

A Study on Gender Difference in Antecedents of Trust and Continuance Intention to Purchase Voice Speakers

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ABSTRACT

This study aims at understanding gender difference in trust and the related factors affecting the intention to purchase voice speakers VS. VS are one of the innovations that are emerging at a fast pace in the market. Although it seems to be widely embraced by both genders, people do not intend to use them in some cases due to a lack of trust and the rumors circling these types of technologies. Nevertheless, there are particular barriers to the acceptance of VS technology between females and males due to unfamiliarity with the effective components of such technologies. Therefore, assuming that increasing the knowledge-based familiarity with an effective technique is essential for accepting it. So far, only little is known about VS and its concepts to increase the familiarity and, as a consequence, the acceptance of effective technology. Technology adoption in gender has been studied for many years, and there are many general models in the literature describing it. However, having more customized models for emerging technologies upon their features seems necessary. This study is based on Theory of Reasoned Action and trust-based acceptance which provides a background for understanding the relationships between beliefs, attitude, intentions, and subject norms and how it's affecting gender trust in VS. The statistical analysis results indicate that perceived system quality and perceived interaction quality have stronger influences on trust for males, while privacy concern and emotional trust have stronger influences on trust for females with the intention of purchase for both genders. Our study can be beneficial for future research in the areas of Perceived risk and Perceived utility and behavioral intention to use and human-technology interaction and psychology.

Keywords: Voice Speakers, Gender Trust, Cognitive Trust, Emotional Trust, Intention to Purchase

I . Introduction

Since VS listens to users 24/7, it provides a lot

of convenience by utilizing customer information. However, users worry about companies' misuse of their private information. As technology has become

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closer to daily life, there are more related privacy concerns. The fast growth of VS, particularly language recognition and voice recognition technologies, has helped to transform how people interact with machines and consume digital content. Therefore, more trust in the new technologies is based on a different perception of trust among potential users based on their gender identity. Regular or current technologies that we use on our daily basis restrict human-machine interaction. From using traditional manual pressing of remote control buttons to swiping on mobile phones, here it comes the importance of modern technologies and its adoption among different sexes where the level of trust differs depending on the background of the person. It can be different even between the same gender. VS, which are disruptive technologies that feature the advanced functions allowable by the Internet of Things, have already insinuated themselves into our daily lives and captured the attention of established technological firms, such as Amazon, Google, and Apple. Despite this ongoing trend, many investors are still not sure about how VS can be translated into revenues for firms that adopt VS commerce (Kharpal, 2017). What remains unclear is how and to what extent firms can convince the customer to interact or buy VS considering the privacy concern and trust issues within genders that might affect the revenues from its sales. This study focuses on a different level of cognitive and emotional trust in VS and the willingness of each gender to accept it. (Choi et al., 2018). Cognitive trust in VS is defined as consumers' rational expectations that VS can provide accurate, reliable and safe services, an individual's trust in the target can be transferred from a trusted source when s/he believes that there is a close relationship between the source and target (Stewart, 2003). Secondly, in this study, we define emotional trust as a consumer's feelings of comfort

and security about relying on VS to conduct daily needs. Emotional trust captures an individual's evaluation of effective feelings about relying on the trustee. Thus, it can be viewed as a trustee's attitude toward adoption behavior, so an individual's behavioral intention will be predicted by attitude. In other words, if a consumer has a high level of emotional trust in VS, then she/he will be more likely to adopt it (Komiak and Benbasat, 2006). In sum, the objective of this study is to employ a trust-centric lens with a balanced cognitive and emotional perspective to investigate VSs adoption among genders via the trust transfer mechanism. We include the role of perceived entitativity to enrich insights into the trust transfer process. We, therefore, develop a research model to address our research objective. More specially, we identify seven factors to explicate the trust.

II. Theoretical Background

2.1. Trust-based Acceptance Model

Komiak and Benbasat (2006) developed the trust-based acceptance model in the context of online recommendation agents. This model is based on the theory of reasoned action (TRA) Fishbein and Ajzen (1975), which provides a background for understanding the relationships between beliefs, attitude, intentions, and subject norms. According to TRA, behavioral intention refers to an individual's likelihood of performing a behavior. Beliefs capture the cognitive assessments of performing this behavior. TRA points out that the individual's behavior is predicted by behavioral intention, which is further influenced by attitude and subjective norms. Drawing upon TRA, Komiak and Benbasat (2006) proposed three types of trust in their trust-based acceptance

model. These are cognitive trust, emotional trust and intention to adopt, which capture the trustee's willingness to rely on the trustee for certain behavior. In their model, emotional trust is argued to be essentially different from cognitive trust, because cognitive trust is based on the rational appraisal of the trustee's attributes. Whereas, emotional is developed upon feeling, faith, and emotional evaluation to the trustee (Komiak and Benbasat, 2004; Zhang et al., 2014). Moreover, the cognitive trust states people's cognitive capacities by which people engage in possessing conscious calculations and orderly preferences (March 1994). Meanwhile, emotional trust enables consumers to feel secure and comfortable with relying on the trustee beyond the available evidence (Mayer et al., 1995; Sun, 2010). Thus, ignoring emotional trust may hamper our understanding of trust and consumers' adoption behavior. The trust-based acceptance model then highlights that cognitive trust in correlation with emotional trust. It further leads to behavioral intention to either purchase or use VS.

2.2. Cost and Benefit Theory

Interaction between human and VS can be seen as either positive or negative. That is why human beings often ponder whether to engage in it or not. Most human behaviors are expected to be engaged carefully due to the human nature of not trusting new technologies. In this case, gender is no difference, which can include both positive and negative aspects of VS. Obtaining a positive impression from VS usage may require plentiful efforts in material and extraneous aspects. However currently purchasing VS does not require substantial monetary expenses, as VS is turning into the affordable low-cost device. All In all, weighing pros and cons before making the

purchasing decision is the natural behavior of any potential customer or user.

