

Consumer to Consumer (C2C) Online Auction Transaction Intentions: an Application of the Theory of Planned Behaviour

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Abstract

There has been a dramatic growth of individuals using online auctions especially within Consumer-to-Consumer (C2C) e-commerce coupled with increasing academic attention to behaviour in the online environments. Literature has identified the influence of attitudes, perceptions, trust and security on individual's online auction transaction intentions and behaviours. The aim of this study, therefore, was to predict and understand individuals online auction transaction intentions and behaviours through the application of the Theory of Planned Behaviour (TPB). Three hundred and seventy-two respondents completed the survey within two geographical regions. Findings reported that attitudes, self-efficacy and trust significantly influenced intentions; while intentions and self-efficacy significantly influenced online auction behaviours. Interestingly, social pressures, perceived control and security failed to have any influence. Overall, the study provided greater insight into which salient drivers influence transaction behaviours and intentions.

Keywords: Consumer behaviour; Theory of Planned Behaviour; Attitudes; Online auctions; Trust; Security

Summary statement of contributions

The discovery of attitudes, personal abilities, trust and intentions as influential factors within the current research further highlights the need for online auction site marketing messages that emphasise aspects, like convenience and ease of use, while enhancing consumer confidence in the service provider. The attitude and satisfaction related variables identified in the current research are invaluable in terms of attracting new online auction site consumers, and retaining the existing consumer base.

Introduction

The overall aim of this study is to examine the antecedents of online auction purchasing and selling transactions through an application of the Theory of Planned Behaviour model (TPB: Ajzen, 1991) with the addition of both trust (Delafrooz, Paim and Khatibi, 2011) and security (Abbass and Ibrahim, 2011) factors. The medium of e-commerce is becoming more important with the numbers of online buyers and sellers increasing over the past number of years (Rauniar *et al.*, 2009; Xu, Lin and Shao, 2010; Leonard, 2012). Furthermore, the success of customer-to-customer (C2C) transactions has grown over the past number of years and particularly in the area of online auctions (Chu and Liao, 2007). Online auctions such as eBay account for millions of transactions each day (Roggio, 2012; Armitstead, 2013; Music Trades Corporation, 2016). With high volumes of online auction transactions the issue, therefore, is not of how successful online auctions are, but rather to understand the salient influences that drive consumers to buy and sell in these marketplaces.

Conceptual model development

Consumers behave in different ways and are influenced by various stimuli which in turn influence their purchasing motivations, intentions and behaviours (Davidson, 2011); and understanding the role that these play is important for firms (Jack and Powers, 2013). The consumer behaviour process consists of several interlinked stages where consumers undertake a number of activities in relation to a purchase, such as information gathering and evaluation of purchase options and overall purchase (Engel, Kollatt and Blackwell, 1993; Gabbott and Hogg, 1998; Davidson, 2011). Numerous conceptual models have been developed to better understand this consumer behaviour process. Ajzen (2015) identifies both the Multi-Attribute Decision-Making (MADM) and the Subjective Expected Utility (SEU) approaches that have been applied to understand the decision-making of consumers. Within these approaches the consumer rates competing brands by their attributes, and inferences are made then about their choices. However, these approaches do not consider the role of social influences that can inform consumer's choices; for example, brand attributes presented may not be realistic or relevant to consumer choice due to various social influences (Ajzen, 2015). These models are more applicable to understanding choices around products or brands available online rather than consumer motivations, intentions and purchasing.

There is one theoretical model which measures not only consumers' purchasing behaviours but also their intentions and motivations: this model is the TPB (Ajzen, 1991, 2002, 2011). Applying a theoretical framework model such as Ajzen's (1991) TPB would provide an integrated understanding of consumer's decisions and purchasing within an online auction. The TPB posits that consumer behaviours and decisions are influenced by motivations such as attitudes towards the behaviour, subjective-norm (SN) and perceived behaviour control (PBC: Ajzen, 1991, 2011). Within the theory, consumer behaviour can be influenced by the level of readiness, intention the individual holds in carrying out the behaviour, and the level of perceived behavioural control over carrying out the behaviour. Predicting purchasing intentions can be dependent on the strength of the consumer's attitudes, possible social pressures as measured through SN, and their PBC. Each of these motivational factors, and their role within the model, are addressed in the following sections.

