

# ADAPTING TAM AND ECT: CONTINUANCE INTENTION OF E-SHOPPING IN SAUDI ARABIA

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## Abstract

*The objective of this study is to clarify the theoretical problem and identify factors that could explain the level of continuance intention of e-shopping in context of Saudi Arabia. The study proposes a revised technology acceptance model that integrates expectation confirmation theory to measure age differences with regard to continuance online shopping intentions.*

*Structural equation model confirms model fit. The research findings confirm that Perceived usefulness, enjoyment, and subjective norms are determinants of online shopping continuance. The structural weights are mostly equivalent between the young and old groups, but the regression path from subjective norms to perceived usefulness is not invariant, with that relationship being stronger for the younger respondents.*

*This research moves beyond online shopping intentions and includes factors affecting online shopping continuance. The model explains 65% of the intention to continue shopping online. The research findings suggest that online strategies cannot ignore either the direct and indirect effects on continuance intentions.*

*Keywords: Internet shopping, e-shopping, technology acceptance, young and old examination, continuance online shopping, Saudi Arabia.*

## 1 INTRODUCTION

In electronic commerce environment, business to customer electronic commerce had developed rapidly for recent years (Alden *et al.* 2006; Holt *et al.* 2004), and advances with the Internet and e-commerce have further diminished trade boundaries. e-Commerce and e-shopping create opportunities for businesses to reach consumers globally and directly – indeed they are transforming retailing. In turn, business and social science research increasingly focuses on cross-national and cross-cultural internet marketing (Griffith *et al.* 2006). This paper examines an aspect of on-line retailing of increasing potential importance, the Saudi Arabian context.

The Internet has changed how businesses and customers customize, distribute, and consume products. Its low cost gives both businesses and consumers a new and powerful channel for information and communication. In 2007, World Internet Users and Population Stats estimated that sales on the Internet are expected to continue to rise.

Unsurprisingly, e-commerce transactions are also growing in the Middle East (19.5 million Internet users) and in the Gulf States. In Saudi Arabia, online transactions increased by 100%, from \$278

million in 2002 to \$556 million in 2005 (Al Riyadh 2006). Yet this context of explosive growth is under-researched.

Generally, of course, consumers now have various online and offline options from which to choose, and without a compelling reason to choose one retailer over another, they experiment or rotate purchases among multiple firms (Bhattacharjee 2001b; Crego and Schiffrin 1995). Within this growing marketplace we focus our research on one issue. Despite impressive online purchasing growth rates, compelling evidence indicates that many consumers who search different online retail sites abandon their purchase intentions. So our study is aimed to help online businesses understand which factors encourage consumers to complete their e-shopping. Such continuance is critical, because acquiring new customers may cost as much as five times more than retaining existing ones (Bhattacharjee 2001b; Crego and Schiffrin 1995; Petrisans 1999).

Theoretical explanations of online shopping intentions consider several factors. Rogers' theory of innovation (1995) suggests that consumers reevaluate acceptance decisions during a final confirmation stage and decide to continue or discontinue, and this is a clear stage in the purchasing process on-line. As a result, we are looking to understand continuance intention of online customers. The decision to continue may be an extension of acceptance behaviour that co-varies with acceptance (e.g., Bhattacharjee 2001a; Davis *et al.* 1989; Karahanna *et al.* 1999). We adopt the extended expectation confirmation theory (ECT; Bhattacharjee 2001b) and the technology acceptance model (TAM; Davis *et al.* 1989) as a theoretical basis, integrating ECT (Continuance Intention) from consumer behaviour literature to propose a model of e-shopping continuance intention, similar to the way in which the TAM adapts the theory of reasoned action (TRA) from social psychology to postulate a model of technology acceptance. Our contribution is potentially valuable, as the TAM stops at intention and does not investigate continuance intentions. Moreover, the cross-cultural aspect to our contribution is also relevant, as both models have been used widely in research in the industrialized world, but they are less commonly applied to developing countries.

Previous research found that gender and age differences significantly affect new technology decision-making processes (Van Slyke *et al.* 2002; Venkatesh *et al.* 2000; Spero and Stone 2004). Venkatesh and others (2000) report that women tend to accept information technology when others have high opinions of it and are more influenced by ease of use. Additionally, youth populations are motivated by status and peer pressure (Spero and Stone 2004). On the other hand, men rely more on their evaluations of the usefulness of the technology. However, in many cultures, women represent the primary decision makers in families and households' main shoppers. Greater e-commerce exposure and decision-making power may imply that male and female can attain greater satisfaction from online shopping, especially that the Internet is one of the main environments for young people to play, work, learn and communicate (Alreck and Settle 2002; Spero and Stone 2004). Saudi Arabia has a population of 25 million, highly skewed in terms of age distribution, with 60% under the age of 30 (Middle East Statistics 2007). This age profile relevant to our topic, as in countries that are further advanced in internet shopping; much of the growth has been driven by young people. For example, in the United Kingdom, teenagers spend on average £3 billion a year (Datamonitor, cited by Spero and Stone 2004). Clearly young people's behaviour is of special importance to Saudi trade.

In summary, researchers are confronted with a choice among a multitude of models and find that they could "pick and choose" constructs across the models, or choose a "favoured model" and largely ignore the contributions from alternative models (Venkatesh *et al.* 2003). Given the complementary nature of TAM and ECT, our research attempts to provide a validated conceptual model of on-line intention, adapting different constructs from the modified TAM and ECT, including age, and to clarify and explain more variance of continuance intentions in the context of e-shopping. Such an integrated model is depicted in Figure 1. In this proposed model, we postulated the effect on Continuance Intention, which is adapted from ECT, comes from three constructs: perceived usefulness, enjoyment, and subjective norm.

The remainder of this article proceeds as follows: We offer a review of existing literature, and then detail our proposed model, hypotheses, and methodology. After describing the structural equation model and analysis, we provide our results. We conclude with some limitations, our conclusions and contribution, and recommendations for further research. Finally, we present managerial implications.

