

# The Joint Moderating Role and Factors of Trust in Consumer-to-Consumer Electronic Commerce with Gender and Age

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## Abstract

Trust is a vital factor in many social transactions. Compared to regular environment, in e-commerce there are some more interesting properties such as uncertainty, being anonymous, lack of control, and potential opportunities. Thus, trust is one of the most important factors to facilitate e-commerce. In this paper, an efficient model on trust in C2C e-commerce has been developed which has many parts. Trust in web environment has been divided to trusting buyers and sellers, and trusting third parties and medians. Also the role of gender and age in trust in C2C e-commerce has been explored in this article. According to analysis, among the influencing factors, third parties and structural assurance are confirmed as the effective factors in trust in web environment, third party confirmation, website quality, ease of use, and website security. Those who are 40 or older are the main factor for trusting sellers in C2C e-commerce; therefore, we realized that trust in e-commerce can be enhanced with age and gender and this trust factor encourages online buying decisions and maintaining customers [1].

## Keywords:

*Trust, C2C e-commerce, trust certificate, security, age, gender*

## 1. Introduction

Today e-commerce is rapidly spreading over organization and has had a deep influence on business as well as daily life. On the other hand, e-commerce development has introduced new international issues. Since buyers and vendors from different countries are connected through communication technologies, the necessity of considering moral, cultural, and social principles becomes more and more clear. Generally in internet commerce many dangers are posed and the difficulty level of creating and improving methods for safe and secure business in internet is constantly increasing. For example, how one can make sure that an electronic signature is original and legal. These kinds of complexities show that it is possible that an error or mistake occurs in e-commerce. So trust building services are the main factors which create more confidence in using internet and are the main factor for e-commerce success. Trust services are not a new concept in business, business always has observed the presence of legal, financial and

insurance institutions which create trust in business contracts between the participating parties [2]

## 2. Definition of trust and its effects in electronic commerce

Mayer, Davis, and Schoorman (1995) defined trust as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular-lar action important to the trustor, irrespective of the ability to monitor or control that other party”. This contemporary definition is widely recognized and cited. It embeds two critical components of trust: confident expectations and a willingness to be vulnerable [3]. Barber (1983) outlines the view that concepts of trust are anchored by the expectation of the persistence and fulfillment of the moral social order, the expectation of technically competent role performance, and the expectation that partners in the interaction will carry out their fiduciary obligations and responsibilities [4]. Lewis and Weigert (1985) further suggested that trust is an expectation set within particular contextual parameters and constraints [5]. Precisely, Boon and Holmes (1991) conceived trust as the reliance upon another person under uncertain environmental states and in risky situations. The view that we adopt in this research is trust in C2C e-commerce via the website [6]. One typical type of the trust can be formed at the initial point of contact with a seller via the website. The parties do not have credible information about the other party and there is no relationship between the parties.

For instance, consumers’ general trust in B2C e-commerce website such Walmart.com, BestBuy.com and so on tends to be built over a sustained period of time through their own experiences of using those companies or through word-of-mouth communication from others. In contrast, consumers’ initial trust in C2C e-commerce forms during the first interaction with seller’s with-out prior knowledge or experience [7]. For example, when a consumer wants to purchase some products from an unknown seller through a C2C e-commerce website such as eBay.com or craigslist.org, and so on for the first time, she or he might develop a certain level of initial trust. In this case, customers

might face the risk of buying fake or poor quality products. The product being sold can only be seen in a picture that may not be an accurate representation of the actual product. It cannot be directly touched or inspected and many of the non-textual cues which people can use to judge the honesty of the seller such as voice tone, facial expressions, and body gestures are absent as well [8]. The lack of these indicators can make trust more difficult to achieve. On the other hand, in B2C e-commerce, business vendors have protected customers who are not satisfied with their products or services by providing sound policy such as a money back guarantee. Moreover, the enterprises have provided online customer services that can help customers 24 hours a day, 7 days a week. Comparing trust in C2C e-commerce to trust in B2C e-commerce, therefore, the trust issue in C2C e-commerce seems to be more problematic than in B2C e-commerce [9]. In terms of effects of trust, trust is getting more important in making a transaction via the Internet and it has been found to have an impact on a customer's willingness to purchase on the Internet and it has been considered as an influencer of the overall transaction online. According to Ba and Pavlou (2002), customers tend to pay higher price premiums when they trust retailers in e-commerce [10]. Lee and Lee (2005) found that both store trust and product trust are correlated to the customers' intention to buy on websites. Other evidence suggests that there was a level of initial perceived trust in the online vendors that enabled them to make purchases. On the other hand, some researchers have found that trust alone is not sufficient [11]. Mistral (1996) found that social order based on trust alone is unpredictable and unstable, namely, trust is not always functional. Kramer and Tyler (1996) also suggest that trust alone is not always sufficient although it is important in predicting civic engagement. Therefore, it is meaningful to find antecedents that might influence customers trust in C2C e-commerce since trust is a stronger and more significant factor when it works with other factors [12].