Motivations to use online auctions

The increasing popularity of online auction marketplaces is due to several motivating factors that positively influence consumer attitudes, beliefs and experiences. Studies have identified key factors that influence attitudes towards online auctions; for instance, convenience (Burke, 1998; Li, Chung and Fiore 2017) and ease to locate products (Weinberg and Davis, 2005). Evidence suggests that those who believe online auctions are a more convenient way to shop, as they can easily find what they want to purchase or bid on, were likely to use the service more. In addition, consumers emphasise the importance of having a good experience while bidding during an auction (Saputra, Warokka and Naruephai, 2012). Thus, online auctions provide consumers with a convenient, easy and enjoyable way to purchase online. However further emphasis should be placed on the attitude-intention relationship (Ajzen, 2015; Schlaegel, 2015) and how attitudes influence transaction intentions (Schlaegel, 2015). Therefore, the current study tests the following hypothesis:

H1 Favourable attitudes will positively influence intentions to use online auctions

Previous literature has highlighted the importance of social motivations for online customers (Hou and Elliott, 2016; Li, Chung and Fiore, 2017): online consumers' enjoyment of their shopping experience due to their social interactions with other shoppers, family and friends (Hou and Elliott, 2016). So, the online purchasing process is not an isolating experience for many but rather one with much interpersonal communication, which in turn influences the consumer's perception of the website (Li, Chung and Fiore, 2017). Considering the present research, the role of social influences is viewed as a motivational factor to engage (Ajzen, 1991); social influences are measured by SN. According to Ajzen (1991), SN is the amount of influence the individual feels either to engage or not with the intended behaviour; thus, positive social influences would be more associated with increased likelihood to engage with online purchasing (Parsons, 2002; Rohm and Swaminathan, 2004). Recently, Lim *et al.* (2016) and Hasbullah *et al.* (2016) report that SN had a significant role in predicting online purchasing intentions. In both instances, consumers who had taken on the favourable views of others were more likely to purchase compared to those who did not. However, not all research is consistent

with this; others have reported that the role of SN does not account for any influence on online auction purchase intentions (Huang *et al.*, 2011). Thus, with such inconsistencies within the literature the current study explores the possible role of SN in predicting online auction intentions. Therefore, the current study tests the following hypothesis:

H2 Favourable SN views will positively influence intentions to use online auctions

Evidence reports that PBC has an important role in predicting consumers' intended use of online auctions (Bosnjak, Obermeier and Tuten, 2006; Huang *et al.*, 2011), suggesting that those consumers receiving more encouragement have greater intentions to use online auction sites. Though PBC influences behaviour as well as intentions, not all research has shown this to be consistent (Bosnjak, Obermeier and Tuten, 2006). Bosnjak, Obermeier and Tuten (2006) report that PBC influences consumer intentions but not the number of bids they placed online; suggesting a further investigation of the PBC-behaviour relationship. Interestingly, Chen *et al.*, (2007) when suggesting future research in relation to online auctions, stated that consumer's capabilities and self-efficacy should be taken into consideration. Similarly, Ajzen (1991) suggests that PBC can comprise of two distinct dimensions. Evidence suggests that internal (self-efficacy) and external (perceived) control may be related but not necessarily synonymous constructs (Terry and O'Leary, 1995; Conner and Armitage, 1998), but rather distinct (Lunardo, 2011). Self-efficacy focuses on individual internal abilities that may influence decisions to carry out the behaviour while perceived control takes into account the number of perceived barriers to overcome to carry out the behaviour (Terry and O'Leary, 1995; Armitage and Conner, 1999; Lunardo, 2011). Rather than just use both these terms interchangeably, it's important to provide clarification on the role of self-efficacy and perceived control in predicting consumer intentions and usage of online auctions. Based on this, four hypotheses are formulated:

H3 Increased levels of self-efficacy will positively influence intentions to use online auctions

H4 Increased levels of self-efficacy will positively influence frequency of online auction transactions

H5 Increased levels of perceived control will positively influence intentions to use online auctions

H6 Increased levels of perceived control will positively influence frequency of online auction transactions

Not only is it important to understand the role of control factors in predicting online auction use intentions and behaviours, but there is also a need to further understand user intentions to purchase (Abbass and Ibrahim, 2011). Not all previous research explores the link between intentions to use online and actual usage; some have only examined the antecedents of intentions (Huang *et al.*, 2011). However, one recent meta-analytic study of online auctions reports the important role of intentions in

predicting online auction usage but it recommended that more research needs to be conducted exploring the role of motivational factors and intentions on behaviours (Schlaegel, 2015). The TPB (Ajzen, 1991) theory provides a valuable approach to understanding these links. The theory proposes that increased intentions link to greater likelihood the individual will carry out the behaviour (Ajzen, 2015). Thus those consumers who express stronger intentions will be more likely to engage in online auction transactions. To explore the influence of intentions on behaviour, the following hypothesis is formulated:

H7 Favourable intentions will influence more frequent online auction transactions

Past research has successfully demonstrated the utility of the TPB model in explaining various online intentions and behaviours such as online trading intentions (Gopi and Ramayah, 2007), banking adoption (Lee, 2009), internet banking (Sanayei and Bahmani, 2012), self-protection intentions around online privacy (Yao and Linz, 2008), online shopping behaviours (Hsu *et al.*, 2006; Pavlou and Fygenson, 2006; Hansen, 2008; Huang *et al.*, 2011; Schlaegel, 2015) and behaviour (King, Dennis and Wright, 2008; Schlaegel, 2015). However, applying an expanded TPB (Ajzen, 1991) approach to understand online auction behaviours such as to sell or buy a product has been quite limited. Despite the limited application of Theory of Planned Behaviour to explain the influences on online auction behaviour, its merit and value as a tool to examine and explain behaviour is evident and longstanding (Schlaegel, 2015). Similarly, alternative online auction research has investigated intentions to use online auctions (Chen *et al.*, 2007; Yen and Lu, 2008a, 2008b; Chiu *et al.*, 2009; Huang *et al.*, 2011) but also importantly the role of trust (Schlaegel, 2015) and security (Chen *et al.*, 2007). The current study examines an expanded TPB model with the additional constructs of trust and security.