## 2 THEORETICAL BACKGROUND

The TAM (Davis 1989) represents an adaptation of the TRA, tailored to users' acceptance of information systems. It helps explain determinants of computer acceptance and can explicate user behaviours across a broad range of computing technologies and populations; it also is parsimonious and theoretically justified (Davis *et al.* 1989). The major determinants are perceived usefulness and ease of use. Perceived usefulness significantly influences attitude formation (Agarwal and Prasad 1999; Davis 1989; Dishaw and Strong 1999; Gefen and Keil 1998; Igarria *et al.* 1996; Moon and Kim 2001; Taylor and Todd 1995; Venkatesh 2000; Venkatesh and Davis 2000), but evidence regarding perceived ease of use remains inconsistent. Furthermore, other researchers (e.g., Bhattacharjee 2001a; Ma and Liu 2004; van der Heijden, *et al.* 2003) indicate that ease of use has the greatest most effect on acceptance after a certain threshold. That is, with more experience, the impact of ease of use on intention declines. Because our research focuses on continuance intentions, we assume all participants already have e-shopping experience, which implies other factors may be more important than ease of use. Moreover, many studies simplify TAM by dropping attitude and studying just the effect of perceived usefulness and ease of use on intention to use (Gefen and Straub 2000; Leader *et al.* 2000; Teo *et al.* 1999; Venkatesh and Davis 2000; Venkatesh *et al.* 2003).

Updates to the TAM add antecedents of perceived usefulness and ease of use (Venkatesh and Davis 2000), such as subjective norms, experience, trust, and output quality. Ample evidence confirms that both usefulness (i.e., external motivation) and intrinsic enjoyment (i.e., internal motivation) offer direct determinants of user acceptance online (Davis *et al.* 1992; Leader *et al.* 2000; Moon and Kim 2001; Teo *et al.* 1999; Venkatesh 1999).

Expectation confirmation theory (ECT) in turn helps predict consumer behaviour before, during, and after a purchase in various contexts, in terms of both product and service repurchases (Anderson and Sullivan 1993; Dabholkar *et al.* 2000; Oliver 1980, 1993; Patterson *et al.* 1997; Spreng *et al.* 1996; Swan and Trawick 1981; Tse and Wilton 1988). According to ECT, consumers define their repurchase intentions by determining whether the product or service meets their initial expectations. Their comparison of perceived usefulness versus their original expectation of usefulness influences their continuance intentions (Bhattacharjee 2001a; Oliver 1980). For example, expectations might derive from knowledge and information collected from mass media or other sources that predict products or services will perform in a certain way. As the consumer uses the product, he or she confirms these expectations about the value and benefits of the product/service. If it meets his or her initial expectation and leaves the consumer happy and satisfied, the consumer experiences positive intentions to repurchase. That is to say repurchase intentions depend on satisfaction with the product or service (Anderson and Sullivan 1993; Oliver 1980).

However, ECT ignores potential changes in initial expectations following the consumption experience and the effect of these expectation changes on subsequent cognitive processes (Bhattacharjee 2001a). Pre-purchase expectations typically are based on others' opinions or information from mass media, whereas post-purchase expectations derive from first-hand experience, which appears more realistic (Fazio and Zanna 1981). Following such first-hand experience, expectations may increase if consumers believe the product or service is useful or contains new benefits and features that were not part their initial expectation.

Venkatesh and others (2003) suggest that usage and intentions to continue usage may depend on cognitive beliefs about perceived usefulness. Gefen (2003) also indicates that perceived usefulness reinforces an online shopper's intention to continue using a Web site, such that when a person accepts a new information system, he or she is more willing to alter practices and expend time and effort to use it (Succi and Walter 1999). However, consumers may continue using an e-commerce service if they consider it useful, even if they are dissatisfied with its prior use (Bhattacharjee 2001a).

The dominant influence of perceived usefulness has led Bhattacharjee (2001) to include usefulness in his revised ECT. Furthermore, in a recent study by Premkumar and Bhattacharjee (2008), an interesting finding was reported. Perceived usefulness is the strongest predictor of intention in TAM,

and continues to be the strongest predictor of continuance intention (over satisfaction) when TAM combined with ECT, whereas satisfaction was the dominant in ECT (Premkumar and Bhattacharjee 2008). The relative dominance of usefulness explains its role as critical driver in continuance decisions, particularly in respect of utilitarian rather than hedonic aspects (Premkumar and Bhattacharjee 2008).

Site quality and good interface design enhance the formation of consumer trust (McKnight *et al.* 2002a), and if a consumer perceives a vendor's Web site to be of high quality, he or she should trust that vendor's competence, integrity, and benevolence (McKnight *et al.* 2002a). Gefen and others (2003) integrate trust into the TAM in a B2C e-shopping context and find trust positively affects consumers' intention to use a Web site. Building trust with consumers is an essential mission for e-retailers, because purchasing decisions represent trust-related behaviours (Jarvenpaa *et al.* 2000; McKnight *et al.* 2002b; Urban *et al.* 2000).

A person's beliefs about what important others think about the behaviour also should directly influence subjective norms. Therefore, if e-shopping is believed to be socially desirable behaviour, a person is more likely to e-shop (George 2002).

Childers *et al.* (2001) also find that enjoyment can predict attitude towards e-shopping, just as much as usefulness can. However, usefulness was the better predictor for grocery items, whereas enjoyment offered better results for hedonic purchases. With regard to e-shopping, the hedonic enjoyment constructs in the TAM may reflect the pleasure users obtain from shopping online, which reinforces continuance intentions.

### 3 PROPOSED MODEL AND HYPOTHESES

#### 3.1 Site Quality

Initial trust forms quickly on the basis of available information (Meyerson *et al.* 1996). If consumers perceive a Web site as high quality, they trust it and will depend on that vendor (McKnight *et al.* 2002a). Site information quality and a good interface design enhance consumer trust (Fung and Lee 1999). Web site quality may help predict behaviour indirectly (Business Wire 1999; Carl 1995; Meltzer 1999). Perceptions of Web site quality affect trust and perceptions of usefulness. In addition, e-shoppers should perceive a Web site as more trustworthy if it appears more attractive because of its contents, layout, and colours, which represent site quality. On the basis of previous research, we therefore predict:

H1.a Perceived Site Quality is positively related to Perceived Usefulness.

