An Empirical Study on the Adoption of Consumer-to-Consumer E-commerce: Integrating the UTAUT Model and the Initial Trust Model

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Abstract. With the ever-increasing internet penetration in Ghana, e-commerce development seems to be on the ascendency. However, users are reluctant to patronize these online sites due to the lack of trust. While literature is inundated with numerous B2B and B2C e-commerce studies, little is known about C2C e-commerce. Thus, our study contributes to the e-commerce literature, seeking to extend knowledge by integrating the Unified Theory of Acceptance and Use of Technology (UTAUT) model with the Initial Trust Model (ITM) to explore user adoption of C2C e-commerce in an emerging market. Data was collected from 193 university students who have had some experience with some Ghanaian C2C websites and analyzed using the Partial Least Squares approach to Structural Equation Modelling (PLS-SEM). Results from the model showed that Performance Expectancy had the most significant effect on Behavioral Intention, followed by Trust. Behavioral Intention was also found to significantly predict Actual Usage. In all, our model accounted for about 51% of the variability in Actual Use. The proposed model is useful in understanding trust in the C2C context. Results from this work could inform strategies to be taken by these C2C websites to attract visitors to such websites.

Keywords: E-commerce · PLS-SEM · UTAUT · ITM · Structural assurance Situational normality · C2C

1 Introduction

The increasing internet penetration rate in Ghana is opening avenues for businesses and individuals to transact businesses online. E-commerce affords users (sellers and buyers) a 24-hour access to the storefront from any location. Even though e-commerce offers

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some great advantages to shoppers, recent research shows that due to the space and time separation between the buyer and the seller, trust has become an important issue [1, 2].

There are mainly three e-commerce business models: Business-to-Business (B2B), Business-to-Customer (B2C) and Consumer-to-Consumer (C2C). C2C e-commerce is a type of e-commerce that allows individuals to come together to buy and sell goods/services through a third party platform provider. C2C is fast becoming the most popular form of electronic commerce. In China, C2C e-commerce accounted for about 64% of all online shopping transactions in 2013 [3]. The platform providers often play an inactive role in the transaction, only mediating the transaction between the seller and the buyer. Unlike B2B and B2C where the business host its own platform, the platform for C2C is hosted by a third party and hence trust in C2C becomes a major issue. Issues of trust range from buyers not being able to hold the platform provider responsible for any inappropriate products sold to the buyer and the inability to return the products or receive a refund. As more and more individual consumers buy from and sell to other individual consumers, it is imperative to understand consumers' purchasing and selling behaviors in relation with trust and other factors that influence them to participate in C2C transactions.

Sustaining C2C business is important since C2C providers face intense competitive pressure as their website and ideas can easily be replicated by competitors [4]. In addition, the entry barriers for other providers and switching cost for sellers who advertise on the platform is low. Although the C2C market is the fastest growing, only a few studies have investigated the motives for adopting this e-commerce model. Additionally most research in this area have concentrated on developed countries. Hence, by integrating the Unified Theory of Acceptance and Use of Technology [5] and the Initial Trust Model [6] our study seeks to identify the factors that influence a user's decision to adopt C2C e-commerce in an emerging market.

2 Literature Review and Hypotheses Development

2.1 C2C E-commerce

E-commerce relates to buying and selling through electronic means, using web-based and other related technologies to support necessary activities for firms to perform effectively [7]. E-commerce facilitates shopping 24/7, anywhere, anytime, and all year round. In recent times due to increasing access to the web, potential for cost-savings and availability of a limitless selection of products and services, C2C has grown in popularity. In 2013, C2C sales were responsible for about 64% of the online shopping market in China [3].

Whereas B2C transactions involve well established businesses, same cannot be said of C2C. B2C online businesses have policies that protect customers that are not satisfied with the products they buy [2]. C2C on the other hand cannot promise such protection since the third party listing website or forum only provides a platform for buyers and sellers to interact but does not have any control over the seller [8]. As more

people resort to C2C, it is important to understand issues that relate to trust and consumer behavior in this segment.

2.2 The Unified Theory of Acceptance and Use of Technology (UTAUT) Model

In a bid to improve the predictive power of technology adoption models, Venkatesh et al. [5] examined eight previous models and came out with the UTAUT. The rationale for developing the UTAUT model stemmed from the fact that variables from the previous models were similar and therefore, it was logical to map and integrate them to create a unified model [5]. The UTAUT model proposes four key constructs namely; performance expectancy, effort expectancy, social influence, and facilitating conditions. The model postulates that these four key constructs significantly influence behavioral intention and ultimately actual use behavior. The UTAUT model has drawn the attention of many scholars and has been applied to a varied number of technological innovation under different settings including, including internet banking [9, 10], mobile banking [11], e-governance [12], and e-learning [13].