Trust and security in online transactions

Over the past few years there has been a growth in online auctions which are also central points for customer-to-customer (C2C) e-commerce (Leonard, 2012; Lu and Lin, 2012). Unlike B2C, where transactions are generally conducted online directly between the retailers and the customer, C2C online auctions are done between the buyer and seller with the auction site overseeing the transaction. B2C online transactions are dyadic (seller and buyer) while C2C are triadic (seller, buyer and auction site) and trust would be placed differently within the transaction relationship. In B2C transactions the buyer is directly dealing with the retailer, a two-party transaction, where the buyer is the weaker party. In addition, the buyer would be aware of the reputation of the seller. However, in C2C e-commerce auction transactions the buyer and seller are relatively unknown to each other even when taking into account other user reviews of past behaviour; this is referred to as information asymmetry (Chiu, Huang and Yen, 2010). Consumers' perceptions of risk associated with online marketplaces and variable knowledge of sellers impacts their social interactions with online auctions. Thus this online transaction is based on trust, for example for customers there is the expectation that the product they bought arrives in an appropriate condition (Schlaegel, 2015). However, untrustworthy sellers could exploit information asymmetry to serve themselves by misrepresenting the condition of the product.

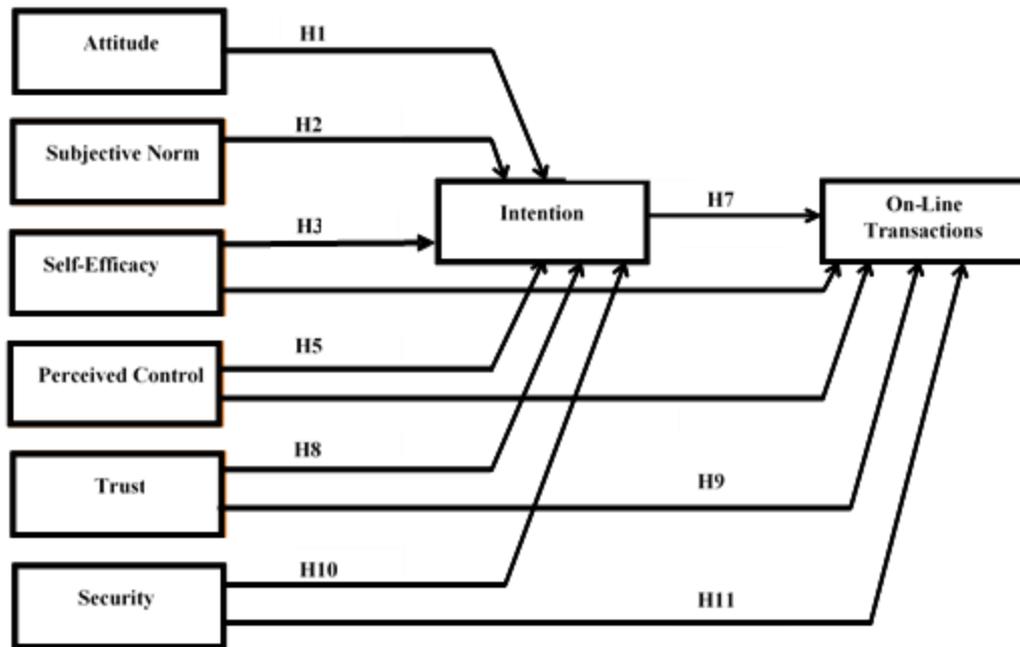
Trust enhances purchase intentions and customer retention (Gefen and Straub, 2004), and its influence is not underestimated (Chen and Barnes, 2007; Chiu, Huang and Yen, 2010). Therefore, trust can ultimately affect the relationship between e-consumers and online providers (Gefen, Karahanna and Straub, 2003; Koufaris and Hampton-Sosa, 2004). However, most research within the area of trust and online transactions has focused on B2C and not C2C (Shareef *et al.*, 2013). Furthermore, Wu, Cheng and Yen (2014) argue that there has been limited detailed investigation of trust in C2C online auctions.