H1.b Perceived Site Quality is positively related to Customer Trust to use online shopping.

#### 3.2 Trust

Trust refers to an expectation that others will not behave opportunistically (Gefen 2003). Trustworthiness in the person trusted is therefore an essential element in the decision to place trust in the other party (Halliday 2004). Trust therefore implies a belief that the vendor will provide what has been promised (Ganesan 1994). In turn, perceived usefulness should occur only for an e-vendor that can be trusted (Festinger 1975). Thus:

H2.a Perceived Trust is positively related to customer perceived Usefulness.

#### 3.3 Perceived Usefulness

According to Burke (1997), perceived usefulness is the primary prerequisite for mass market technology acceptance, which depends on consumers' expectations about how technology can improve and simplify their lives (Peterson *et al.* 1997). A Web site is useful if it delivers services to a customer but not if the customers' delivery expectations are not met (Barnes and Vidgen 2000). The usefulness and accuracy of the site also influence customer attitudes. Users may continue using an e-commerce service if they consider it useful, even if they may be dissatisfied with their prior use (Bhattacharjee 2001a). Consumers likely evaluate and consider product-related information prior to

purchase, and perceived usefulness thus may be more important than the hedonic aspect of the shopping experience (Babin *et al.* 1994). In a robust TAM, perceived usefulness predicts IT use and intention to use (e.g., Adams *et al.* 1992; Agarwal and Prasad 1999; Gefen and Keil 1998; Gefen and Straub 1997; Hendrickson *et al.* 1993; Igabria *et al.* 1995; Subramanian 1994), including e-commerce adoption (Gefen and Straub 2000). Therefore:

H3.a. Perceived Usefulness is positively related to increasing customer Subjective Norm.

H3.b. Perceived Usefulness is positively related to increasing customer Enjoyment.

H3.c. Perceived Usefulness is positively related to increasing customer Continuance Intention.

### 3.4 Subjective Norm

According to Venkatesh *et al.* (2003), social influences result from subject norms, which relate to individual consumers' perceptions of the beliefs of other consumers. Shim, Eastlick, Lotz, and Warrington (2001) consider subjective norms only marginally significant for e-shopping intentions, whereas Foucault and Scheufele (2005) confirm a significant link between talking about e-shopping with friends and intention to e-shop. Social influence also is relevant to enjoyment, because involving websites facilitate e-friendship among social communities and enforce enjoyment as e-shopping. Thus,

H4.a. Perceived Subjective Norm is positively related to increasing customer Enjoyment.

H4.b. Perceived Subjective Norm is positively related to increasing customer Continuance Intention.

### 3.5 Enjoyment

Enjoyment in using a Web site significantly affects intentions to use (Davis *et al.* 1992; Igbaria *et al.* 1995; Teo *et al.* 1999; Venkatesh *et al.* 2002). Shopping enjoyment (Koufaris 2002), perceived entertainment value of the Web site (O'Keefe *et al.* 1998), and perceived visual attractiveness have positive impacts on perceived enjoyment and continuance intentions (van der Heijden 2003). Thus:

H5. Perceived Enjoyment is positively related to increasing customer Continuance Intention.

## 4 METHODOLOGY

To validate the conceptual model and the proposed research hypotheses, we developed an online survey, which is suitable for collecting data from large geographical areas. In addition, compared with traditional surveys, online surveys offer lower costs, faster responses, and less data entry effort. Respondents were contacted through e-mail invitations sent to seven universities and colleges, which put the survey link on an official Web site to encourage students and staff to participate.

### 4.1 Measures

The measures of the various constructs come from previous literature, adapted to the context of online shopping if necessary. All online survey items use 1–7 Likert scales, on which 1 indicates strongly disagree and 7 is strongly agree. The site quality and trust items come from McKnight and others (2002a, 2002b). The perceived usefulness items derive from Gefen (2003). Perceived enjoyment is a measure from Childers (2001). Shih and Fang (2004) provide the subjective norm items. The continuance intention items were adapted from Yang and Peterson (2004).

A pilot study was carried out in Saudi Arabia to evaluate the effectiveness of the research instrument. The pilot study suggested some clarifications to the survey instruments. Both Arabic and English language versions were available. The Arabic questionnaire employed Brislin's (1986) back-translation method to ensure that the questionnaires have the same meaning in both languages.

### 4.2 Data analysis

Survey respondents were people who were actively engaged in Internet and online shopping. As we show in Table 1, the sample consists of 465 participants, 68.6% (319) of whom are women and 31.4% (146) of whom are men. Most respondents are in the younger age groups with 74.8% younger than 35



and 25.1% 35 years or older (specifically, 3.4% younger than 18 years of age, 28% between 18 and 25, 43.4% are 26–35, 18.9% are 36–45, and 6.2% are older than 46 years). . This age range broadly reflects the profile of the young Saudi population, where 60% is younger than 30 years of age. The vast majority (92.3%) of respondents came from the three main regions in Saudi Arabia: 25.2% from the east, 26.5% from the central region, and 40.6% from the western region. The education levels indicate that 1.9% of respondents earned less than a high school degree, 10.7% attended high school, 12.4% had diplomas, 51.8% had bachelor degrees, and 22.2% were postgraduates, indicating that most respondents thus are well-educated. Moreover, 31.8% work in the public sector (government employees), 34.6% in the private sector, 6.5% were businesspeople, and 26% were students.

Table 1 indicates that younger people have the intention to spend more than older people. In the group of younger than 35 years old, 115 (33%) of participants within this age group intend to spend up to £500, 111 (31.9%) participants intend to spend up to £1000, and 73 (21%) intend to spend more than £1000. On the other hand, the group of 35 years and older, 48 (41%) of participants intend to spend up to £500, 32 (27.4%) participants intend to spend up to £1000, and 28 (23.9%) intend to spend more than £1000.