In the context of privacy, this process affects people's endeavor to strike equity between their desire for privacy and their need for disclosure and communication to gain certain benefits (Westin, 2003). Different studies in various fields have elucidated privacy-related performance in terms of costs and benefits (Dinev and Hart, 2006; Knijnenburg and Kobsa, 2012; Li et al., 2010; Milne and Gordon, 1993; Xu et al., 2011). Laufer et al. (1974) describe this act as "A privacy calculus, which they define as an analysis of the future consequences of engaging in current behaviors". It may also be accepted as managing the boundary between opening and closing access to personal information of others depending on the relative weight given to costs and benefits (Petronio, 2002). Therefore, a privacy calculus is a cognitive process in which people assess future consequences of present choices by weighing the potential costs and benefits of sacrificing some degree of privacy to gain better outcomes (Angst and Agarwal, 2009; Li et al., 2010). Saying that people assess and weigh costs and benefits, does not necessarily mean that they rationally and objectively enumerate and evaluate all the relevant costs and benefits in a mathematical way.

In previous researches, many academics have studied ways of decreasing people's privacy concerns in various online contexts to encourage people to engage in target behaviors (Sheehan and Hoy, 2000; Zhou, 2011). Particularly in the context of voice speakers, privacy-related studies have been brought to light because of the possible loss of revenue-creating opportunities when a customer identifies that their privacy is under threat. The costs related to privacy have been classified in the literature as general concerns about the privacy of transactions conducted

via the Internet. Factors that have been found to mitigate these privacy concerns are trust in the Internet and service providers (Dinev and Hart, 2006; Li et al., 2011; Malhotra et al., 2004; Metzger, 2004; Mikuliner and Nachshon, 1991), perceived protections (Li et al., 2011; Metzger, 2004), and perceived usefulness and ease of use (Pavlou, 2003).

Beyond the scope of interpersonal communication with VS, there are some gender differences in terms of privacy concern and intention to purchase. Men are more likely than women to purchase products and services online than women (Briones, 1998; Kramarae and Taylor, 1993). These findings, then, suggest that women may be more concerned than men about information gathering and their privacy online.

Men are also less concerned about their privacy than women in regards to entities selling information that has been collected online. Women tend to be more cautious than men when they interact with VS (Kehoe et al., 1997).

These findings, then, suggest that women may be more concerned than men about information-gathering and their privacy interacting with VS. There is some evidence that there are similar concerns about these issues in off-line communication (Westin, 1997). More women than men were "very concerned" about threats to privacy today (58% of women compared to 53% of men). Westin (1997) found that these strong privacy concerns of American women were a driving force behind an unprecedented wave of state privacy laws in 1997, which addressed a wide range of privacy issues. Nowak and Phelps (1992) found that concerns about threats to personal privacy did not vary between sexes. They also found that the propensity of individuals to request removal from a mailing list did not correlate with gender. It indicates that perhaps no gender differences exist in the actions

men and women take to protect their privacy in direct marketing contexts. It might be due to the fact human beings strongly care about privacy regardless of gender.

III. Research Model and Hypothesis

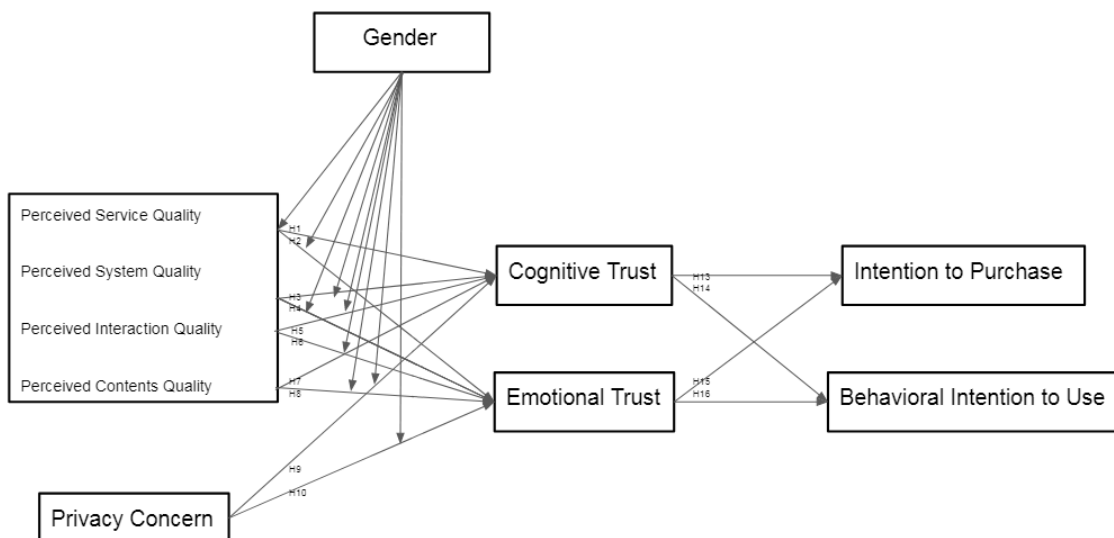
Gender adoption of VS in correlation with the intention to purchase VS, in general, is an important factor that could reduce uncertainties and perceived risks in social or economic interactions with the device. Especially, when making important decisions related to the adoption of the new technology, such as VS (Gefen, 2002). In the VS system, trust is one of the most important factors affecting adoption (Zhou, 2013). Trust is defined as "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another" (Rousseau et al., 1998). Following this definition trust is a tradeoff between the pros and cons of a device leading to its adoption rejection. The VS information quality and contents quality can be used to describe the nature and level of the content. Studies have proved both to be determinants of utility and ease of use. Privacy concern can be defined as users' concerns about their personal information (Smith et al., 1996). Since VS listens to users 24/7, it provides a lot of convenience by utilizing customer information. However, users worry about companies' misuse of their private information. As technology has become closer to daily life, there are more related privacy concerns. From the prior research, it is known that privacy concerns are positively related to perceived risks (Taylor et al., 2009; Zhou, 2013). Cognitive trust in VS is defined as consumers' rational expectations that VS services can provide accurate, reliable and

safe services. According to the trust transfer theory, an individual's Emotional trust in the target can be transferred from a trusted source when s/he believes that there is a close relationship between the source and target (Stewart, 2003). Emotional trust captures an individual's evaluation of effective feelings about relying on the trustee. Thus, it can be viewed as a trusting attitude toward adoption behavior (Komiak and Benbasat, 2006). An individual's behavioral intention to trust will be predicted by attitude. In other words, if a consumer has a high level of emotional trust in VS, then s/he will be more likely to adopt it.