Security factors surrounding the storage of personal information of users have been shown to have a significant role in the adoption or non-adoption of e-commerce (Yousafzai, Pallister and Foxall, 2003; Gregg and Walczak, 2008; Abdelghaffar and Moustafa, 2013). The role of trust and security within e-commerce transactions are related (Chellappa and Pavlou, 2002; Shareef *et al.*, 2013) not only to each other, but also with the attitudes of users towards the service (George, 2002), which impact on consumer transactions (Vijayasathy, 2004). The current study explores the role of trust and security further with the following hypotheses:

- H8 Perceptions of trust will positively influence intentions to use online auctions*
- H9 Perceptions of trust will positively influence frequency of online auction transactions*
- H10 More favourable perceptions of security will positively influence intentions to use online auctions*
- H11 More favourable perceptions of security will positively influence frequency of online auction transactions*

TPB research has provided important insights into understanding psychological motivations that underlie consumers' online auction intentions and behaviours (Pavlou and Fygenson, 2006; Huang *et al.*, 2011) while expanded TPB models have provided further insights relating to additional antecedents of intentions and behaviours (Schlaegel, 2015). Within the current research trust and security are included alongside attitudes, SN and control factors in an expanded TPB model, to further understand their influences on online intentions and behaviours. The expanded TPB model tested in the current study is represented in Figure 1.

Figure 1: Expanded TPB model examining online auction transactions with associated hypotheses



Method

Sample and procedure

Administration of the survey took place in two geographical locations within Northern Ireland and the Republic of Ireland to examine the robustness of the data over different national environments (Kautonen, van Gelderen, and Tornikoski, 2013). Due to the global presence of eBay the inclusion of more than one geographical region was an important aspect of this study. Participants in the study are representative of eBay UK (www.ebay.co.uk) and eBay Ireland (www.ebay.ie). Participants were recruited from a series of business events. All surveys were conducted in a face to face setting and contained an instruction sheet which explained how to complete the survey and semantic differential scales; additionally, all participants were informed they had the right to withdraw at any time. Statistical analysis employed IBM SPSS v22 for descriptive statistics, factor analysis and correlations and IBM AMOS v22 was used to test the hypothesised model. In total, there were three hundred and seventy-two ($N = 372$) participants who voluntarily took part in the survey; of which one hundred and fifty-four ($n = 154$) were males and one hundred and ninety-two ($n = 192$) were females. The average age was 24.59 years ($SD = 7.43$) for participants; with slightly more coming from a suburban ($n = 136$; 38.4%) background than urban ($n = 109$; 30.8%) or rural ($n = 109$; 30.8%) for those that responded. Most participants within the sample rated that they were buyers and sellers ($n = 149$; 41.6%) or sellers ($n = 143$; 39.9%) on the eBay auction site; however, fewer participants rated themselves either as just buyers ($n = 4$; 1.1%) or not using the service to buy or sell ($n = 62$; 17.3%).

Measures

The questionnaire was developed to measure those constructs contained within the original TPB (Ajzen, 2002) and the application of TPB (Armitage and Conner, 2001) models; following recommendations for questionnaire design as suggested by Ajzen (2015). As outlined by Ajzen (2002), direct predictors were assessed on seven-point semantic differential scales. An instructional sheet explaining the seven-point scale used was provided to the respondents. All statements were based on action, context, target and time elements. Higher scores represented more online service use, more favourable attitudes, positive social influence and more perceived behavioural control over using an online auction site.

Intention

This construct measured an individual's motivation to use a globally renowned and established online auction service, namely eBay. There were three statements posed at various points within the questionnaire, requiring respondents to think about the likelihood of using an online auction within the next month. For example: *'How likely are you to use eBay to buy/sell an item in the next month?'*

Attitude toward the behaviour

The direct measure of attitudes examined a respondent's affective feelings towards using an online auction service such as eBay using a set of six differential scale items; these included practical/impractical, complicated/uncomplicated, appealing/unappealing, good idea/bad idea, valuable/worthless and easy/difficult.

Subjective norm

At a direct level the measurement of subjective norm is the extent of how much importance the respondent views the role of *'significant others'* in their life in endorsing them to use an online auction site to buy or sell an item. Each respondent was asked to evaluate the following statement: *'Most people who I know think that using eBay to sell or purchase an item in the next month is a good idea?'*

Perceived behavioural control

In regard to perceived behavioural control (PBC), nine items were employed to measure a respondent's confidence in using an online auction site to buy or sell an item within the next month. These included: *'I would feel very confident to buy or sell an item on eBay within the next month'* and *'I feel that I have no control over the selling or buying of an item on eBay if I were to use it'*.

Trust and security

In the expansion of the TPB model, two additional variables were included. Firstly, trust in online auctions was measured by one item: *'I don't trust a service like eBay when purchasing or selling an item'*. The perception of security was also measured with one item: *'Providing personal information would discourage me from using eBay to buy or sell an item'*.

Behaviour

A respondent's frequency of eBay online auction behaviour was measured using one item. This item examined if the respondent had ever bought or sold something using an online auction site and was rated on an eight-point scale (*not at all – daily*).