Performance Expectancy (PE). In our study, we define performance expectancy as user's perception of outcome improvement after adopting a new technology. It is expected that user's perception of how C2C retailing websites would improve shopping convenience, and efficiency has an influence on user's adoption intentions. Previous studies have affirmed significant relationship between performance expectancy and technology adoption [14, 15]. We therefore posit that:

H_1: Performance expectancy positively affects behavioral intention
H_2: Performance expectancy positively affects trust

Effort Expectancy (EE). Effort expectancy connotes the degree of ease associated with using a system. In-built systems complexity deter adoption. Hence, when a user feels that buying and selling online is easy and it does not require specialized mental and physical efforts, then effort expectancy becomes a strong predictor of intention to use C2C. Empirically, the link between effort expectancy and behavioral intention has been supported by many authors [9, 14, 16]. In line with this, we posit that:

H_3: Effort expectancy positively affects behavioral intention

Social Influence (SI). Social influence is the degree to which an individual's intention to adopt a technological innovation is influenced by referent others [16]. Users/potential users are more likely to adopt a new technological innovation when important people like family members, friends and colleagues advise them to do so. There have been some mixed findings in the literature on the effect of social influence on behavioral intentions. Previous researchers have shown that social influence has a significant effect on behavioral intention [5, 16]. For example, Lian and Yen [17] found social influence to significantly affect intention among both old and young online

shoppers. However, in a study of user acceptance of mobile wallet, Shin [18] found no support for the relationship between social influence and behavioral intention. In view of this we propose:

H_4: Social influence positively affects behavioral intention.

Facilitating Conditions (FC). According to Venkatesh et al. [5], facilitation conditions relate to consumer's perception about the existence of resources and support system to promote the use of technology. If users believe that there exists adequate resources, help-lines, and support services (both organizational support and technical infrastructure), they would be more likely to adopt. Thus, if users are not in a position to provide the necessary resources (financial, software and hardware) and its associated know-how, they will most likely not adopt C2C e-commerce. Hence, we hypothesize that:

H_5: Facilitating conditions positively affects actual use.

Behavioral Intention (BI). This construct is derived from the Theory of Planned Behavior, which posits that an individual's behavior is driven by his/her intention to engage in that behavior. A number of studies have found behavioral intention to be a strong predictor of actual use [5, 19]. In line with previous research we expect behavioral intention to have a positive influence on the actual use of C2C website and therefore propose the following:

H_6: Behavioral intention positively affects actual use.

2.3 Initial Trust and Its Antecedents

The inability of consumers to touch and inspect products as well as the lack of cues such as body gestures, the tone of voice, facial expressions, etc. makes trust an important issue in e-commerce. In B2C e-commerce, vendors may protect consumers with return or refund policies and warranties. Unfortunately, this is not the case for C2C since the C2C platform provider is only responsible for creating a platform for buyers and sellers to interact and does not play an active role in the transaction.

In B2C trust is built over time through the consumer's experiences developed from using the B2C website, e-WoM and the reputation of the B2C vendor. In contrast to B2C, trust in C2C website is based on the initial interaction the buyer has with the seller on the platform and not experiences since no relationship would have been formed yet between the buyer and the seller. In the context of e-commerce, McKnight et al. [20] proposed a typology of trust which included the following: dispositional trust, institutional trust, and interpersonal trust. In this study, we concentrate on institutional trust. Institutional trust can be decomposed into two components – situational normality and structural assurance.

Situational Normality (SN). Situational normality is belief that the environment is in order and that success is likely because the situation is normal [20]. Consumers are expected to have high trust in the website if they believe that the nature of the transaction and the information required from them by the C2C website is what they expect. On the other hand, consumers are likely to develop distrust towards the website if the

interface is suspicious or are required to go through procedures that are atypical. We therefore hypothesize that:

H_7: Situational normality of website positively influences the user's initial trust in C2C e-commerce website.

Structural Assurance (SA). Structural assurance is the belief that structures like guarantees, regulations, promises, legal recourse are in place to support success [21, 22]. Consumers are likely to develop trust in the website if they believe that there are enough safeguards, legal structures and technological features that support the success of their online transactions. In the C2C e-commerce environment where there is little direct interaction with the seller, structural assurance is expected to play an important role in the trust building process. Thus,

H_8: Structural assurances positively influence the user's initial trust in C2C e-commerce website

Initial Trust (TRST). Previous research in e-commerce shows a positive relationship between trust in websites and behavioral intention to engage in transactions on the website [23]. Trust can be categorized as initial trust and continuance trust [23]. Initial trust is most applicable in the context of C2C e-commerce since users lack previous experience with the seller. Initial trust in the C2C website leads users to believe that the website has the ability to perform as expected. Once users develop trust, it is the expectation that they would have positive intentions towards adoption. Thus:

H_9: Initial trust positively influences the user's intention to adopt C2C e-commerce.