Arose from social psychology, trust has been conceptualized as a faith that the other gender will act following the proper behavior of generosity, integrity and ability (Gefen, 2000; McKnight et al., 2002; Zhou, 2011). Luhmann (1979) defined trust as the idea that one will react predictably. Mayer et al. (1995) posited that trust arises between two genders who consciously act with altruism. McKnight et al. (2002) established a philosophical structure to ex-

amine the important precursors that influence genders' trust-building and behaviors. And the study unveiled that two vendor-factors (reputation and site quality) and structural assurance are critical factors that promote genders' trust and behavioral intention in VS. Their framework has been widely applied to mobile or electronic commerce (Corbitt et al., 2003; Huang et al., 2014; Lee, 2005; Ou et al., 2014; Teo and Liu, 2007). Our study draws upon a trust-based acceptance model between male and female as an overarching approach to develop our theoretical model. To intensify the theoretical basis of our proposed theoretical model, this study further reviews and summarizes the extant literature on trust constructing process in the field of VS between genders which affect male and female purchase behavior.

The research model proposed and described in <Figure 1> draws from two theoretical frameworks to justify the various predictors of adoption of VS and the moderating effect of gender affection on the purchase of VS. We used quality factors along with cognitive and emotional trust, trust-based ac-



<Figure 1> Shows our Research Model

ceptance model (Davis, 1989) and cost and benefit theory as they have been recurrently found to be good predictors in the adoption of VS. These factors are posited to have a direct influence on the prediction of VS adoption within gender. The adoption of VS has attempted to explain the factors that influence the intention to adopt it. We have created a parsimonious model of technology acceptance that includes the trust factor because of the nature of the use of the service and gender as a moderator. There is not much research on the moderating impact of gender in VS adoption up to now. Wan et al. (2005) found that males were more inclined to adopt technology than females, hence supporting previous finding that males are more positive about VS than females (Pijpers et al., 2001). Yang (2005), in an exploratory study, found that gender influences perceived ease of use and usefulness but in a negative way, contrary to expectations. Concerning VS, it has been found that females are more concerned with security issue.

H1: Perceived service quality has a positive effect on cognitive trust.

H2: Perceived service quality has a positive effect on emotional trust

The quality of the service delivered by VS is judged based on customers' expectations because the service is directly interfacing with users, as it is delivered through the VS system. Therefore, service quality is critical for adoption of VS. As service quality of AIS is closely related to other qualities, like system and content quality they strongly influence user satisfaction related to the system's post-implementation success (Hsu et al., 2017). Research results have persistently shown that anticipated service quality is a key factor in the rating of satisfaction of smart devices

users. Bernardo et al. (2018) show that e-service quality played a critical role in proving the perceived value of functional quality and hedonic quality of smart devices.

H3: System quality positively affects a user's cognitive trust

H4: System quality positively affects a user's emotional trust

System quality is the user evaluation of system performance and quality of delivered information as well as to what extent user needs are being met by the VS performance. Therefore, the high quality of a system, via its central role in the evaluation of VS increases people's satisfaction and enhances VS adoption process. In return, the information that is collected helps enhancing the development of VS. On the contrary, consumers are reluctant to use the VS when they experience response delays, disconnections, and lack of access, or low security, decreasing trust.

H5: Interaction quality of an AI Speaker positively affects a user's cognitive trust.

H6: Interaction quality of an AI Speaker positively affects user's Emotional trust.

In literature, ambiguity and anticipated risk of VS are two important avoidance of its adoption. Trust can have a big impact on customer's behavior to interact with voice speakers. It could reduce ambiguity and anticipated risk in social or economic interactions, especially when making important decisions or adopting VS (Gefen, 2002). In the voice speaker's system, trust is one of the most important factors affecting adoption (Zhou, 2013). Trust is defined as "a psychological state comprising the intention to accept vulnerability based upon positive expect-

ations of the intentions or behavior of another” (Rousseau et al., 1998). Gefen (2002) argues that perceived risk and trust affect the user’s behavior. While Trust and risk are essential factors that influence consumers’ interaction with VS (Kim et al., 2008). Kim et al. (2008) research led to the antecedents of trust and risk, by developing a theoretical framework resulting in the trust-based decision-making process. Perceived trust, and attitudes positively affect the adoption of VS systems. therefor Trust is playing an important role not only on the intention to use but also on the continuance of using a VS.

H7: Content Quality has a positive effect on cognitive trust.

H8: Content Quality has a positive effect on emotional trust.

Content quality can be described as the authenticity and timeliness of knowledge, nature, and level of content provided by the VS alongside the information quality of VS. Both qualities are stated to be determinant of utility ease of use in the vast number of studies (Lee et al., 2015).

H9: The privacy concerns of smart speakers will negatively affect individual cognitive trust.

H10: The privacy concerns of smart speakers will negatively affect individual emotional trust.