Results

Exploratory factor analysis

Exploratory factor analysis (EFA) using maximum likelihood analysis with Direct Oblimin was used and factors with Eigenvalues over 1 were reported. Two factors emerged which accounted for 59.97% of variance (see Table 1). The results indicate that control perceptions in using an online auction site fall into two factors. Factor 1 would reflect confidence in an individual's ability to use an online auction site and can be referred to as self-efficacy, while Factor 2 reflected more perceived barriers or efforts regarding using an online auction site. This factor can be referred to as perceived control. Thus, this analysis suggests that the PBC element of this TPB model consists of two factors, self-efficacy and perceived control. The subsequent analyses include both these factors as separated rotated variables rather than one variable for PBC.

Table 1: Exploratory Factor Analysis of PBC Items

PBC items	Factor	
	1	2
<i>'I would find using eBay as pretty straight forward'</i>	.83	
<i>'I know I would have the ability to use eBay'</i>	.78	
<i>'I would feel very confident using eBay'</i>	.76	
<i>'I feel that I would encounter very few problems using eBay'</i>	.67	
<i>'It would be difficult for me to be able to receive items bought on eBay'</i>		.73
<i>'It would be difficult for me to be able to send items which I sold on eBay'</i>		.70
<i>'I feel that I don't have enough capability either to sell or purchase an item on eBay'</i>		.57
<i>I feel that I have no control over the selling or purchasing of an item on eBay'</i>		.51
<i>'I feel using eBay in the next month would take too much time'</i>		.50
Eigenvalues	3.72	1.68
Percentage of variance	41.34	18.62
Percentage of variance explained	59.97	

Descriptive and correlational analysis

Descriptive statistics for each of the TPB and behaviour measures employed in the current study are displayed in Table 2. Alpha coefficients were favourable (Kline, 2005). Overall in relation to use of online auction sites intentions ($M = 14.30$, $SD = 5.61$), attitudes ($M = 21.83$, $SD = 8.39$), self-efficacy ($M = 13.18$, $SD = 6.38$), perceived control ($M = 16.92$, $SD = 6.48$), security ($M = 4.39$, $SD = 1.85$) and trust ($M = 3.59$, $SD = 2.02$) were moderately favourable, while overall respondent behaviour ($M = 6.79$, $SD = 1.40$) reflected very frequent online auction site use. However, the average rating of SN ($M = 2.90$, $SD = 1.50$) was less favourable.

Zero-order correlations are also presented in Table 2 and it is evident that the strongest significant relationships with intentions to use the online auction site were with attitudes ($r = .73$, $p < .001$), self-efficacy ($r = .57$, $p < .001$) and trust ($r = .45$, $p < .001$). Furthermore, more moderate to weaker significant relationships with intentions were reported with the variables perceived control ($r = .31$, $p < .001$), SN and security ($r = .14$, $p = .011$). Lastly, behaviour was significantly related from strongly to moderately with intention ($r = .70$, $p < .001$), attitude ($r = .55$, $p < .001$), self-efficacy ($r = .50$, $p < .001$), trust ($r = .42$, $p < .001$) and perceived control ($r = .33$, $p < .001$) while SN ($r = .18$, $p = .001$) and security ($r = .14$, $p = .009$) were significantly, yet weakly, related. Lastly, each of the predictor variables were related to the each of the criterion variables of intention and behaviour, supporting further examination of relationships through path analysis.

Table 2: Descriptive and Inferential Statistics for Aggregate TPB Variables

	M	SD	Range	α	1	2	3	4	5	6	7	8
1. Intention	14.30	5.61	3-21	.87	----							
2. Attitude	21.83	8.39	6-42	.87	.73***	----						
3. SN	2.90	1.50	1-7	†	.31***	.39***	----					
4. Self-efficacy	13.18	6.38	4-28	.85	.57***	.67***	.38***	----				
5. Perceived Control	16.92	6.48	5-35	.76	.31***	.36***	.01	.39***	----			
6. Security	4.39	1.85	1-7	†	.14*	.09	-.07	.05	.24***	----		
7. Trust	3.59	2.02	1-7	†	.45***	.44***	.16**	.44***	.51***	.39***	----	
8. Behaviour	6.79	1.40	1-8	†	.70***	.55***	.18**	.50***	.33***	.14**	.42***	----

Note: * significant at the .05 level; ** significant at the .01 level; *** significant at the .001 level;

† only one item.

Estimation of the TPB model

The path analysis testing the TPB model is shown in Figure 1 and the overall fit of the model was reported (see Table 3) to be a good explanation of the relationships within the data ($\chi^2(372) = 3.142$, $df = 2$, $p = .208$, RMSEA = .039). The chi-square values in conjunction with the degrees of freedom were reported to be low and non-significant and the RMSEA was less than .05 (Browne and Cudeck, 1993; Hu and

Bentler, 1999), thus indicating a close fit of the model to the data. Incremental fit indices were also employed for the evaluation of the model fit as suggested by Hoyle and Panter (1995,) and Miles and Shevlin (2007). The values indicated that the NFI (.997), IFI (.999), and TLI (.981) were all greater than the .95 cut off point and furthermore suggested that the tested model provided a good approximation and explanation of the data. Overall, based on the descriptive and incremental fit indices, the TPB model provided a good fit to the data.