### **3. Effects of gender and age in electronic commerce**

Even though men or younger generations have long been associated with technology and women or older generations have often been depicted as passive customers in e-commerce, women or older generations have used e-commerce more often than ever before. However, most scholars who are interested in e-commerce have conducted their research regardless of the effect of gender or age. A meta-analysis of the literature on gender differences related to computer usage found that there are significant effects of gender in attitudes and behaviors related to computers. Therefore, gender and age should be considered as a significant factor that can influence or moderate trust in e-commerce and it is very meaningful to empirically test that

role in e-commerce. With the increasing importance of e-commerce, many researchers have wondered whether or not male and female shoppers perceive online shopping and behave in e-retailers differently. As a result, many studies aiming at answering the related questions have been conducted and have found gender differences in customers' perception, intention, and behavior [13, 14]. According to Van Slyke, Communal, and Belanger (2002), female customers in e-commerce are more rational and more sensitive to risks than male customers in e-commerce are. The study also found that gender is a significant predictor of intention to shop on websites. Rodgers and Harris (2003) showed that emotion, trust, and convenience can predict dissatisfaction in online shopping providing a conceptual framework [15]. Bae and Lee (2011) explored gender differences in consumers' perception in e-commerce, and they found that effect of online consumer reviews on purchase intention is stronger for females than males, and female customers are more cautious and conservative while they are shopping online. In addition, in the practical field of e-commerce, retailers have considered women as one of the fastest growing population segments using the website. They have recognized the differences between men and women in e-commerce market place. When it comes to the effect of age in e-commerce, many older generations have used websites to buy goods and services because of ease of use. As far as the purpose of Internet usage by age goes, younger and older people might use the Internet very differently [16]. According to S. Jones and Fox (2009), older people tend to seek health information, purchase products, and obtain religious information. On the other hand, younger people are more likely to play games, download music, and watch videos online. The result showed that there is a significant effect of age on Internet usage. McCloskey (2006) conducted a study on trust to online customers focusing on older consumers and found that age affects the initial decision regarding whether or not to purchase on the Internet. Here is another important statistical issue related to age [17]. As mentioned in Section 1, many consumer behavior studies related to e-commerce have used college students as subjects. For example, K. Jones and Leonard (2008) studied trust in C2C e-commerce using student samples in a Southwestern US university, stating that "Drennan, Mort, and Previte (2006) argued university students are representative of a dominant cohort of online users". However, student subjects have caused some disagreement on whether using them is appropriate. Therefore, it is also meaningful to investigate whether or not a result from a student sample can be generalized to other populations in research area of C2C e-commerce. Given findings and discussions above, we propose eight corresponding hypotheses rationally:

Hypothesis 5. Gender will moderate the relation between a customer's natural propensity to trust and trust in C2C e-commerce.

Hypothesis 6. Gender will moderate the relation between a customer's perception of website quality and trust in C2C e-commerce.

Hypothesis 7. Gender will moderate the relation between other's trust of a buyer/seller and trust in C2C e-commerce.

Hypothesis 8. Gender will moderate the relation between third party recognition and trust in C2C e-commerce.

Hypothesis 9. Age will moderate the relation between a customer's natural propensity to trust and her/his trust in C2C e-commerce.

Hypothesis 10. Age will moderate the relation between a customer's perception of website quality and her/his trust in C2C e-commerce.

Hypothesis 11. Age will moderate the relation between other's trust of a buyer/seller and her/his trust in C2C e-commerce.

Hypothesis 12. Age will moderate the relation between third party recognition and her/his trust in C2C e-commerce [18].