Privacy concern can be described as users’ anxieties about their data (Smith et al., 1996). VS stay in alert mode enduringly, so it can be activated by the user’s voice at any time. Nevertheless, users worry about companies’ abuse of their private information, because of the continuous recordings of anything occurring around the VS. As technology has become closer to daily life, there are more related privacy concerns. Most previous researches have focused on general

privacy concerns an ‘individual’s overall aim to worry about information privacy’ (Li et al., 2011). Nevertheless, situation-specific factors may override dispositional factors and persuade individuals to disclose their information despite general worries (Keith et al., 2013; Li et al., 2011; Wilson and Valacich, 2012). Lastly, from the prior research, it is known that privacy concerns are positively related to perceived risks in many contexts (Taylor et al., 2009; Zhou, 2013).

H11(a): Gender will moderate the impact of perceived service quality on cognitive trust

H11(b): Gender will moderate the impact of perceived service quality on emotional trust

H11(c): Gender will moderate the impact of perceived system quality on emotional trust

H11(d): Gender will moderate the impact of perceived system quality on cognitive trust

H11(e): Gender will moderate the impact of perceived interaction quality on emotional trust

H11(f): Gender will moderate the impact of perceived interaction quality on cognitive trust

H11(g): Gender will moderate the impact of perceived content quality on emotional trust

H11(h): Gender will moderate the impact of perceived content quality on cognitive trust

H11(i): Gender will moderate the impact of privacy concern on emotional trust

H11(j): Gender will moderate the impact of privacy concern on cognitive trust

Both males and females can be defined as a potential user’ to adopt VS in a sense of assuaging asylum and comfort about leaning on VS to assist them in daily chores. It also focuses on the gender’s evaluation of the amount of trust one has into relying on VS. Thus, trust in VS is defined as users’ sane

expectations that VS can provide meticulous, dependable and unassailable services depending on the gender's needs. According to the trust transfer theory, an individual's trust in the VS can be transferred from a trusted source, when they are convinced that there is a right connection between user and VS (Stewart, 2003).

Social psychology literature has indicated that there are vital behavioral distinctions between females and males based on situation relevant decision (e.g., Bandura, 1986). That is adequate to separate attitudinal and behavioral adjustments within the gender (Bandura, 1986). For instance, employing sharp psychologically developed cognitive logic, females and males are altered when they process information and evaluate VS (Venkatesh and Morris, 2000).

Antecedent academicians have demonstrated that pragmatic and task-oriented traits are more prominent among men, which make them prone to the influence of VS, such as by the utility and expected performance (Venkatesh et al., 2012). For example, Zhou et al. (2014) find that male users are more likely to use special techniques for achieving an effective task and gaining pragmatic (task-oriented) benefits. Meantime, men have a competing stance and thus, it is easier for them to evaluate VS and related device and decide to adopt a device (Roberts, 1991). Given this evidence, males are 'selective processors' who often rely on a subset of deeply available and salient cues in place of assimilating all detailed available information, as Sanchez-Franco (2006) remark. In particular, a male group will create more trustworthy beliefs with the positive evaluation of VS (San Martín and Jiménez, 2011). Especially appearance and reputation are powerful levers for males to build trust. As well as. Males tend to rely more on the reputation and public impression of the device to create the trust.

On the other hand, females tend to have a more prominent concern while handling new activities and are more risk-averse. Thus, females value safety and implied privacy matters when undertaking novel ventures. For instance, it has been recorded that privacy-related and security-related policies are dominantly significant in building females' trust in the online market, which can be similar in case of smart device adoption (San Martín and Jiménez, 2011). Opposed to males, females are more concerned about security (Dwyer et al., 2002). Consequently, females are more frequently engaged in security and privacy assurance behaviors to avoid potential economic damages (Hoy and Milne, 2010). Moreover, females are process-oriented and prefer the personalization of products and services (San Martín and Jiménez, 2011). For example, Venkatesh et al. (2000) report that females concentrate more on the process rather than outcomes. On the other hand, comparing to males, females tend to be more nervous and less willing to interact with VS (Venkatesh et al., 2000). on the contrary, customization may increase and enhance females' willingness to interact with a smart device (Huang et al., 2014). Additionally, Females are more process-oriented and value control and security, so they require a more individual approach

H13: Cognitive trust in AI Speaker is positively associated with intention to purchase

H14: Cognitive trust in AI Speaker is positively associated with post-trial intention

Cognitive trust in VS is defined as users' sane expectations that VS services can provide meticulous, dependable and unassailable services. According to the trust transfer theory, an individual's trust in the VS can be transferred from a trusted source when they are convinced that there is a tight connection

between user and VS (Stewart, 2003).

H15: Emotional trust in AI Speaker is positively associated with intention to purchase

H16: Emotional trust in AI Speaker is positively associated with post-trial intention

According to the study of Komiak and Benbasat (2006), the emotional trust may be generated based on users' cognitive trust. As stated earlier, a high level of cognitive trust means that customers believe relying on VS will acquire reliable and secure services. Consumers with such trusting beliefs are likely to invoke a sense of higher security and comfort about relying on VS (Sun, 2010). This is also compatible with TRA, which asserts that beliefs create significant impacts on attitude. Accordingly, we presume that consumers' cognitive trust in VS places a positive effect on their emotional trust in VS.

The quality of the service delivered by VS is judged based on customers' expectations because the service is directly interfacing with users, as it is delivered through the VS system. Therefore, the high quality of a system, via its central role in the evaluation of VS increases people's satisfaction and enhances VS adoption process. In return, information enhances the development of VS. According to the trust transfer theory, an individual's trust in the VS can be transferred from a trusted source when they are convinced

that there is a tight connection between user and VS (Stewart, 2003). And according to the study of Komiak and Benbasat (2006), the emotional trust may be generated based on users' cognitive trust and finding out how they correlate with each other according to gender differences is the main purpose of our study