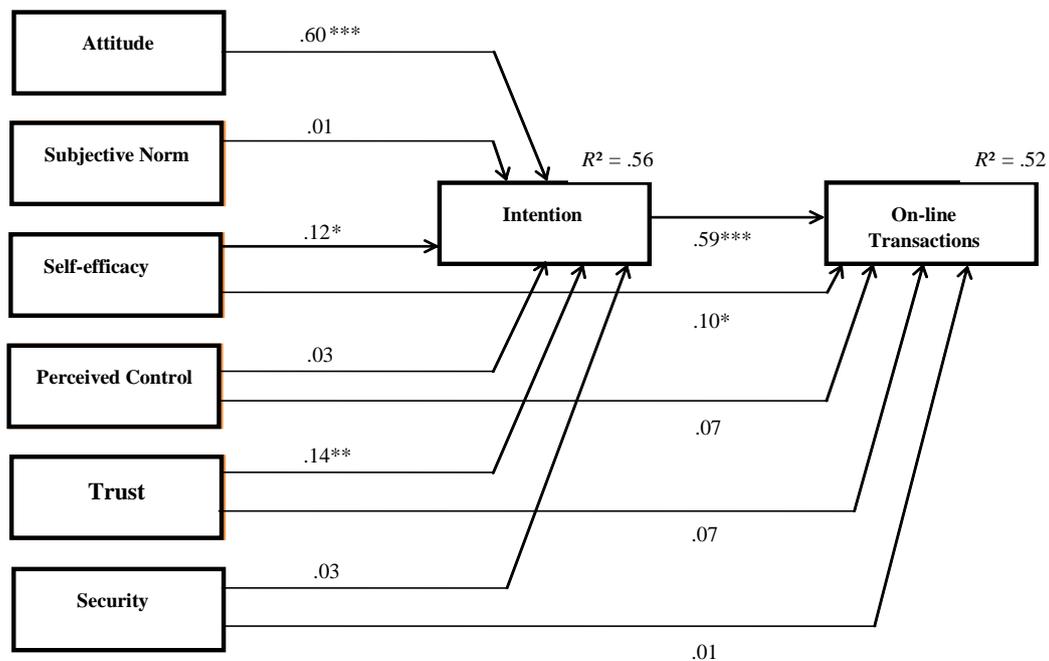
Table 3: Path Coefficients and Fit Statistics of the TPB Model

Path (Hypotheses)		R^2	Path coefficients	p	Hypothesis supported
(H1) Attitude	→ Intention		.60	.000	Yes
(H2) SN	→ Intention		.01	.877	No
(H3) Self-efficacy	→ Intention	.561	.12	.020	Yes
(H5) Perceived control	→ Intention		.03	.535	No
(H10) Security	→ Intention		.03	.414	No
(H8) Trust	→ Intention		.14	.004	Yes
(H7) Intention	→ On-line Transactions		.59	.000	Yes
(H4) Self-efficacy	→ On-line Transactions		.10	.030	Yes
(H6) Perceived control	→ On-line Transactions	.519	.07	.122	No
(H11) Security	→ On-line Transactions		.01	.891	No
(H9) Trust	→ On-line Transactions		.07	.131	No
Goodness of fit statistics					
χ^2		3.14			
Df		2			
P		.208			
RMSEA		.039			
Incremental fit indices					
NFI		.997			
IFI		.999			
TLI		.981			

Figure 2 and Table 3 illustrate the predictor variable relationships with intentions and behaviours regarding the use of an online auction site. Attitudes ($\gamma = .60$; $p < .001$),

self-efficacy ($\gamma = .12, p = .020$) and trust ($\gamma = .14, p = .004$) had significant relationships with intentions, with attitudes being the strongest predictor of intentions to use the online auction site. However, perceived control ($\gamma = .03, p = .535$), SN ($\gamma = .01, p = .877$) and security ($\gamma = .03, p = .414$) did not have any significant relationships with intentions. These factors accounted for 56% ($R^2 = .56$) of variance in intentions to use an online auction site. In regard to predicting online behaviour, intentions ($\beta = .59, p < .001$) had the strongest significant relationship with the criterion variable followed, to a lesser extent, by self-efficacy ($\gamma = .10, p = .030$). The path analysis indicated that perceived control ($\gamma = .07, p = .122$), trust ($\gamma = .07, p = .131$) and security ($\gamma = .01; p = .891$) did not have significant relationships with online auction site behaviour. These factors accounted for 52% ($R^2 = .52$) of variance in online auction site use behaviour.

Figure 2: Path Diagram of the applied TPB Model



Note: * significant at the .05 level; ** significant at the .01 level; *** significant at the .001.