#### 4. Satisfaction and re-purchase Intention

Consumer's purchase behavior refers to the process by which individuals search for, select, purchase, use, and dispose of goods and services, in satisfaction of their needs and wants. According to the Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM), consumers' attitudes and intention can effectively predict their actual behaviors. Satisfaction and intention to continue using the Internet for purchasing (re-purchase intention) are thus often used as dependent variables in consumer purchasing. In this paper, we adopt these two variables as the outcome variables. Customers' satisfaction with transactions, including purchasing, can be viewed in various ways, e.g., comparing the costs one incurs from engaging in the transaction with the benefit he or she expects to receive; or evaluating whether a product or service meets expectations. The IS literature has emphasized satisfaction as important both for holding down costs through customer retention (versus more costly new customer acquisition) and for promoting customers' loyalty and continued purchasing. The higher satisfaction is perceived, the higher re-purchase intention will be shown. Thus, we propose that:

**H1.** Consumers' satisfaction positively affects re-purchase intention. From a sociopolitical perspective, Social Exchange Theory (SET) suggests that exchange

parties evaluate relationships in a behavioral context. Exchange partners look beyond short-run inequities or risks and concentrate on long-run mutual gains. According to SET, trust is the most precious asset any business has, the bedrock on which business is built. The Expectation-Confirmation Model (ECM) is widely used by IS researchers to investigate consumers' satisfaction and their intention to continue using various IT products and services. ECM points out that consumers' expectations about products or services, as well as whether these expectations are met, leads to post-purchase satisfaction and an intention to purchase again. The more benefit is perceived, the more likely consumers' expectations will be reached, and the higher level of satisfaction and re-purchase intention will be shown by consumers. Thus, we propose that:

**H2.** Consumers' perceived benefit positively affects their satisfaction.

**H3.** Consumers' perceived benefit positively affects their re-purchase intention.

Risks are inherent in e-commerce systems, with research arguing that risk and trust may be the most important components of consumer-marketing relationships. Online transactions are inherently more uncertain than brick-and-mortar purchases because of consumers being distant spatially (and sometimes temporally) from their purchases as well as the unpredictable nature of the Internet. These factors, in turn, translate to consumers' perceiving more risk, being less satisfied, and, more generally, being reluctant to buy online. Consumers' perception of online risks has been argued as among the most leading factors in predicting e-commerce acceptance and one's intention to continue purchasing online. Hence, we propose that:

**H4.** Consumers' perceived risk negatively affects their satisfaction.

**H5.** Consumers' perceived risk negatively affects their re-purchase intention [19].

#### 5. Gender differences in online purchasing behavior

Though a number of studies have shown that men and women have different attitudes toward online shopping and have different purchasing behavior, few has looked in depth at the interaction between gender and other factors that influence online purchasing. On both theoretical and practical grounds, it is important to understand how gender differences work in connection with other factors. Gender differences in online commerce affect consumers' overall attitudes and behavior and level of trust. Van et al. found

that men were more likely to use the Web to make purchases than women. They found that men's perceptions of Web shopping were more favorable than women's. Swami Nathan, Lepkowska-White, and Rao (1999) found that online male buyers were more convenience-oriented and less motivated by social interaction than female buyers [20]. Dittmar and Drury (2000) and Dittmar et al. (2004) found that both genders considered functional concerns relevant in online shopping, but men were more strongly influenced by these factors. For women, socio-psychological and

Emotional factors were more significant than functional aspects in conventional buying, but functional factors played the dominant roles when they buy online. This suggests that, online, women's attitudes become more similar to men's. For men, the importance of functional factors is amplified in shifting from brick-and-mortar buying to online shopping. For both sexes, financial considerations are more readily apparent than are emotional. Recently, Workman found that Korean women had a greater preference for touch shopping channels than men. Taken together, these findings indicate that gender plays a role in how consumers experience online shopping. Generally, men are more function and benefit oriented than women. As we have noted, consumers' experiences with online shopping are reflected in their overall satisfaction and their intention to purchase online again, and both of these are influenced by the benefits they perceive from the transaction. Based on existing confirmed differences, we propose that gender has moderating effects on these benefit oriented behavior, and we extend our original model by proposing:

**H7 (a).** Gender moderates the relationship between online consumers' perceived benefit and their overall satisfaction. Specifically, the positive relationship between perceived benefit and their overall satisfaction is stronger for male consumers than female consumers.

**H7 (b).** Gender moderates the relationship between online consumers' perceived benefit and their re-purchase intention. Specifically, the positive relationship between perceived benefit and their re-purchase intention is stronger for male consumers than female consumers [21].