IV. Data Analysis and Research

Using Komiak and Benbasat (2006) TRA model to suggest that cognitive and emotional trust in VS will put notable impacts on the intention to use VS. Cognitive trust in VS is also expected to confidently influence emotional trust in VS. Then, we refer to the trust transfer theory and propose that cognitive trust in voice speakers and perceived quality will be positively correlated with cognitive trust in VS, whereas emotional trust in VS will be predicted by emotional trust in VS and perceived quality. To empirically test our model and hypotheses, we conducted an online survey to collect data by asking people of different background and culture from around the globe. Since this study examines consumer adoption and intention to use and purchase VS, we targeted at a convenient sample Male and female of different age group between 18 and 50+, who know and experienced VS before. Finally, a total of 157 responses

<Table 1> Characteristics' of the Respondents

Region	N	%	Age	N	%	Gender	N	%
Africa	28	17.8	18-29	100	63.7	Female	80	51
Europe	34	21.7	30-40	32	20.4	Male	74	47.1
Asia	61	38.9	40-50	20	12.7	Other	3	1.9
Australia/Oceania	13	8.3	50+	5	3.2			
North America	12	7.6						
South America	9	5.7						

were gathered. <Table 1> lists the respondents' demographic characteristics.

4.1. Measurements

Questionnaires were developed to measure 9 constructs - Content Quality-Interaction Quality-Service Quality-System Quality-Privacy Concern- Cognitive Trust, Emotional Trust - Intent to Purchase - Behavior Intention to Use - use in Hypothesis. All

of the survey items were chosen from previous research where reliability and validity were verified and slightly modified pertinent to the research context. All measured on 5 points Likert Scale.

4.2. Data Analysis and Results

We used Smart PLS to analyze the research model. PLS is suitable for the data analysis of the current study for two reasons. First, PLS is a compo-

<Table 2> Measurements

Construct	Item Wording	References
Content Quality	- I think that VS provides various services. - I think the services I can obtain from the VS are valuable. - I think the VS provides services that I need.	Shin, 2015; Shin, 2017
Interaction Quality	- I think I would feel close to the VS. - I think I would feel socially connected to VS. - I think the VS seems to be trying to make users feel good.	Lee et al., 2017
Service Quality	- I think the level of service quality users receives from the VS is excellent. - I think the level of service quality users receives from VS is high. - I think the level of service quality users from VS is good.	Shin, 2017; Xu et al., 2009
System Quality	- I think the VS response time is sufficiently fast. - I think the VS provides a reliable system. - I think the VS underlying technologies are solid and established.	Shin, 2015
Privacy Concern	- I think the VS protects my personal privacy. - I think the VS has an adequate number of security features. - I think the VS will not provide my information to other sites without my permission.	Park et al., 2018
Cognitive Trust	- I think the VS provides accurate services. - I think the VS provides reliable services. - I think the VS provides safe services.	Gong et al., 2016
Emotional Trust	- I think I would feel secure about using the VS for my daily needs. - I think I feel comfortable about using the VS for my daily needs. - I think I would feel content about using the VS for my daily needs.	Gong et al., 2016
Intention to Purchase	- I intend to buy the VS in the near future. - I think the likelihood that I will purchase the VS is high. - Assuming that price is not an issue, I think that I will purchase the VS.	Yang et al., 2017
Behavior Intention to Use	- I think that using VS is worthwhile. - I intend to use VS in the future. - I intend to discontinue using AIS.	Thakur, 2016; Yang et al., 2016

ment-based structural equation modelling approach which requires a relatively small sample size Gong et al. (2016). Second, it is appropriate for dealing with formative constructs and exploratory analysis (Gong et al., 2016).

4.3. Testing the Measurement

We used convergent and discriminant validity to evaluate the measurement model. For convergent validity, the reliability of items, composite reliability of constructs, and AVE of constructs was examined. For reliability of reflective items, the reliability score (outer loadings while using PLS) should be over 0.07 (Hair et al., 1998). For evaluating composite reliability, 0.8 is suggested as an indicator (Nunnally, 1967). Also, we used Cronbach’s alpha as another evidence of construct validity (Cronbach, 1951). To count on the reliability of constructs, Cronbach’s alpha should be greater than 0.7, although small degree lower than 0.7 might be acceptable for exploratory research (Hair et al., 1998).

Composite reliability (CR) and average variance extracted (AVE) are the two indicators of convergent validity. To ensure convergent validity, CR values should exceed 0.7, and AVE values should be 0.5

or above, according to (Fornell, 1981). As shown in <Table 3> below, the CR values ranged from 0.89 to 0.94, whereas the AVE values were all greater than 0.50, suggesting good convergent validity of this study.

Discriminant validity was assessed by items loading of all constructs exceeding 0.7, and the square root of AVE for each construct greater than its correlations with other constructs, (Chin et al., 2003). As shown below, discriminant validity was also acceptable in this study.

Analysis of the credibility of the research constructs of the subject research model indicates reliability and validity are all above the suggested threshold, supporting clear reliability and validity of the measurement.

Chin (1998) suggested that the values of R2 that above 0.67 considered high, while values ranging from 0.33 to 0.67 are moderate, whereas values between 0.19 to 0.33 are weak and any R2 values less than 0.19 are unacceptable. Falk and Miller (1992) proposes an R-squared value of 0.10 as a minimum acceptable level.