Discussion

The overall aim of this study is to further understand the role motivational factors, trust, and security have in influencing consumer's online auction intentions and transaction behaviours. Overall the TPB (Ajzen, 1991) model provided a good

explanation of online auction intentions and transaction behaviours and the evidence further supports previous suggestions that applying an expanded model such as the TPB can be beneficial (Schlaegel, 2015). Further evidence from the current findings show how attitudes (**H1**), social influences (**H2**), abilities (**H3**, **H4**, **H5** and **H6**), trust (**H8** and **H9**) and perceptions of security (**H10** and **H11**) influence consumer's online auction intentions and frequency of transactions, while also establishing the link between online auction intentions and frequency of transactions (**H7**).

Predicting online auction intentions

Within the current study TPB framework, attitudes towards using online auctions (**H1**) had the strongest influence on online auction intentions; suggesting that the more favourable the consumer's attitudes toward online auctions the more favourable their intentions to use such a service. This is consistent with other studies that found favourable attitudes to using an online auction are generally related to more bidding or selling transactions (Pavlou and Fygenon, 2006; Huang *et al.*, 2011; Schlaegel, 2015). Thus, perceptions of transaction convenience, ease and success inform attitudes towards online auctions (Burke, 1998; Li, Chung and Fiore 2017) but also demonstrate the strength of the attitude-intention relationship regarding consumer's engagement with online auctions (Ajzen, 2015; Schlaegel, 2015).

Furthermore, the current study findings also reflect the inconsistent nature of SN (**H2**) as social or normative pressures neither increased nor decreased consumer's intentions to use an online auction site (Huang *et al.*, 2011). This would mean that they did not view the expectations of others as important when considering using an online auction service like eBay, which contradicts the conclusions drawn by Rohm and Swaminathan (2004), and Parsons (2002). Thus the current study suggests that the opinions of friends, family and others do not necessarily influence the online auction decisions of consumers, even if these experiences are informative or cautionary. Therefore, it seems to be down to the consumer's own attitudes towards online auctions, rather than the opinions of others, that influence their transaction decisions.

The current study identified self-efficacy and perceived control as two constructs linking to PBC, which is consistent with previous research (Terry and O'Leary, 1995; Conner and Armitage, 1998; Lunardo, 2011). Apart from consumer attitudes, the only other construct within the TPB (Ajzen, 1991) that influenced online auction intentions was self-efficacy, suggesting that consumers with more confidence in their ability to use online auction sites were slightly more likely to intend to use online auction sites (**H3**). By separating PBC into two constructs it also becomes clearer that consumer confidence in their abilities is more important in predicting consumer intentions than perceptions around perceived control barriers. Consumers perceptions around barriers to engaging with online auctions did not have a significant influence on their intentions (**H5**), thus possible barriers to using online auctions do not seem to influence intentions to use the service. However, consumer confidence in their ability to engage with bidding, selling or purchasing within an auction marketplace was not as important as their attitudes toward the service. This current finding partially supports previous research, which explored the important

role PBC has in prediction of online auction intentions (Pavlou and Fygenson, 2006; Huang *et al.*, 2011; Schlaegel, 2015).

Although both trust (**H8**) and security (**H10**) were included within the expanded TPB (Ajzen, 1991) model, only consumer's perceptions of trust had a significant but weak influence on intentions to use online auction sites. The current research supports previous findings with regard the role of trust in predicting online auction intentions (Chiu *et al.*, 2010) but it also highlights that this role is secondary to the role of consumer attitudes. This is consistent with past research where consumer trust aligns with consumer online auction satisfaction levels regarding the bidding, purchasing and selling process (Schlaegel, 2015). Trust may have a role informing consumer intentions but a more important role could be informing consumer satisfaction levels. This further suggests that within C2C online auctions trust may be an important issue around service quality and satisfaction for the consumer (Vijayasarathy, 2004). Despite the weak role for trust within the model, its statistically significant relationship with online auction intentions does provide more evidence of its, at least minor, role within the C2C transactions (Shareef *et al.*, 2013). In contrast to previous findings, the impact of security in relation to storage of personal information by online auction services was non-significant in the current study (Abdelghaffar and Moustafa, 2013; Sanayei and Bahmani, 2012).

Predicting online transaction behaviours

As for predicting frequency of online auction behaviour, both consumer intentions (**H7**) and self-efficacy (**H4**) played a significant role. Consumer intentions had the stronger influence suggesting that when engaging with online auction bidding, purchasing or selling consumer's intentions, rather than confidence in their abilities, to use the service, held greater sway in deciding to use the service (Schlaegel, 2015). This may be due to the greater consumer experience with online shopping, and these websites being more user friendly. Contrary to previous findings (Terry and O'Leary, 1995; Conner and Armitage, 1998), perceived control of external barriers (**H6**) did not influence their online auction usage. Both trust (**H9**) and security (**H11**) failed to significantly influence consumer's online auction usage, contradicting previous findings (Pavlou and Gefen, 2005; Shareef *et al.*, 2013, Schlaegel, 2015), which suggested significant roles for trust and security in predicting e-commerce transactions. Importantly for C2C research, although trust significantly influenced transaction intentions, it was not a significant predictor of online transaction behaviours in the current study. Furthermore, perceptions of how secure online auctions are did not influence consumer transaction frequency, which is quite different from what other researchers have reported (Abdelghaffar and Moustafa, 2013). Abdelghaffar and Moustafa (2013) had identified that security issues around consumer information can influence consumer engagement. In contrast, the current research provides no support for this, rather online transactions are based on consumer intentions, and to a lesser extent their confidence in their own ability, to use the service. Finally, these findings demonstrate the importance of the intention-behaviour relationship, provide clarity on how the consumer is engaged with online auctions, and support the usefulness of the TPB model itself (Ajzen, 1991).