As we show in Table 2, 208 (59.8%) of the respondents younger than 35 years old used the Internet in the previous six months to book flights and purchase airline tickets, compared to 86 (73.5%) respondents on the other group of 35 years and older; 149 (42.8%) respondents younger than 35 years old have made hotel reservations, compared to 69 (59.0%) for 35 and older; 102 (29.3%) have purchased clothing, compared to 18 (15.4%) for 35 and older, ; 197 (56.6%) have bought books, compared to 65 (55.6%) for 35 and older ; and 157 (45.1%) have bought CD-DVD and videotapes, compared to 36 (30.8%) for 35 and older. In their responses about why they used the Internet, 320 (92%) respondents younger than 35 years old indicated they used it for information searches, compared to 112 (95.7%) for 35 and older; 245 (70.4%) have used to it for social communication, compared to 77 (65.8%) for 35 and older; 231 (66.4%) have used to it for banking, compared to 90 (76.9%) for 35 and older; 256 (73.6) have used to it for entertainment, compared to 74 (63.2%) for 35 and older; 194 (55.7%) have used to it for work-related tasks, compared to 92 (78.6%) for 35 and older; and 44 (60.9%) have used to it for study-related efforts, compared to 59 (50.4%) for 35 and older. Both the young and old age group trust international companies more than the local Saudi companies. Younger age participants dominated the older group of 35 years and older in all categories. Security, quality, payment, and language barrier are considered as an issue when conducting e-shopping, as we show in Table 3.

Question	younger than 35	35 and older
Gender		
Male	114 (32.8%)	32 (27.4%)
Female	234 (67.2%)	85 (72.6%)
Age		
Less than 18	16 (4.6%)	0
Between 18-25	130 (37.4%)	0
Between 26-35	202 (58%)	0
Between 36-45	0	88 (75.2%)
Above 46	0	29 (24.8%)
Education Level		
Less than high school	8 (2.3%)	1 (0.9%)
High school	49 (14.1%)	8 (6.8%)
Diploma	43 (12.4%)	12 (10.3%)
Bachelor	191 (54.9%)	50 (42.7%)
Post-graduate	57 (16.4%)	46 (39.3%)
Internet Spending		
None	49 (14.1%)	9 (7.7%)

SR100-1,000 (£100-500)	115 (33.0%)	48 (41.0%)
SR1,001-5,000 (£501-1,000)	111 (31.9%)	32 (27.4%)
>SR5,001 (£>1,001)	73 (21.0%)	28 (23.9%)
Income Level		
<SR4,000 (£1,000)	87 (25.0%)	5 (4.3%)
SR4,000-SR6,000 (£1,000-2,000)	56 (16.1%)	13 (11.1%)
SR6,001-SR8,000 (£2,001-4,000)	46 (13.2%)	12 (10.3%)
SR8,001-SR10,000 (£4,001-7,000)	33 (9.5%)	9 (7.7%)
SR10,001-SR15,000 (£7,001-10,000)	42 (12.1%)	27 (23.1%)
>SR15,001 (>£10,000)	21 (6.0%)	49 (41.9%)
Dependent on others	63 (18.1%)	2 (1.7%)
Region		
East region	100 (28.7%)	17 (14.5%)
West region	122 (35.1%)	67 (57.3%)
Central region	93 (26.7%)	30 (25.6%)
North region	20 (5.7%)	1 (0.9%)
South Region	13 (3.7%)	2 (1.7%)

Table 1: Demographic findings

Items purchased in the last six months	younger than 35	Percentage (%)	35 and older	Percentage (%)
Buying Books	197	56.6%	65	55.6%
Music CD, DVD, Videotape	157	45.1%	36	30.8%
Cloth	102	29.3%	18	15.4%
Sports equip	67	19.3%	18	15.4%
Travel reservation and ticketing	208	59.8%	86	73.5%
Hotel booking	149	42.8%	69	59.0%
Reason for using the Internet				
Info. Search	320	92%	112	95.7%
Entertainment	256	73.6	74	63.2%
Social Communication	245	70.4%	77	65.8%
Work	194	55.7%	92	78.6%
Study	44	60.9%	59	50.4%
Purchasing	284	81.6%	97	82.9%
Banking	231	66.4%	90	76.9%
Types of companies trusted				
Local companies	42	12.1%	12	10.3%
International companies	143	41.1%	54	46.2%
Trust them both the same	163	46.8%	51	43.6%

Table 2: Items purchased online and reason for using the Internet

\*\* Respondent can select more than one option.

Important issues to e-shoppers	younger than 35	Percentage (%)	35 and older	Percentage (%)
Security	275	79%	100	85.5%
Price	204	58.6%	73	62.4%
Service, Delivery	222	63.8%	78	66.7%
Quality	252	72.4%	81	69.2%
Payment	220	63.2%	78	66.7%
Language Barrier	157	45.1%	56	47.9%

Table 3: *Important issues when shopping online*

\*\* Respondent can select more than one option.

### 4.3 Analysis

The Cronbach's alphas (Table 4) are all greater than 0.7 (Bagozzi and Yi 1988). The squared multiple correlation cut-off point is 0.7, and the average variance extracted cut off-point is 0.5 or higher (Bagozzi 1994; Byrne 2001; Hair *et al.* 2006) (Table 5). We thus confirm the convergent reliability and discriminant validity.

Model Constructs	Factor Correlations								
	Mean	Std. Dev.	Cronbach's alpha	SQ	PU	Trust	SN	Enj	CIU
SQ	21.52	5.31	0.926	1.000					
PU	21.89	5.59	0.949	0.740	1.000				
Trust	21.68	5.31	0.949	0.676	0.719	1.000			
SN	18.73	6.19	0.947	0.298	0.316	0.440	1.000		
Enj	20.80	5.07	0.935	0.464	0.494	0.686	0.547	1.000	
CIU	21.30	5.49	0.961	0.440	0.468	0.650	0.565	0.778	1.000

Table 4: *Scale Prosperities and Correlations*

Constructs/Indicators	S. Factor Loading	S.E	C.R.	AVE	Squared Multiple Correlation
Site Quality (SQ)				0.758	
SQ 1	0.918	0.043	24.143		0.84
SQ 2	0.850	0.042	23.400		0.72
SQ 3	0.841	0.041	22.731		0.71
SQ 4	0.872	—	—		0.76
Perceived usefulness				0.817	
PU 3	0.906	0.031	31.931		0.82
PU 4	0.892	0.030	32.097		0.80
PU 5	0.937	—	—		0.88
PU 6	0.880	0.031	30.848		0.77
Trust				0.814	