Moreover, Effect size indicates the relative effect of a particular exogenous latent variable on the endogenous latent variable(s) utilizing changes in the

<Table 3> Results of Measurement Model - Convergent Validity

Construct	Cronbach’s Alpha	Rho_A	CR	AVE
Behavior intention to use	0.920	0.922	0.949	0.861
Cognitive Trust	0.926	0.927	0.944	0.772
Content Quality	0.883	0.886	0.928	0.811
Emotional Trust	0.925	0.928	0.947	0.817
Intention to Purchase	0.916	0.920	0.947	0.856
Interaction Quality	0.852	0.861	0.901	0.696
Privacy Concern	0.909	0.910	0.936	0.786
Service Quality	0.820	0.821	0.893	0.736
System Quality	0.845	0.850	0.906	0.762

<Table 4> Latent Variable Correlations

	BI	CT	CQ	ET	IIT	IQ	PV	SQ	SYQ
BI	0.928								
CT	0.703	0.879							
CQ	0.696	0.705	0.900						
ET	0.745	0.772	0.655	0.904					
IIT	0.774	0.630	0.537	0.724	0.925				
IQ	0.717	0.741	0.705	0.720	0.658	0.834			
PV	0.533	0.649	0.506	0.636	0.554	0.543	0.887		
SQ	0.631	0.760	0.666	0.740	0.545	0.691	0.603	0.858	
SYQ	0.569	0.705	0.561	0.653	0.526	0.623	0.584	0.795	0.873

Note: Diagonal elements are the squareroot of AVE. These numbers should exceed the inner construct correlations for adequate discriminant validity. This condition is satisfied for each construct. BIU: Behavior Intention to Use, CQ: Content Quality, IP: Intention to Purchase, IQ: Interaction Quality, CT: Cognitive Trust, ET: Emotional Trust, PC: Privacy Concern, SQ: Service Quality, SYQ: System Quality

<Table 5> Coefficient of Determination R2

Constructs Relation	R Square	Results
Behavior Intent to Use	0.477	Moderate
Intent to Purchase	0.428	Moderate
Emotional Trust	0.507	Moderate
Cognitive Trust	0.515	Moderate

R-squared, (Chin, 1998). Interpreting effect size F2 if the results are above 0.35 it is considered large effect size if F2 ranging from 0.15 to 0.35 it is considered Medium effect size, if the F2 between 0.02 to 0.15 considered Small effect size, F2 values less than 0.02 are considering with NO effect size, (Cohen, 1988). Using Cohen (1988) Formula the results exceeded 0.35 equaling to 0.668 which considered large effect size.

Furthermore, we used Predictive Relevance (Q2) in our study. Using Smart PLS we calculated 2 values: Cross Validated Redundancy (cv-red), and Validated Communality (cv-comm). According to Fornell and Cha (1994), a CV-RED Value of > 0 shows that there is predictive relevance while Value of < 0 indicated the lacks predictive relevance.

As we can see the values of 1-SSE/SSO is greater than Zero, which supports the claim that this study model has adequate ability to predict. We also calculated the Goodness of Fit of the Model (GOF). Using the calculation formula of GOF, as follows:

$$GoF = \sqrt{(R^2 \times AVE)}$$

<Figure 2> Goodness of Fit of the Model (GOF)

To determine whether GoF values are no fit, small, medium, or large to be considered as global valid PLS model we followed the criteria given to us by Wetzels et al. (2009), we present the following criteria. If GoF is less than 0.1, it is considered “No fit”.

<Table 6> Construct Cross Validated Redundancy

	SSO	SSE	Q ² (= 1-SSE/SSO)
BI	471.000	246.148	0.477
CT	785.000	380.000	0.515
CQ	471.000	471.687	
ET	628.000	309.000	0.507
ITP	471.000	269.922	0.428
IQ	628.000	628.378	
PC	628.000	628.673	
SQ	471.000	471.000	
SYQ	471.000	471.000	

Note: BI: Behavior Intention to Use, CQ: Content Quality, ITP: Intention to Purchase, IQ: Interaction Quality, CT: Cognitive Trust, ET: Emotional Trust, PC: Privacy Concern, SQ: Service Quality, SYQ: System Quality

<Table 7> Construct Cross-validated Commuality

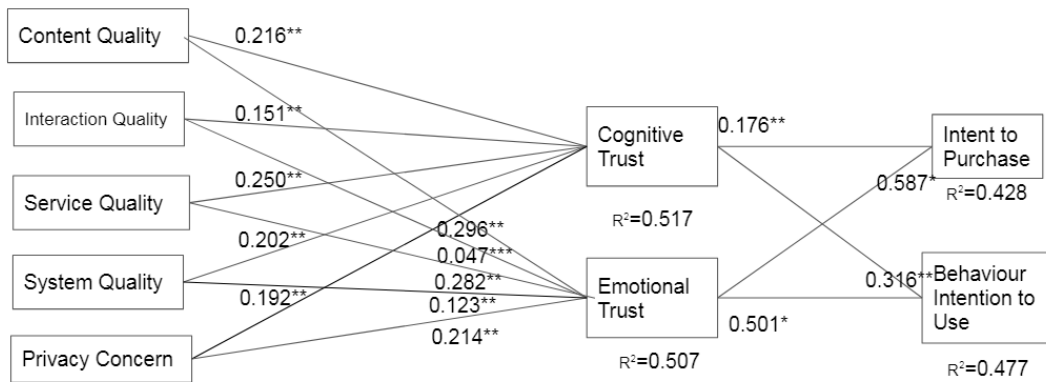
	SSO	SSE	Q ² (= 1-SSE/SSO)
BI	471.000	175.165	0.628
CT	785.000	304.025	0.613
CQ	471.000	212,343	0.549
ET	628.000	228,944	0.635
ITP	471.000	179,440	0.619
IQ	628.000	331,826	0.472
PC	628.000	256,896	0.591
SQ	471.000	265,293	0.437
SYQ	471.000	246,006	0.478

Note: BI: Behavior Intention to Use, CQ: Content Quality, IP: Intention to Purchase, IQ: Interaction Quality, CT: Cognitive Trust, ET: Emotional Trust, PC: Privacy Concern, SQ: Service Quality, SYQ: System Quality