3 Methodology

3.1 Measurement Instrument

Items for Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions and Behavioral Intention were derived from Venkatesh et al. [5] Situational Normality was also derived from Gefen et al. [22], while the items used to measure Structural Assurance were derived from Kim et al. [24]. Items on Trust were also derived from Koufaris and Hampton-Sosa [25]. Finally Actual Use was measured with three items adapted from Kim [26]. All measurement items used in the current study were presented in English and measured using a 5-point Likert scale anchored between Strongly Disagree (1) and Strongly Agree (5).

3.2 Sample and Data Collection

Students from three private universities in Ghana were sampled and asked whether they had C2C e-commerce usage experience. Respondents who answered in the affirmative were given questionnaires to fill, using their previous experience in C2C e-commerce business. A total of 320 questionnaires were handed out. Out of this number, 221 were returned, representing a response rate of 69.1%. Of these responses, 28 were dropped

Table 1. Demographic information of the sample.

	Option	Percentage %
Gender	Male	52.8
	Female	47.2
Age	<20	18.5
	20–29	39.2
	30–39	32.6
	>39	9.7
Educational level	Undergraduate	58.7
	Graduate	41.3
Preferred C2C website	Kaymu.com	15.6
	Olx.com.gh	23.8
	Tisu.com	7.9
	Jumia.com.gh	19.5
	Tonaton.com	33.2

because they contained too many missing values. As a result, 193 valid responses were used for data analysis. Of the valid responses, 47.2% were females and 52.8% were males. Table 1 provides information on the demographic characteristics of respondents.

4 Analysis

4.1 Measurement Model

Reliability was assessed using both Cronbach's alpha (α) and composite reliability (CR). For variables to exhibit satisfactory levels of reliability, it is recommended that values for both Cronbach's alpha and Composite Reliability must be above 0.7 [27].

Table 2. Results for testing reliability and convergent validity.

Construct	Item	Std. Loading	*t*-Statistics	AVE	CR	α
Behavioral intention	BI1	0.931	79.80	**0.867**	**0.951**	**0.923**
	BI2	0.942	102.77			
	BI3	0.921	61.46			
Effort expectancy	EE1	0.856	26.68	**0.748**	**0.922**	**0.888**
	EE2	0.878	33.64			
	EE3	0.860	26.58			
	EE4	0.866	41.41			
Facilitating conditions	FC1	0.898	50.45	**0.724**	**0.887**	**0.81**
	FC2	0.836	23.90			
	FC3	0.816	23.39			

(*continued*)

Table 2. (*continued*)

Construct	Item	Std. Loading	*t*- Statistics	AVE	CR	α
Performance expectancy	PE1	0.884	41.97	**0.781**	**0.934**	**0.907**
	PE2	0.889	46.53			
	PE3	0.870	37.13			
	PE4	0.891	47.93			
Structural assurance	SA1	0.873	37.55	**0.717**	**0.91**	**0.868**
	SA2	0.849	32.69			
	SA3	0.864	34.29			
	SA4	0.800	21.77			
Situational normality	SN1	0.866	34.85	**0.764**	**0.907**	**0.846**
	SN2	0.892	47.57			
	SN3	0.863	36.09			
Social influence	SI1	0.919	26.24	**0.821**	**0.902**	**0.783**
	SI2	0.893	26.63			
Trust	TRST1	0.889	54.24	**0.809**	**0.927**	**0.882**
	TRST2	0.901	59.24			
	TRST3	0.908	67.56			
Actual use	USE1	0.944	123.23	**0.876**	**0.955**	**0.929**
	USE2	0.933	90.01			
	USE3	0.931	76.74			

From Table 2, it is evident that all constructs are reliable. Convergent validity is assessed with average variance extracted (AVE) measure and factor loadings of items. Variables with AVE greater than 0.5 are seen to have satisfactory levels of convergent validity [27]. From Table 2, it can be seen that AVE for each construct is above 0.5 indicating that our measurement model exhibits good convergent validity.