## 6. Trust and Security in E-commerce

One of the major problems developing e-commerce is that despite of huge investments, its use is not accepted by users easily. One of the reasons is lack of trust customers have. For attracting and maintaining customers it is necessary to increase their understanding and knowledge of security and gain their trust. Trust is the center of online customer and lack of trust is one of the biggest obstacles for online business. Having sufficient knowledge about how to

create trust and its influencing factors help companies to create and manage trust. Companies' observation and understanding of online trust begins with confidential issues and evolves through time. Today trust is more than security and confidentiality and is a multi-dimensional issue with a complex structure and has important consequences. From untechnical point of view these dimensions are summarized in three categories:

- The trusted person's characteristics: factors which influence the person's tendency and therefore are related to psychological, personal, practical and cultural characteristics which influence person's trust in others.

- The trusting person's characteristics: factors which enable the trusting person to know if the other person is reliable base on a personal evaluation. Capability, charitably, and integrity of trusted person's opinion are recognized as trusting factors.

- Characteristics related to background: characteristics which are completely related to risk and vulnerability level, and of course are dependent on power balance in relationships, information symmetric dimension and possible alternatives for trusting person.

- Some people believe that trust is related to behavior. Nilsen believes real trust is gained by the company treatment with customers. Olsen says people trust others by attention to their behavior. Others feel trust is a cognitive option. Louis believes we choose cognitively who to trust in certain conditions and fields and make this choice based on evidence on reliability.

Trust is a vital factor in customer's supporting behavior. Successful business websites are those who can gain their customer's trust and the customers feel the minimum risk in transactions and technology development. Compared to traditional business, technology plays a more important role in online and electronic transactions because it is a mean for marketing without the presence of the vendor. Appearance, functionality and quality of services of online stores is the direct result of technical design which actually is related to business and marketing strategies. Therefore, marketing and technical trust is vital in the case of trust on web.

Security expressions are the information written for customers for operations and security solutions. Expressions about security specifications, data protection and confidentiality, security policies and other describing contents about security actions help users to have more correct understanding of secure online payment systems. These secure expressions should be available and comprehensive for users [22].

## 7. Data analysis and result

### Validity and reliability of measures

For data analysis, Harman's single-factor test was used to check for any common method variance (CMV) because several variables were collected from the same source. CMV refers to the amount of spurious covariance shared among variables because of the common method used in collecting data. Such method biases are problematic because the actual phenomenon under investigation becomes hard to differentiate from measurement artifacts [23]. Harman's single-factor test requires that all variables be entered together. It assumes that if all variables load on one factor accounting for all of the variance or one factor accounts for a majority of the variance, there is a high level of common method variance present. Therefore, we conducted exploratory factor analysis (EFA) and five factors resulted with an eigenvalue (EV) greater than 1.0 (Table 1). The variance explained ranged from 5.952% to 91.557% of the total [24]. This showed that there is no problem on CMV. We use latent constructs with multiple measurement items to explain the determinants of trust in C2C e-commerce. For estimating such models, we need to simultaneously consider both the measurement and structural components. Generally speaking, covariance-based structural equation models assume multivariate normal distributions. However, studies related to human belief, behavior, and attitude have repeatedly indicated that their measures might be skewed and might not meet the multivariate normality assumptions required by the covariance-based structural equation modeling techniques. As a result, one incorrectly identified structural path or one construct having weak measures might affect all other estimates throughout the covariance-based structural equation model [25]. Under such conditions, Chin, Peterson, and Brown (2008) recommend the use of Partial Least Squares (PLS) path modeling over the traditional covariance-based structural equation modeling approach since PLS employs a component-based approach for model estimation and it is not highly demanding on sample size and residual distribution. These reasons make the technique avoid inadmissible solutions and factor indeterminacy. Therefore, it is appropriate for researchers to use PLS path modeling when they try to estimate a larger complex model dealing with attitudes and behaviors. The model shown in Fig. 1 was analyzed using Smart PLS. Smart-PLS assesses the psychometric properties of the measurement model and estimates the parameters of the structural model taking into account the moderating latent constructs [26].

First, in accordance with the guidelines of Geffen et al. (2003), we conducted a PLS confirmatory analysis. The results show that items have much higher self-loadings than cross-loadings.