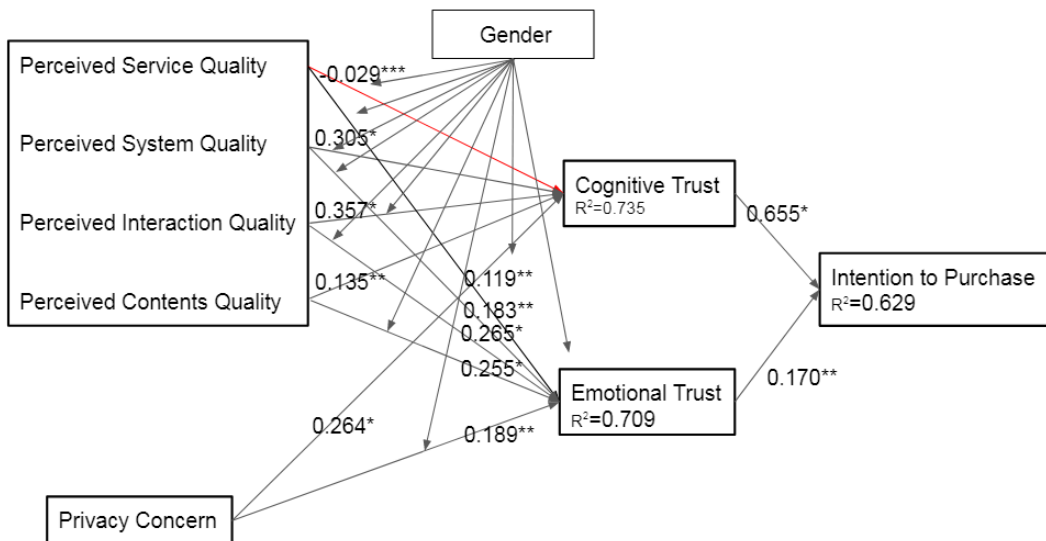
Secondly, if GoF between 0.1 to 0.25 it is considered “Sall”. Thirdly, If GoF is between 0.25 to 0.36it is considered “Medium”. Moreover, if GoF is greater than 0.36 it is considered “Large”. Lastly, according to the above criteria and the value of the GoF (0.680), it can be concluded that the GoF model of this study is large enough to sufficient global PLS model validity.

The PLS results of the structural model were reported in <Figure 3>. The results showed that cognitive ($\beta = 0.17$) to Intention to Purchase and emotional trust in VS ($\beta = 0.58$) toward Intention to Purchase

VS. It also indicated that emotional trust in VS posited a stronger effect than cognitive trust in VS. Hypothesis (1-8) was thus supported. The results also showed that cognitive trust in VS was predicted by quality dimensions in voice speakers β was between 0.21 and 0.29 and privacy concern β between 0.19 and 0.21, indicating that H9 and H10 were supported. Overall, the variances explained in cognitive trust in VS, emotional trust in VS, and intention to use VS was 51%, 50%, 42% and 47% respectively. High statistical R2 value shows that our model is



<Figure 3> Structural Model (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$)

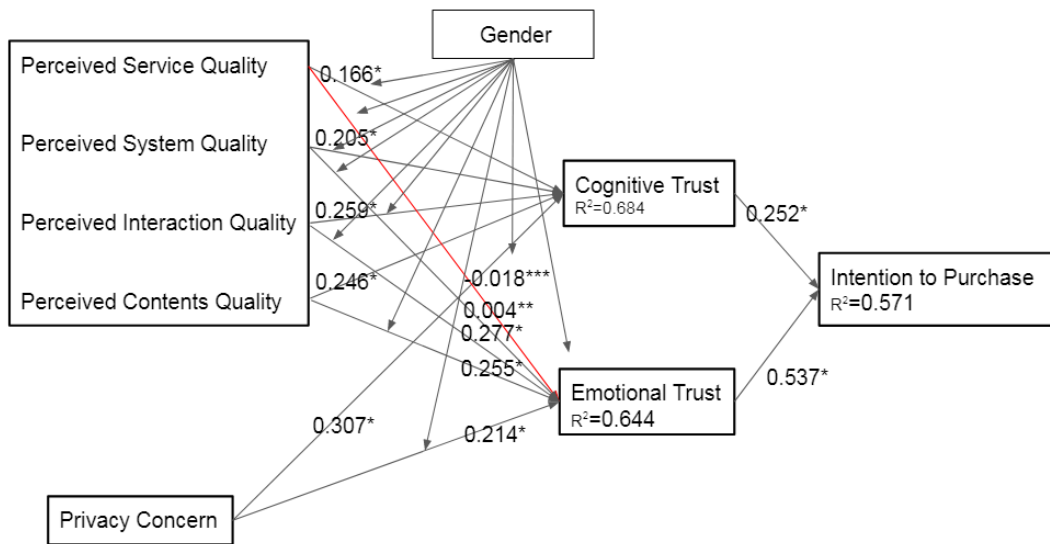


<Figure 4> Male Structural Model (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$)

acceptable to explain factors influencing trust-building mechanisms and intention to purchase VS.

A five-point Likert scale was used to measure the variables, so the values of all variables range between 1 and 5. A higher value indicates that the respondent has higher drivers and lower barriers. Additionally, a higher value also means that the respondent's intention to adopt VS is stronger. To test the proposed hypotheses, two partial least squares (PLS) (Ringle

et al., 2005) models were analyzed to verify the research hypotheses. We divided the samples into two sub-samples (females and males). Following Keil et al. (2000), we conducted a multi-group PLS analysis to compare differences among all path relationships in the two sub-samples. This procedure was widely adopted in prior literature (e.g, Sia et al., 2009; Zhou et al., 2014). The Smart PLS analyses for two samples are respectively presented in <Figure 4> and <Figure



<Figure 5> Female Structural Model (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$)

5>. The multi-group PLS test results reveal that the path coefficient between quality dimension and emotional trust and cognitive trust is significantly larger in the male user sample than female user sample. In particular, females are more likely than male to be more concerned about privacy, echoing findings from previous studies and this paper’s findings (Lewis et al., 2008; Nosko et al., 2012; Taraszow et al., 2010). Furthermore, previous research noted that females have a greater fear of danger than males (Harris and Miller, 2000) and therefore are more inclined to adopt more privacy-averse strategies to avoid being victims (Moschis and Churchill, 1978). A multi-group analysis shows that the relative influences of trust-building mechanisms are contingent upon gender. Specifically, while system quality has more effects on cognitive trust for male group and contents quality have stronger influences on emotional trust for female

In the case of males, the results indicate that Perceived Service Quality does not affect Emotional Trust in connection with the Intention to Purchase

VS. On contrary in case of male respondents, Perceived Service Quality is not correlated with Cognitive Trust in the process of creating the intention to Purchase VS. Therefore, rejected hypothesis is H1. On the contrary in the case of females, there is no relationship between Perceived Service Quality and Emotional Trust affecting Intention to Purchase VS, indicating that (H2) hypothesis is rejected. Pointing out, the reasons for adversity against VS among males and females are different as follows.