Trusting Beliefs Integrity 1	0.903	0.032	31.167	0.82
Trusting Beliefs Integrity 2	0.897	0.025	38.232	0.80
Trusting Beliefs Integrity 3	0.889	0.030	30.023	0.79
Trusting Beliefs Integrity 4	0.919	—	—	0.85
Subjective Norm				0.819
SN 3	0.757	—	—	0.57
SN 4	0.976	0.057	23.251	0.95
SN 5	0.966	0.057	22.815	0.93
SN 6	0.904	0.059	21.415	0.82
Enjoyment				0.756
Enj 4	0.704	—	—	0.79
Enj 5	0.931	0.066	19.223	0.87
Enj 6	0.935	0.067	19.479	0.88
Enj 8	0.887	0.066	18.058	0.50
Continuance Intention				0.872
CIU 1	0.872	0.026	34.199	0.76
CIU 2	0.938	0.020	47.621	0.88
CIU 3	0.975	—	—	0.95
CIU 4	0.946	0.020	50.386	0.90

Table 5: Measurement Model

## 5 STRUCTURAL EQUATION MODEL

As the first step in testing the proposed model, we estimate the goodness-of-fit indices (Figure 1). Bentler and Bonnett (1980) suggest the Chi-square/Degrees-of-freedom (CMIN/DF) ratio as an appropriate measure of model fit, which should not exceed 5 (Bentler 1989).

A structural equation model (SEM) with AMOS 5.0 software determines additional goodness-of-fit indices, including Critical Ratio (CR), Chi-square (CMIN), Degrees-of-Freedom (df), Chi-square/Degrees-of-freedom (CMIN/DF), Root mean square residual (RMR), Root mean square error of approximate (RMSEA), Goodness-of-fit (GFI), Comparative fit index (CFI), Normed fit index (NFI), Relative fit index (RFI). In general, GFI, NFI, RFI, IFI, and CFI greater than 0.90 indicate good model fit (Bentler 1989). As illustrated in Table 6, all hypotheses are statistically significant and supported, with critical ratios ranging from 17.261 to 4.594, which are greater than 1.96 and thus indicate acceptable results (Hair *et al.* 2006; Holmes-Smith 2000). As illustrated in Table 7, the goodness-of-fit indices of the proposed model of continuance intentions fit the data reasonably well, as confirmed by the chi-square CMIN=656.880, df=236, CMIN/DF=2.783, RMR=0.176, GFI=0.897, CFI=0.966, and RMSEA=0.062.

Hypotheses	Paths			Standardized Regression Weights (B)	Standard Error S.E.	Critical Ratio C.R.	P Value	Hypotheses Findings
	From	To	Path					
H1 a	PU	<---	SQ	0.318	0.059	5.796	***	Supported
H1 b	Trust	<---	SQ	0.740	0.044	17.261	***	Supported
H2	PU	<---	Trust	0.484	0.058	8.673	***	Supported
H3 a	SN	<---	PU	0.440	0.042	9.184	***	Supported
H3 b	Enj	<---	PU	0.553	0.035	11.549	***	Supported

Hypotheses	Paths			Standardized Regression Weights (B)	Standard Error S.E.	Critical Ratio C.R.	P Value	Hypotheses Findings
H3 c	CIU	<---	PU	0.198	0.043	4.594	***	Supported
H4 a	Enj	<---	SN	0.303	0.036	7.076	***	Supported
H4 b	CIU	<---	SN	0.182	0.041	4.974	***	Supported
H5	CIU	<---	Enj	0.543	0.072	10.244	***	Supported

Table 6: Regression Weights

Confirmatory Factor Analysis CFA (Goodness-of-fit measure)	Acceptable Values	Value
Chi-Square CMIN	NA	656.880
Degree of freedom	NA	236
CMIN/DF	Chi square/ df $\leq 5$ (Bentler and Bonnett, 1989)	2.783
P value	$p \leq 0.05$ (Hair <i>et al.</i> , 2006)	0.000
Root mean square residual (RMR)	No established thresholds (the smaller the better) (Hair <i>et al.</i> , 2006)	0.176
Goodness-of-fit (GFI)	$\geq 0.90$ (the higher the better) (Hair <i>et al.</i> , 2006)	0.897
Comparative fit index (CFI)	$\geq 0.90$ (Hair <i>et al.</i> , 2006)	0.966
Root mean square error of approximate (RMSEA)	$< 0.08$ (Hair <i>et al.</i> , 2006)	0.062
Normal fit index (NFI)	$\geq 0.90$ (Hair <i>et al.</i> , 2006)	0.943
Incremental fit index (IFI)	$\geq 0.90$ (Hair <i>et al.</i> , 2006)	0.960
Relative fit index (RFI)	$\geq 0.90$ (Hair <i>et al.</i> , 2006)	0.933

Table 7: Goodness-of-fit indices

Next, we examine the regression weights (path significance) of each relationship in our research model and the variance explained (R<sup>2</sup> value) by each path. The AMOS software reports the standardized regression weights, standard error, and critical ratio for each path (Table 6). The hypothesized associations are strongly significant at  $p = 0.000$ . Perceived enjoyment is the strongest predictor of continuance intention (standardised regression weight (B) = 0.543), followed by perceived usefulness (B = 0.198), and then subjective norms (B = 0.182). The model explains 65% of the variance in continuance intentions (Figure 1)