Second, in order to check that the measures used for the various constructs are reliable, we calculated composite

reliabilities. As shown in Table 1, the composite reliability scores are highly satisfactory. Composite reliability is similar to Cronbach's alpha. However, composite reliability score is superior to Cronbach's alpha measure of internal consistency since it uses the item loadings obtained within the theoretical model. Cronbach's alpha values for each construct were also estimated following the approach of Nunnally and Bernstein (1994). They range from 0.784 to 0.971, and all values are greater than the recommended value of 0.7, suggesting adequate measurement reliability.

Third, following Fornell and Larcker (1981), we estimated the average variance extracted (AVE) by each of the different latent constructs in Table 1. All latent constructs have an average variance extracted higher than 0.5 and it shows that all AVEs are greater than its correlations with other constructs. Fourth, in order to confirm that there is adequate discriminant validity among the various constructs, the correlations among the various latent constructs are reported in Table 1 as well. In the diagonal element of Table 1, we show the square root of AVEs (italic and bold region) by each of these latent constructs. As shown in Table 1, the square root of the average variance extracted by each of the latent variables is higher than the correlation between the latent variable and all the other latent variables. This demonstrates that the different latent variables extract a higher share of variance from their own indicators than from other latent variables. Since the measurement model is satisfactory, we can proceed to test the structural model. Next, we discuss the structural model results that are used to test our specified hypotheses [27].

## 8. Validation of the structural model

The path of the structural model was assessed. Each path (Fig. 1) corresponds to a hypothesis. Each hypothesis was tested by checking the sign, size, and statistical significance of the path coefficients ( $\beta$ ) between each latent variable and the dependent variable. The higher the path coefficient, the stronger the effect of a predictor latent variable on the dependent variable. The significance of the path coefficients was tested by checking the significance of the t value for each path coefficients. This was conducted using the bootstrapping function of the Smart-PLS 3.0 with 1000 resample. Table 2 shows the summary of the path results and the corresponding t values and estimated p value associated with each t value.

Table 2 shows that only one out of four paths is significant. The path coefficient of the path linking 'Third Party Recognition' to 'Trust in C2C e-commerce' (H4) is positively and statistically significant. Therefore, we found that TPR influences trust in C2C e-commerce. This study tried to find whether or not trust in C2C e-commerce will

depend on age or gender as control variables. Therefore, the sign, size, and statistical significance of the path coefficients ( $\beta$ ) between each latent variable and the dependent variable were checked, considering gender and age factor as control variables. According to the results (Tables 3 and 4), there were some different results among age. We found that TPR influenced trust in C2C e-commerce in people who are in their 20's and 30's while OTBS significantly influenced trust in C2C e-commerce in people who are older than 40. Therefore, H11 and H12 were supported. Table 4 shows the result of testing gender factor as a moderator on the relations between each latent variable and the dependent variable. According to the results, there was no different result between male and female. Therefore,

H5, H6, H7, and H8 were not supported. It means that trust in C2C e-commerce does not depend on gender.

**Table 3**  
Correlation matrix and AVEs for constructs.

Construct	Cronbach's $\alpha$	Composite reliability	EV	Mean	S.D.	Squared root of AVEs and correlation					
						AVE	NPT	PWSQ	OTBS	TPR	TRUST
NPT	0.971	0.932	7.33	4.78	1.65	0.606	<b>0.778</b>				
PWSQ	0.784	0.874	2.45	3.83	0.97	0.698	-0.196	<b>0.835</b>			
OTBS	0.951	0.968	3.78	4.60	1.67	0.910	-0.141	0.160	<b>0.954</b>		
TPR	0.955	0.978	1.07	4.76	2.25	0.957	-0.230	0.497	0.155	<b>0.978</b>	
TRUST	0.969	0.977	3.66	3.36	1.97	0.915	-0.136	0.496	0.188	0.799	<b>0.957</b>

**Table 2**  
e 4  
Results of structural model (Overall).

Path	Expected sign	Path coefficient ( $\beta$ )	t-value	Sig.	Relevant hypothesis
NPT → C2C TRUST	+	-0.069	1.113	0.133	H1 not supported
PWSQ → C2C TRUST	+	0.132	1.402	0.081	H2 not supported
OTBS → C2C TRUST	+	0.062	1.194	0.116	H3 not supported
TPR → C2C TRUST	+	0.740	7.847	0.000	H4 not supported

Adjusted  $R^2 = 0.643$ .