Table 3. Test for discriminant validity using the Fornell- Larcker criterion

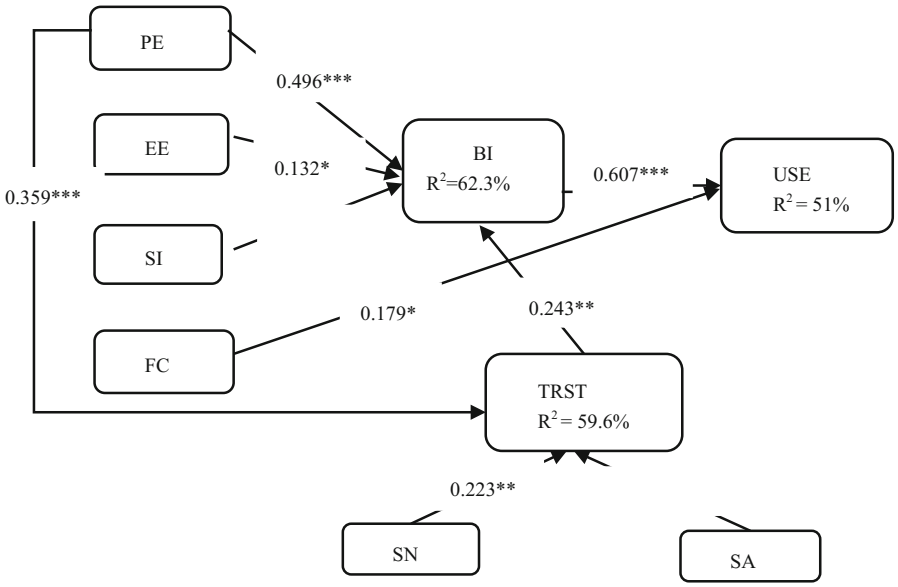
	USE	BI	EE	FC	PE	SN	SI	SA	TRST
USE	**0.936**								
BI	0.697	**0.931**							
EE	0.633	0.596	**0.865**						
FC	0.483	0.500	0.630	**0.851**					
PE	0.449	0.516	0.586	0.510	**0.804**				
SN	0.566	0.589	0.527	0.391	0.470	**0.874**			
SI	0.33	0.349	0.319	0.28	0.326	0.326	**0.906**		
SA	0.600	0.520	0.389	0.268	0.322	0.605	0.329	**0.847**	
TRST	0.766	0.655	0.587	0.561	0.449	0.643	0.348	0.642	**0.899**

Note: Square root of average variance extracted (AVEs) are shown on diagonal and off-diagonals are inter-construct correlations.

Discriminant validity on the other hand was assessed using the Fornell- Larker criterion [28]. According to this Fornell and Larcker [28] discriminant validity is exhibited when the AVE of each latent construct is greater than the squared correlations between any other construct. Evidence of discriminant validity is presented in Table 3. Based on our results, we conclude good psychometric properties for our latent constructs.

4.2 Structural Model

Once the measurement model has been shown to be reliable and valid, the structural model can then be assessed. Using a bootstrap resampling procedure with 5000 subsamples drawn with replacements from the initial sample of 193 samples, the significance of the path coefficients was tested. We found Performance Expectancy ($\beta = 0.496$, $p < 0.001$) to have the most significant effect on Behavioral Intention, providing support for H_1. In support for H_3, Effort Expectancy ($\beta = 0.132$, $p < 0.05$) was found to predict Behavioral Intention. Social Influence ($\beta = 0.037$, $p > 0.1$) was however found not to be a significant predictor of Behavioral Intention. Trust ($\beta = 0.243$, $p < 0.01$) was found to be the second most significant predictor of Behavioral Intention. In all, our model was able to account for 62.3% of the variability in Behavioral Intention. Performance Expectancy ($\beta = 0.359$, $p < 0.001$), Situational Normality ($\beta = 0.223$, $p < 0.01$), and Structural Assurance ($\beta = 0.343$, $p < 0.001$)



*** Significant at $p = 0.001$ **; significant at $p = 0.01$; *significant at $p = 0.05$; ns not significant

Fig. 1. PLS results for structural model

Table 4. Path coefficients and their significance

Hypotheses	Path	Path coefficient	t-Statistics	p-values	Results
H_1	PE→BI	0.496***	6.772	0.000	Supported
H_2	PE→TRST	0.359***	6.010	0.000	Supported
H_3	EE→BI	0.132*	2.156	0.031	Supported
H_4	SI→BI	0.037 ns	0.736	0.462	Not supported
H_5	FC→USE	0.179*	2.585	0.010	Supported
H_6	BI→USE	0.607***	10.386	0.000	Supported
H_7	SN→TRST	0.223**	3.204	0.001	Supported
H_8	SA→TRST	0.343***	5.152	0.000	Supported
H_9	TRST→BI	0.243**	3.314	0.001	Supported

