288	0.724	0.291	0.35	0.452	0.263	0.918	-0.217	0.328	0.519	0.693	0.493
COM1	0.464	0.244	0.761	0.431	0.286	0.491	0.189	-0.442	0.49	0.267	0.181	-0.083
COM2	0.434	0.261	0.796	0.562	0.4	0.446	0.213	-0.516	0.531	0.302	0.229	0.012
COM3	0.664	0.301	0.864	0.493	0.432	0.483	0.278	-0.464	0.654	0.319	0.27	0.043
COM4	0.657	0.354	0.826	0.484	0.419	0.489	0.288	-0.423	0.677	0.371	0.311	0.161
COM5	0.387	0.282	0.760	0.43	0.281	0.454	0.25	-0.303	0.408	0.304	0.156	0.013
COM6	0.197	0.177	0.575	0.343	0.155	0.231	0.191	-0.185	0.233	0.234	0.212	-0.076
COM7	0.527	0.314	0.852	0.474	0.349	0.354	0.328	-0.41	0.531	0.276	0.302	0.041
COM8	0.595	0.326	0.844	0.541	0.397	0.343	0.241	-0.477	0.518	0.292	0.21	0.109
COM9	0.617	0.255	0.842	0.465	0.36	0.415	0.177	-0.411	0.566	0.219	0.194	0.028
COM10	0.644	0.338	0.845	0.461	0.43	0.475	0.261	-0.4	0.613	0.233	0.234	0.032
CON1	0.425	0.208	0.399	0.703	0.292	0.336	0.27	-0.263	0.315	0.15	0.149	-0.009
CON2	0.592	0.41	0.558	0.791	0.469	0.481	0.333	-0.481	0.486	0.312	0.363	0.133
CON3	0.365	0.467	0.32	0.795	0.493	0.315	0.357	-0.339	0.338	0.454	0.39	0.427
CON4	0.579	0.381	0.532	0.720	0.527	0.403	0.219	-0.558	0.64	0.402	0.235	0.157
CON5	0.349	0.177	0.426	0.560	0.352	0.452	0.043	-0.563	0.458	0.194	0.127	0.066

EI1	0.261	0.357	0.177	0.335	0.658	0.508	0.32	-0.216	0.382	0.238	0.423	0.237
EI2	0.299	0.432	0.25	0.438	0.787	0.424	0.342	-0.44	0.432	0.433	0.484	0.356
EI3	0.282	0.383	0.357	0.33	0.647	0.491	0.378	-0.32	0.369	0.455	0.394	0.248
EI4	0.457	0.522	0.37	0.386	0.827	0.484	0.426	-0.438	0.548	0.557	0.589	0.357
EI5	0.382	0.347	0.427	0.504	0.635	0.468	0.305	-0.592	0.451	0.289	0.392	0.155
EI6	0.353	0.334	0.265	0.425	0.677	0.535	0.224	-0.503	0.51	0.359	0.292	0.276
EI7	0.435	0.321	0.393	0.613	0.779	0.448	0.223	-0.578	0.556	0.413	0.313	0.254
EXT1	0.422	0.323	0.49	0.456	0.622	0.960	0.278	-0.589	0.656	0.342	0.345	0.128
EXT2	0.337	0.191	0.474	0.498	0.575	0.806	0.119	-0.554	0.584	0.345	0.322	0.086
EXT3	0.259	0.111	0.363	0.366	0.396	0.726	0.037	-0.416	0.498	0.163	0.074	0.043
NEU1	-0.367	-0.297	-0.43	-0.488	-0.614	-0.566	-0.195	0.902	-0.526	-0.323	-0.305	-0.17
NEU2	-0.244	-0.287	-0.412	-0.328	-0.373	-0.39	-0.074	0.678	-0.31	-0.323	-0.295	-0.011
NEU3	-0.372	-0.225	-0.424	-0.472	-0.39	-0.539	-0.107	0.815	-0.424	-0.304	-0.203	-0.092
OPEN1	0.563	0.283	0.503	0.461	0.582	0.554	0.224	-0.406	0.806	0.352	0.244	0.185
OPEN2	0.547	0.343	0.54	0.449	0.575	0.527	0.29	-0.396	0.808	0.332	0.436	0.261
OPEN3	0.521	0.313	0.495	0.382	0.389	0.503	0.247	-0.527	0.739	0.411	0.296	0.172
OPEN4	0.632	0.32	0.625	0.412	0.501	0.585	0.232	-0.41	0.804	0.318	0.303	0.111
OPEN5	0.531	0.319	0.542	0.522	0.497	0.655	0.261	-0.476	0.841	0.377	0.315	0.178
OPEN6	0.557	0.272	0.397	0.474	0.473	0.424	0.214	-0.34	0.689	0.337	0.276	0.15
PEOU1	0.3	0.5	0.396	0.289	0.477	0.32	0.343	-0.381	0.44	0.813	0.432	0.249
PEOU2	0.264	0.593	0.279	0.358	0.394	0.326	0.589	-0.239	0.361	0.739	0.548	0.312
PEOU3	0.226	0.424	0.11	0.226	0.399	0.15	0.234	-0.19	0.259	0.635	0.396	0.223
PEOU4	0.269	0.672	0.309	0.45	0.482	0.313	0.504	-0.355	0.344	0.894	0.64	0.426
PU1	0.241	0.408	0.179	0.323	0.318	0.227	0.399	-0.232	0.225	0.381	0.609	0.365
PU2	0.349	0.625	0.305	0.346	0.531	0.364	0.503	-0.328	0.368	0.582	0.819	0.461
PU3	0.178	0.537	0.141	0.288	0.418	0.236	0.548	-0.169	0.242	0.431	0.807	0.533
PU4	0.215	0.558	0.203	0.228	0.417	0.227	0.524	-0.226	0.297	0.457	0.759	0.565
PU5	0.31	0.737	0.285	0.334	0.566	0.301	0.634	-0.311	0.407	0.669	0.863	0.499
SN1	0.206	0.544	0.065	0.263	0.326	0.089	0.507	-0.122	0.223	0.417	0.609	0.807
SN2	0.099	0.314	0.045	0.159	0.316	0.17	0.265	-0.158	0.18	0.152	0.34	0.71
SN3	0.104	0.375	-0.026	0.107	0.214	0.028	0.468	-0.036	0.092	0.26	0.382	0.719