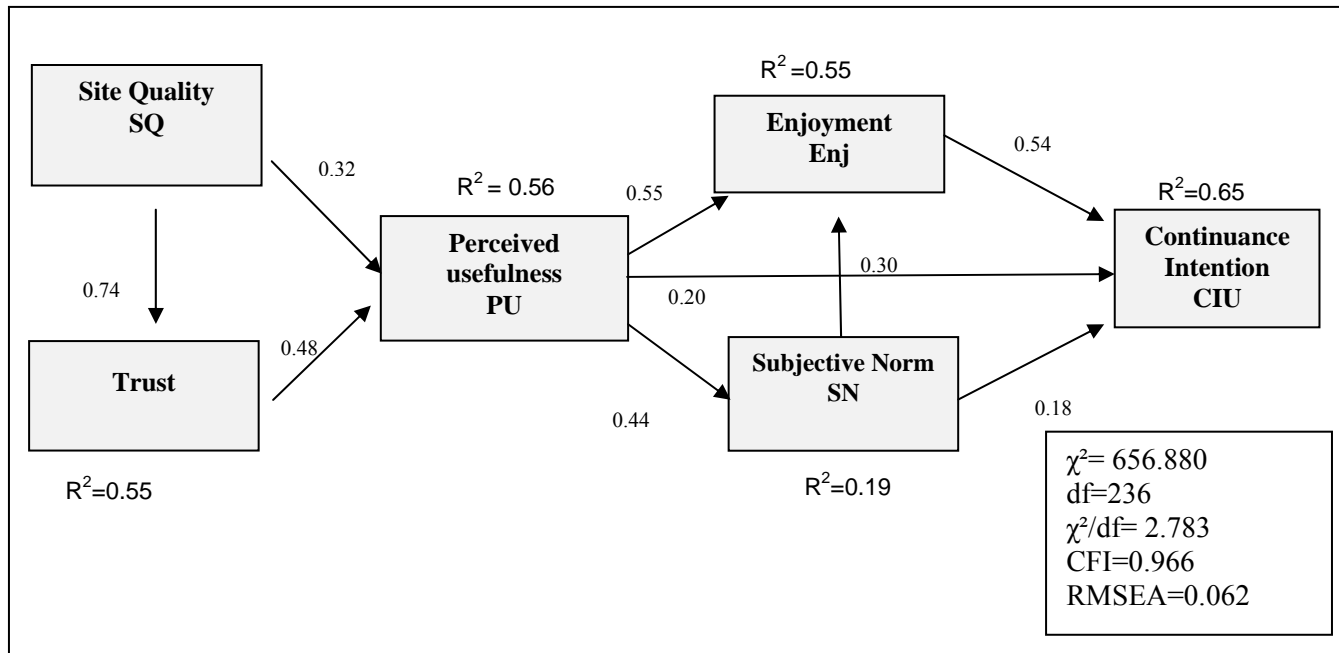


Figure 1: Internet Continuance Intention shopping model

### 5.1 Invariance analysis

When comparing cultures or groups, research participants may not recognize the same meaning and understanding of survey items. Scholars thus have emphasized the importance of minimizing possible research biases in cross-national and cross-cultural research derived from the data collection (Yi *et al.* 2008). To minimize the bias, we assess the measurement invariance (equivalence) across the groups to consider the constructs' factorial invariance (Cheung *et al.* 1999).

The invariance analysis indicates whether any differences occur between the two age groups, young and old. The factorial analysis reveals if young and old conceptualize the model constructs the same way. If we find an age effect on the measurement invariance of the construct and the score of the group analysis is significant, the construct measurement differs for the two groups, and they cannot be compared directly.

To compare age for the young and old samples, we use factorial invariance (metric equivalence) to assess the extent to which measures from both groups have the same meaning (Hair *et al.* 2006). The  $CMIN=1206.661$ ,  $df=468$ ,  $CMIN/DF=2.578$ ,  $RMR=0.123$ ,  $GFI=0.906$ ,  $CFI=0.971$ , and  $RMSEA=0.041$ , indicate satisfactory goodness-of-fit indices across the groups (Table 8).

Confirmatory Factor Analysis CFA (Goodness-of-fit measure)	Acceptable Values	Value
Chi-Square CMIN	NA	1206.661
Degree of freedom	NA	468
CMIN/DF	Chi square/ df $\leq 5$ (Bentler and Bonnett, 1989)	2.578
P value	$p \leq 0.05$ (Hair <i>et al.</i> , 2006)	0.000
Root mean square residual (RMR)	No established thresholds (the smaller the better) (Hair <i>et al.</i> , 2006)	0.123
Goodness-of-fit (GFI)	$> 0.90$ (the higher the	0.906

Confirmatory Factor Analysis CFA (Goodness-of-fit measure)	Acceptable Values	Value
	better) (Hair <i>et al.</i> , 2006)	
Comparative fit index (CFI)	> 0.90 (Hair <i>et al.</i> , 2006)	0.971
Root mean square error of approximate (RMSEA)	< 0.08 (Hair <i>et al.</i> , 2006)	0.041
Normal fit index (NFI)	≥ 0.90 (Hair <i>et al.</i> , 2006)	0.916
Incremental fit index (IFI)	≥ 0.90 (Hair <i>et al.</i> , 2006)	0.949
Relative fit index (RFI)	≥ 0.90 (Hair <i>et al.</i> , 2006)	0.907

Table 8: Goodness-of-fit indices (Younger than 35 – 35 and Older)

Assuming the unconstrained model is correct, compared with constraining all factorial paths, the results across groups indicate changes in df ( $\Delta df$ ) = 18, chi-square ( $\Delta\chi^2$ ) = 31.677, and  $p = 0.115$ , which is greater than Byrne's (2001) 0.05 cut-off. Tests of measurement invariance in which we freely estimate the other loadings appear in Table 9. According to the results in Table 9, changes in the chi-square and df are insignificant ( $p = 0.115$ ). Therefore, the goodness-of-fit indices are comparable across age groups, supporting the invariance of the unconstrained and constrained models. We thereby establish metric equivalence and can proceed in our analysis to regression paths.

Model	$\Delta df$	$\Delta\chi^2$	p
Measurement weights	18	31.677	.115
Structural weights	9	13.244	.369

Table 9: Invariance analysis (Younger than 35 – 35 and Older)

The coefficient (regression paths) invariance analysis determines if young and old respondents have the same relationships with same variables in the research model. The findings in Table 9 suggest coefficient invariance among age groups across the research model with all regression paths constrained ( $\Delta\chi^2 = 13.244$ ,  $\Delta df = 9$ ,  $p = 0.369$ ). Even though the structural weight in Table 9 shows invariance among the groups, the author realised the need to minimize the possibility of research biases in the two age groups (younger than 35 years old and 35 and older) analysis among constructs relationship (path) that may arise from the data strength and weakness when applied to every constructs' path. Therefore, the author decided to test each factorial path separately, while the rest of the paths are freely estimated across the two age groups to look for any non-invariance path.