Implications and future research

The findings provide further valuable theoretical insight into online auction behaviours, which needed further exploration (Saputra, Warokka and Naruephai, 2012), especially in relation to C2C e-commerce (Leonard, 2012; Lu and Lin, 2012; Schlaegel, 2015). A central implication of this study is that it provides further insight into the role of motivational factors that can influence online auction decisions and transactions (Gopi and Ramayah, 2007; Sanayei and Bahmani, 2012; Hsu *et al.*, 2006). Like Yen and Lu (2008), the current research helps to develop a better understanding of the 'bidder's decision process when taking part in online auction' (p. 41). Furthermore, this study contributes to extending consumer behaviour understanding in an online auction environment (Drake, Hall and Byrd, 2012), adding to the work undertaken by Foxall (1993), Constantinides (2004), and Evans, Jamal and Foxall (2009). More specifically, the current study found attitudes towards using an online auction service, personal abilities (Pavlou and Fygenson, 2006; Huang *et al.*, 2011) and trust (Hou, Ma and Yang, 2011) in the service are important predictors of consumer online transaction intentions.

Furthermore, any marketing messages need to further echo and support the attitudes, in terms of convenience and ease of use, highlighted in this research, as these are crucial in encouraging usage and engagement in an online auction environment. Online auction services, such as eBay, need to continue to communicate messages to enhance consumer confidence, building trust, to enhance consumer's belief in the service provider, and therefore reduce perceived risks (Xu, Lin and Shao, 2010). The attitude and satisfaction related variables, like trust, identified in the current research are therefore invaluable in terms of persuading potential consumers to use the service, and maintaining the existing consumer base in the early stages of buying behaviour. In fact, this message needs to be reinforced at each of the interlinked stages that eBay consumers undertake (Engel, Kollatt and Blackwell, 1993; Gabbott and Hogg, 1998). Future online auction site strategies should take note of these factors when trying to retain existing consumers and when trying to attract new consumers (Chen and Barnes, 2007; Tseng and Teng, 2014). By highlighting factors influencing behavioural intentions, this research can inform online auction sites in ways they could increase their competitiveness. Another strength of this study was that rural, suburban and urban consumer online auction behaviours were accurately represented by an extended TPB model, which can be a valuable tool for a global brand such as eBay.

Commercial and academic research interests would be better served by applying conceptual framework models like the TPB and extending it with the inclusion of other antecedents. Further research could investigate the role of future behaviours (Wahab, Mohd and Ali, 2009) and the impact of past experiences (Lodorfos, Trosterud and Whitworth, 2006; Wu and Teng, 2011) on individual's decisions to use online auctions. Other antecedents such as gender could also be explored regarding online auction behaviours, as previous research has indicated that the motivations for males and females to use online auctions differ (Lai, Wu and Lin, 2008). Evidence such as this could to be further explored within the context of the TPB to examine if two possible models for male and female online transaction intentions and behaviours exist.

Limitations

Further geographical locations could have been employed, which would have added more representative scope to the sample. That is, the regions selected for the current study may have shared certain cultural attitudes and perceptions making the sample more homogeneous in nature due to geographical proximity. Thus, a third region could have been employed to explore possible variations and address any cultural variations as suggested by Xu, Lin and Shao (2010). Another sampling related limitation was that individuals attending business events were targeted so the sample itself may not be reflective of those from non-business oriented backgrounds or professions. Lastly, other variables may have explained online auction intentions and behaviours and so we encourage other researchers to examine additional variables like gender. However, as mentioned previously, these antecedents should be integrated within an extended TPB (Ajzen, 1991) framework. Despite these limitations, the authors argue that the current study adds to the existing understanding of online auction site behaviours for academics, online auction practitioners, other C2C e-retailers, and policymakers.

Conclusion

In conclusion, some previous research studies have only applied the TPB to exploring online purchasing intentions only (Yen and Lu, 2008a, 2008b), while the current study does much more. The value of the current study lies in predicting the frequency of online auction transactions, through the significant contributions of positive intentions, abilities around online auction transactions and trust. As the research within the C2C online auctions is relatively new, the current study findings are timely and of great importance as they provide evidence about the role of these drivers. Future research can build on these findings by further extension and application of theoretical frameworks like TPB to understand more about selling and buying in e-commerce sectors.

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