*** significant at $p = 0.001$; ** significant at $p = 0.01$; *significant at $p = 0.05$; ns not significant

were found to be significant predictors of Initial Trust, providing support for H_2, H_7 and H_8 respectively. These variables jointly explained about 59.6% of the variability in trust. As expected, Behavioral Intention ($\beta = 0.607$, $p < 0.001$) was found to be a significant predictor of Actual Use. Besides, Facilitating Conditions ($\beta = 0.179$, $p < 0.05$) was also found to be a significant predictor of Actual Use. Both Facilitating Conditions and Behavioral Intention accounted for 51% of the variability in Actual Use. Results for the structural model assessment are presented in Table 4 and Fig. 1.

5 Discussion and Implications

Of the UTAUT constructs, performance expectancy was found to have the strongest effect on behavioral intention to adopt C2C e-commerce websites as established in the literature [11]. C2C platform providers should therefore strive at developing more user-friendly interfaces that would meet the performance expectations of their customers. While most of the C2C providers do not allow the use of credit or debit cards, the inclusion of this feature would go a long way to improving the users' perception of the usefulness of the C2C websites. Consistent with Venkatesh et al. [16], the study found effort expectancy to be a significant predictor of behavioral intention. This implies that if users found the C2C easy to navigate they were more likely to form positive behavioral intention towards the adoption of the platform. Our results could be due to the fact that our sample was drawn from young university students who are technology savvy. Our study did not find social influence to be a significant predictor of behavioral intention. A plausible reason for this insignificant relationship is that, e-commerce transactions are personal and since users would not want to lose their privacy in such transactions, the need to impress peers and others who are important to the user is overshadowed by the need to keep the transactions confidential.

Structural assurance and situational normality were found to have a strong effect on initial trust. This result is consistent with numerous studies in the IT adoption literature [11, 21, 29]. In C2C, trust becomes an important issue since the chance of returning

items bought is non-existent. Platform providers could improve trust by improving the quality of their website as this would enhance users' perception of situational normality. Because there are currently no specific laws for internet-based fraud in Ghana, users may be skeptical in adopting C2C e-commerce if they feel that the legal framework for online shopping is not well developed to address their concerns should they encounter one. Also, since trust is based on the ability of the service provider, users who find the website useful in their online purchases would develop trust in the system. As is the case with previous research [16], our study also found support for the link between behavioral intention and actual use and that it was stronger than the link between facilitating conditions and actual use. Altogether, facilitating conditions and behavioral intention accounted for 51% of the variability in actual use. Based on the findings, we argue that, when users have a behavioral intention to adopt and the facilitating conditions such as support from friends and technical infrastructure are present, they would want to adopt C2C e-commerce websites.

From a theoretical perspective, this study makes several important contributions to the body of knowledge. First, this study synergistically integrates two theories in information systems research; the UTAUT model and the Initial Trust model to predict user adoption of C2C e-commerce websites in an emerging market. In addition to the significant direct effect that performance expectancy has on behavioral intention, performance expectancy was also found to have an indirect effect through trust. This suggests that intrinsic factors such as trust should be incorporated into models of adoption.

Results from our analysis suggest that performance expectancy is the most significant predictor of behavioral intention. Since consumers cannot verify the quality of the products sold on these C2C e-commerce websites, managers must design their websites to reflect the quality of the product being sold and also manage the evidence of quality as presented by the seller. A well-designed website would also reduce the uncertainties associated with online purchases and improve trust in the system. It will also reduce the time effort used to navigate the platform thereby improving users' perception of effort expectancy.

Results from the study also show that initial trust is a strong predictor of usage intention. Thus, it is important for platform providers to find ways of improving initial trust that potential users have in the system. This could be achieved by focusing in on the antecedents of trust. Platform providers should devote much effort to designing quality websites as it would improve users' perception of situational normality. Platform providers should strive to develop websites that are usable since usability reduces the risks of uncertainty thereby increasing the trust that users have in the system. To improve the interaction between the sell and buyer and build trust, the platform providers could also include an instant message feature on their websites.

5.1 Limitations

Firstly, while our research participants reflect a fairly typical band of actual users of C2C e-commerce, they may not be representative of all C2C e-commerce users. It is therefore important to be cautious in generalizing these results. Secondly, the authors did not consider the moderating effects of demographic variables such as age and

gender, in future research it would be interesting to examine the effects of these variables. Thirdly, the authors made no distinction between sellers and buyers on the C2C e-commerce platform. Finally, the study used cross-sectional data, further research could employ longitudinal data. It would be particularly interesting to explore how the effect of trust on behavioral intention will change with time.

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