The findings in Table 10 indicate that young and old age group are non-invariant in certain relational paths. Therefore, in this case testing the individual path has demonstrated to be a more rigorous test for non-invariance. Differences in their behaviour in the context of online shopping continuance can be observed in the different coefficients in the subjective norm  $\rightarrow$  enjoyment link. Specifically, in the comparisons of the young with old ( $\Delta\chi^2 = 5.609$ ,  $p = 0.018$ ), the influence of subjective norm is greater for younger sample than for older sample (Tables 10).

Hypot hesis	Paths			Younger than 35 Sample			35 and older Sample			Invariance		
				RW	C.R.	P value	RW	C.R.	P Value	$\Delta DF$	$\Delta\chi^2$	P Value
H4 a	Enj	<---	SN	0.186	7.039	***	0.322	5.694	***	1	5.609	0.018

Table 10: Structural Factorial of theoretical construct (structure Invariant – Regression) for the age sample (Younger than 35 – 35 and Older)

The result of the latent mean analysis is reported in Table 11. Age was found to have latent mean non-invariance for the research constructs. This difference between younger than 35 and 35 and older, in the context on continuance internet shopping, resulted from the differences of the latent mean of trust, enjoyment, and continuance intention to use. The standardized latent mean of trust, enjoyment, and continuance intention to use in the younger than 35 sample is estimated to be: trust = 0.278; enjoyment = 0.401; continuance intention to use = 0.217 with a standard error (SE) of: trust = 0.097; enjoyment = 0.095; continuance intention to use = 0.097, and CR (t-value) of: trust = 2.875; enjoyment = 4.209; continuance intention to use = 2.237. The result is significant ( $p > 0.05$ , trust,  $p = 0.004$ ; enjoyment  $p = ***$ ; continuance intention to use  $p = 0.025$ ). Thus, trust is 0.278 more (higher) among the younger sample than it is among older sample. The same is for enjoyment with 0.401 and continuance intention to use with 0.217 are more (higher) among the younger sample than it is among older sample.

	Latent mean	S.E.	C.R.	P Value
PU	0.096	0.092	1.037	0.300
Trust	0.278	0.097	2.875	0.004
Enj	0.401	0.095	4.209	***
CIU	0.217	0.097	2.237	0.025
SQ	0.070	0.091	.769	0.442
SN	0.149	0.091	1.644	0.100

Table 11: Means: (Younger than 35 - Default model) - for the age sample (Younger than 35 – 35 and Older)

## 5.2 Direct and Indirect Effect Analysis

SEM distinguishes between direct, indirect, and total effects (Jöreskog and Sörbom 2001). A total effect consists of a direct and one or more indirect effects. The direct and indirect effects in Table 12 reveal that the greatest total influences of direct and indirect (mediated) effects on continuance intentions come from enjoyment for the 35 years and older (0.749) and (0.705) for younger than 35 years samples. The next greatest influences derive come from site quality (0.624) for the 35 years and older and (0.620) for younger than 35 years samples. Additionally, subjective norm has the second most direct influences for younger than 35 years (0.215) on continuance intention than 35 years and older samples (0.212). Therefore, site quality, trust, perceived usefulness, enjoyment, and subjective norm all play significant direct and indirect roles for continuance intentions regarding online shopping for both age groups.

Construct	CIU (Younger than 35)			CIU (35 and older)		
	Direct	Indirect	Total	Direct	Indirect	Total
SQ	-----	0.620	0.620	-----	0.624	0.624
TRUST	-----	0.318	0.318	-----	0.269	0.269
PU	0.211	0.215	0.426	0.263	0.244	0.506
SN	0.215	0.131	0.346	0.212	0.241	0.453
ENJ	0.741	-----	0.705	0.749	-----	0.749
$R^2 = 0.65$						

Table 12: Direct and Indirect influences on CIU



## 6 DISCUSSION

This research provides an integrated conceptual model that clarifies the theoretical problems of continuance e-shopping intentions and age differences. All hypotheses are confirmed, demonstrating that perceived enjoyment, perceived usefulness, and subjective norms are the main determinants of continuance intentions, explaining 65% of continuance e-shopping intentions. However, enjoyment is more influential (see Table 6; SRW = 0.543, C.R. = 10.244), followed by perceived usefulness (SRW = 0.198, C.R. = 4.594), and then subjective norms (SRW = 0.182, C.R. = 4.974). These findings are consistent with previous research (e.g., Bhattacharjee 2001a; Childers 2001; Davis *et al.* 1989; George 2002; Shih and Fang 2004; Taylor and Todd 1995; Teo *et al.* 1999; Venkatesh *et al.* 2003). Enjoyment, perceived usefulness, and subjective norms have positive influences (direct or indirect) on consumers' continuance e-shopping intentions.

The measurement weights of the young and old groups, are consistent between those groups, as are many of the regression paths, i.e.: between site quality → trust; site quality → perceived usefulness; trust → perceived usefulness; perceived usefulness → enjoyment; subjective norms → continuance intentions; the perceived usefulness → subjective norms and perceived usefulness → continuance intentions relationship; and enjoyment → continuance intentions are similar for both young and old age groups. However, the subjective norms → enjoyment path is non-invariant between the age groups. That is, younger people are more influenced by evaluations of the opinions of others (young RW = 0.186, C.R. = 7.039, old RW = 0.322, C.R. = 5.694;  $\Delta\chi^2=5.609$ ,  $p=0.018$ ). This may reflect the general tendency of more mature people to rely on their own experience or, rephrasing, young people are more influenced by peer groups (Spero and Stone 2004).

Site quality and trust are strong antecedents of perceived usefulness (site quality SRW = 0.318, C.R. = 5.796; trust SRW = 0.484, C.R. = 8.673). Both site quality (0.620) and trust (0.318) have large indirect effects on continuance intentions (see Table 12). These findings match the collectivist culture of Saudi Arabia, where people tend to trust only those within their in-group (Yamagishi and Yamagishi 1994).