Finally, about the moderating effect of different gender, it is significant in this study. The analysis results show that both male and female respondents discern content quality against cognitive trust as the strongest barrier against acceptance of VS. (Its mean is the lowest among the variables). This means that service quality is still a critical problem for the smart speaker industry. About the gender difference, we can find that, compared with women, men have a significantly higher acceptance rate towards VS and lower rejection rate.

Drawing upon the cost and benefit theory and

Komiak and Benbasat (2006)'s, trust-based acceptance model, this study employs a trust-centric perspective to investigate gender trust-building in the context of VS adoption. Our results support the view that Content Quality-Cognitive Trust, Cognitive Trust-Emotional Trust, Emotional Trust-Intention to Purchase, Interaction Quality-Cognitive Trust, Interaction Quality-Emotional Trust, Privacy Concern-Cognitive Trust are positively interrelated with Females' intention to Purchase VS. On the contrary Males' intention to purchase VS is positively interwoven with Content Quality-Cognitive Trust, Emotional Trust-Intention to Purchase, Privacy Concern-Emotional Trust, System Quality-Emotional Trust, Interaction Quality-Cognitive Trust, and Interaction Quality-Emotional Trust. More importantly, despite differences in the way various factors affect cognitive and emotional trust, in case of both genders, emotional trust determines intention to purchase, but Cognitive Trust is negatively correlated with Intention to Purchase VS.

This work aims to better understand how Privacy and trust can affect the users' intention to purchase voice speakers VS, which affect the adoption of AI-based technologies. We found that privacy concern is an important factor for the adoption of voice speakers VS, as an example of AI-based systems. As shown in <Figure 3>, the hypotheses regarding quality dimensions and privacy concern are supported at the 0.4 significance level. Moreover, the positive relationship between cognitive trust, emotional trust and intention to purchase to use is supported at the 0.6 significance level.

We believe in our study, both gender acceptance of VS and privacy concern are the valid factors that should be considered to adopt VS.

V. Conclusion

Drawing upon the trust transfer theory, our study examines the significant antecedents that promote genders trust and intention to purchase VS. Our empirical results show that four characteristics of quality dimension (Perceived service quality, interaction quality, system quality and content quality) are beneficial to perceive both genders to purchase VS through emotional and cognitive trust. Specifically, there exist significant differences in two sub-samples (females; males) concerning the influences of these antecedents. Perceived system quality and perceived interaction quality have stronger influences on trust for males, while privacy concern and emotional trust have stronger influences on trust for females, while the intention to purchase for both genders are similar. While our research offers certain theoretical contributions, future research directions need to be discussed. First, the survey data is collected from different people from different backgrounds, mostly Asian nations. It opens the door for future studies to be conducted in different nations to examine the generalizability of our proposed theoretical model further. Second, future research can incorporate Perceived risk and Perceived utility and behavioral intention to use. Third, our study mainly focuses on the antecedents of trust-building in the VS, but future studies can examine the influence of other factors (perceived value, post usage experience etc.) in promoting gender antecedents of trust and continuance intention to purchase voice speakers, potential continuance usage of VS because our study mainly focuses on the antecedents of trust-building in the VS. Last, but not least, future studies can also examine whether there exists a significant difference in trust-building mechanisms between different VS, such as Google Home vs. Alexa. Our research con-

firmed that factors influencing the user's trust used in our research appear to be critical for VS success. Following Trust-Based Acceptance Theory and Cost-Benefit Theory, we proved that there is a significant relation between Privacy Concern, Cognitive Trust and Emotional Trust, as well as gender dimensions. This confirms the importance of emotional and cognitive trust in the prediction of intention to purchase and behavioral intention to use VS. Overall, such results indicate that VS must be trustworthy to succeed. If any of quality dimensions' needs are not fulfilled or privacy concern is high, it would be difficult to complete transactions and adopt AIS, preventing AIS from flourishing. Besides, our research analysis produced several important implications. Overall, gender variables affect quality dimensions and privacy concerns, pointing out that male tend to ignore privacy concerns more than female potential customers. Moreover, males tend to be less bothered by data collection policy than females. By integrating four quality-related attributes with TAM we were able to extend previous adoption research, especially in regards to VS adoption. Particularly by analyzing data from diverse samples, we were able to make major contributions in regards to VS adoption. Moreover, despite sudden, but particularly slow VS adoption, empirical studies in this

area are not common. Thus our research does not just make practical contributions to the VS domain by providing useful suggestions but also presents a unique research model, including gender variables that can potentially contribute to the development and flourishing of VS. Lastly, as in all prior research, our study has its limitations. To start with, as previously mentioned, the survey data is collected from different people from different backgrounds, mostly Asian nations. Additionally, the research was conducted on a relatively small sample size of just 157 respondents. Herewith, future studies should seek larger sample sizes with broader diversity, because the results of our paper cannot be generalized for users of VS services in other parts of the globe.

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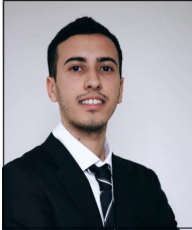
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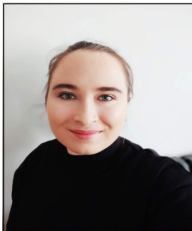
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