**Table 3**  
e 5  
Results of structural model with age factor.

Age	Path	Expected sign	Path coefficient ( $\beta$ )	t-value	Sig.	Relevant hypothesis
20's *Adjusted $R^2 = 0.643$ , * $p = 0.000$	NPT → C2C TRUST	+	-0.026	0.188	0.425	
	PWSQ → C2C TRUST	+	0.314	1.723	0.046	
	OTBS → C2C TRUST	+	0.030	0.321	0.374	
	TPR → C2C TRUST	+	0.644	3.944	0.000	
30's *Adjusted $R^2 = 0.878$ , * $p = 0.000$	NPT → C2C TRUST	+	-0.021	0.144	0.443	H9 not supported H10, H11, and H12 supported
	PWSQ → C2C TRUST	+	0.103	0.770	0.221	
	OTBS → C2C TRUST	+	0.084	1.067	0.143	
	TPR → C2C TRUST	+	0.983	10.029	0.000	
Over 40 *Adjusted $R^2 = 0.661$ , * $p = 0.000$	NPT → C2C TRUST	+	-0.105	0.841	0.200	
	PWSQ → C2C TRUST	+	0.071	0.506	0.306	
	OTBS → C2C TRUST	+	0.756	3.936	0.000	
	TPR → C2C TRUST	+	0.023	0.102	0.460	

**Table 4**  
e 6  
Results of structural model with gender factor.

Gender	Path	Expected sign	Path coefficient ( $\beta$ )	t-value	Sig.	Relevant hypothesis
Male *Adjusted $R^2 = 0.615$ , * $p = 0.000$	NPT → C2C TRUST	+	-0.124	1.184	0.118	H5, H6, H7, and H8 not supported
	PWSQ → C2C TRUST	+	0.284	1.616	0.053	
	OTBS → C2C TRUST	+	0.002	0.029	0.489	
	TPR → C2C TRUST	+	0.580	3.532	0.000	
Female *Adjusted $R^2 = 0.692$ , * $p = 0.000$	NPT → C2C TRUST	+	-0.023	0.243	0.404	
	PWSQ → C2C TRUST	+	0.073	0.666	0.253	
	OTBS → C2C TRUST	+	0.061	0.786	0.216	
	TPR → C2C TRUST	+	0.809	7.527	0.000	

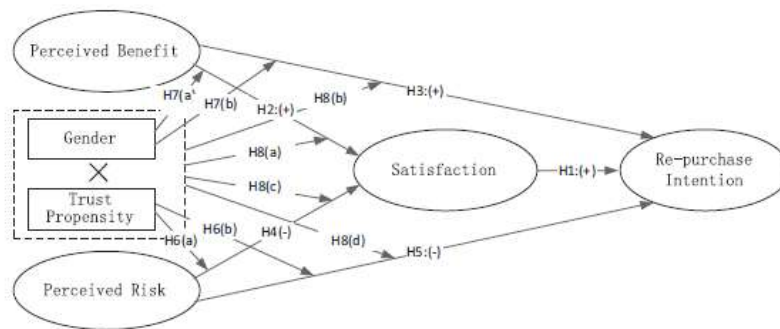


Fig. 1. Proposed research model with all moderating effects included.

## 9. Conclusions, limitations and directions for future research

In this study, we found that only TPR influenced trust in C2C e-commerce in general. Our findings from wide range of ages supported the previous research by K. Jones and Leonard (2008). However, as far as those who are over 40 years of age go, OTBS influences trust in C2C e-commerce while both PWSQ and TPR influenced trust in C2C e-commerce in people who are in their 20's and only TPR influenced trust in C2C e-commerce in people who are in their 30's. Therefore, we found that trust in C2C e-commerce depends on age factor. Website managers related to C2C e-commerce should focus on website quality and third party recognition in order to improve trust and their transaction volume. Moreover, they have to make a different strategy based on age to increase online purchases by consumers. This study is not without limitations. In this study, we selected residents living in the city of Columbia, Missouri for the sample population. However, a different group such as residents living in a large city may yield different results. In the future, research may be extended by selecting samples from wider areas including both large cities and small towns. The other limitation is that buyers and sellers were not separated in the analysis, that is, both buyer and sellers of C2C e-commerce were evaluated together in this study. In the sample size, there were more buyers than sellers of C2C e-commerce. Through a separation of these two groups in a future study, we may obtain different results [28].

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