Trust and site quality do not have direct effects on continuance intentions toward the online retailer. Rather, significant indirect effects from trust and site quality act through perceived usefulness, subjective norms, and enjoyment.

Trust, enjoyment and continuance intention are higher among the younger population (trust,  $p=0.004$ ; enjoyment  $p<0.001$ ; continuance intention to use  $p=0.025$ ). Thus, Trust is 0.278 more (higher) among the younger sample than it is among older sample. The same goes for enjoyment with 0.401 and continuance intention to use with 0.217, both higher among the younger sample than among older sample, consistent with the expected greater readiness of younger people to embrace technological innovations.

## 7 CONCLUSION, CONTRIBUTION, RESEARCH LIMITATION AND FURTHER RESEARCH

This study was motivated by prior research indicating that many consumers who search different online retail sites abandon their purchase intentions. In order to study the important, little-researched area of continuance e-shopping intention, we adapted the TAM and ECT. By integrating these and deriving our own model, we have contributed to an understanding of the factors that encourage consumers to complete their e-shopping intention. A key conclusion from this study is the importance of both the direct and indirect effects of age differences, which should be taken into consideration when developing any website and marketing strategy for e-retailing.

From a theoretical standpoint, these results contribute to existing literature in several ways. First, we enhance e-shopping literature by providing insights into the factors that affect online shopping continuance intentions. We also confirm that enjoyment, subjective norms, and perceived usefulness have direct and indirect effects on continuance intention. The greater positive indirect effects of site quality on perceived usefulness, subjective norms, and enjoyment and that of trust on enjoyment and subjective norms suggest that online retailers should increase the positive perceptions of trust and site quality to make their e-shopping environment more useful and enjoyable. To have a significant effect on e-shopping continuance intentions, any e-shopping environment should encourage a shopping experience that is both useful and enjoyable.

Second, the results support previous research that perceived usefulness reflects the utilitarian aspects of online shopping, whereas perceived enjoyment reflects its hedonic aspects. In our study, enjoyment has the strongest direct effect on e-shopping continuance intentions. Nevertheless, combining the direct and indirect effects indicates that perceived usefulness had a stronger total effect on e-shopping continuance intentions, in support of previous findings that usefulness has strong links to intentions. Usefulness is an important criterion for consumers when they select online stores and can increase their satisfaction. Consumers may continue using an e-commerce service they consider useful, even if they are dissatisfied with it (Bhattacharjee 2001a).

Finally, few prior studies use SEM as their methodological approach in Saudi Arabia, and even fewer apply invariance analysis to verify age differences with a sample obtained from Saudi Arabia. This study addresses this knowledge gap for a unique culture.

## **8 RESEARCH LIMITATION AND FURTHER RESEARCH**

Typical of most survey research, this study suffers some limitations. First, the novelty associated with using an online survey indicates the empirical data may lead to novelty effect bias. Second, the online survey was posted with permission on Saudi universities' online forums. Moreover, the survey may suffer a non-response bias, but there is no systematic way to determine the response rate in an online survey. Although the survey attracted a large sample of participants (928 in the first two months) and covers all the Saudi three main commercial, geographical regions, it still may suffer from the biases that are inherent to survey studies. On the other hand, this survey can claim to be more realistic than typical laboratory experiments, as it addresses real consumers and real shopping issues, outweighing the disadvantages of the survey method.

In the online context; further research could usefully include finding ways to appeal to both hedonic and utilitarian shoppers, especially within the large younger segment of the population. This research demonstrates that the well-established TAM can be incorporated with ECT, a finding which leads us to call for additional, future research related to continuance intentions, such as comparisons of new e-shoppers with continuing users with more Internet knowledge and experience. Additionally, the research findings draw attention to researcher to investigate whether usefulness or satisfaction lead to continuance intention.

Finally, in line with the current interest in cross-cultural research, we recommend that our model should be tested in other cultures, particularly those that may have parallels with Saudi Arabia, such as the Gulf Regions. In addition, the impact of factors such as satisfaction, loyalty incentives, brand reputation, and interactivity, and the moderating effect of different demographic factors, such as income, gender, internet experience and regional location, should be considered in future research investigations.

## 9 MANAGERIAL IMPLICATIONS

This study provides managers with useful and important information to encourage shoppers to complete their online purchases, and we suggest that this should feed into website planning and marketing strategies. Managers and site developers should focus on the quality and informative content, which reflect usefulness and enjoyment. Managers also should not underestimate the power of the technology and the Internet, especially in a young population. By improving their sites, by making them more useful and enjoyable, managers would work to maximise continued shopping and minimize churn. This is important, because customers who fail to return reduce the firm's customer base and most often its revenues and then may require substantial expenditures to attract them back from competitors. In short, we recommend that in these ways managers can build sustainable, continued e-shopping relationships that are relevant and credible to the companies' target audience. Managers cannot ignore either direct (perceived usefulness, enjoyment, subjective norms) or indirect (site quality, trust, perceived usefulness, subjective norms) influences on continuance intentions. The findings indicate that both young and old respondents have concerns about trusting local e-shopping sites. Managers are advised to enhance the website security, content and design quality, and add a dual language feature, in order to retain consumers and build trustworthy and trusting long term relationships.

Of further value to online retailers is that they can build positive word of mouth to enhance the perceptions of friends and family members of current customers about the website's usefulness, site quality, interactivity, and enjoyment, which can increase perceptions of the firm's trustworthiness. The research findings confirm that the Saudi youth population is spending more time online, spending more money in e-shopping, and trusting internet shopping more than the older population. Therefore, managers should communicate the product benefits and values and rely on the young people to spread the positive word of mouth and recommend the product. Peer pressure would engage and encourage consumers to enjoy shopping online leading to more intention to e-shop. This is more important among young consumers as they are making the online world their environment, developing personal relationships, playing, learning, and spreading experiences. Moreover, the findings indicate that young people have greater trust, enjoyment, and intentions to continue e-shopping than older people. This is good news for Saudi online retailers! However, managers could also work towards increasing levels of trust, enjoyment, and intention to continue e-shopping among the older population.

In these many ways this research can help managers shift consumers from single visits to ongoing, trusting, useful, and enjoyable relationships, which should produce more stable, long-run business for online firms.

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