



Research Article

# Integrated Conceptual Framework to Explain Online Purchasing Intention in E-Commerce

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## Abstract

E-commerce has several benefits with many challenges. The identity of the involved parties and verifying the suitability of the goods is a matter of debate. There is no proper theory to explain this complex online purchasing behavior. A conceptual framework development was conducted specifically to find a model to measure online purchasing intention. A thematic literature survey was conducted to evaluate the theoretical models. The identified factors were grouped and used to build the initial model ( $M_{\alpha}$ ) in study one. Technology acceptance models and E-service quality models were critically reviewed to identify a major component in the context of e-commerce in study two. Results from study one and study two were integrated, and constructs were regenerated to build the second model beta ( $M_{\beta}$ ). The results of the delphi method confirm that the second model beta ( $M_{\beta}$ ), with minor modifications, was used to generate the third model gamma ( $M_{\gamma}$ ). Further, model gamma ( $M_{\gamma}$ ) was tested utilizing the nominal group technique with industrial experts, and those results confirm model gamma, without modifications, and this was then called model mu ( $M_{\mu}$ ). The constructs of the model, Personal Attributes, Social Influence, Advantage Expectancy, Effort expectancy, Facilitating Conditions, Vendor Quality, Transaction Safety, E-commerce Services, Web Quality and Trust had a direct association with online purchasing intention. Furthermore, Vendor Quality, Transaction Safety, E-commerce Services and Web Quality had an indirect association with online purchasing intention through Trust. Age, Gender and Expertise were the moderators of the relationships between the constructs of the model and online purchasing intention.

**Keywords:** Conceptual Framework, Online Purchasing Intention, E-commerce

## Introduction

Internet has transformed every activity in all the aspects of the human beings' life (Abiodun, 2013). Accordingly, ways of transaction or purchasing goods have been replaced by online purchasing (Sharma & Lijuan, 2015). Global reach and several other benefits over traditional shopping motivate people to transact online (Alam & Yasin, 2010 and Jiang et al., 2013). A point which is often overlooked is that, people are now reluctant to use online channels for shopping frequently because of the attendant uncertainty and risks (Cha, 2011; Nazir et al., 2012; Meskaran et al., 2013 and Alfina et al., 2014). Under these circumstances, Kim & Forsythe (2010) show that most customers search the internet for product information only without actually purchasing online.

Online companies can implement new strategies to attract potential customers and retain existing customers to maintain and expand their market shares by identifying consumer characteristics which affect their buying behavior (Ahmad et al., 2010 and Adnan, 2014). Many researchers conclude that online buying intention is affected by both technological factors and socio-cultural factors (Abu-shamaa & Abu-Shanab, 2015). Therefore, various studies have examined and recommended to examine the impacts of certain factors on on-line attitudes and behaviors (Cho & Sagynov, 2015).

In essence, consumers' online purchasing behavior is very complex and personal (Chen et al., 2015). Further, factors that influence online shopping intention are still a matter of debate, and the results from research in this field are inconclusive, often fragmented and not cohesive (Sahney et al., 2013). Hence, the presentation of a comprehensive, integrated model is necessary. Abu-shamaa and Abu-Shanab (2015) argue that online purchasing intention is affected by both technological and socio-cultural factors. Therefore, the attitudes and behaviors of consumers and retailers need to be examined and re-

examined in the future (Cho & Sagynov, 2015).

## Requirements of the Conceptual Framework

Previous empirical studies employ technology acceptance theories to measure on-line purchase intention in the context of e-commerce. However, technology acceptance models were developed to measure the acceptability of a new technology by new users in an organization, especially those in the computer field. According to Davis et al. (1989); Ajzen (1991); Davis (1989); Taylor and Todd (1995); Venkatesh and Davis (2000); Venkatesh et al. (2003); and Venkatesh et al. (2012), these theories were utilized in every study that involved technology acceptance in the organizational context.

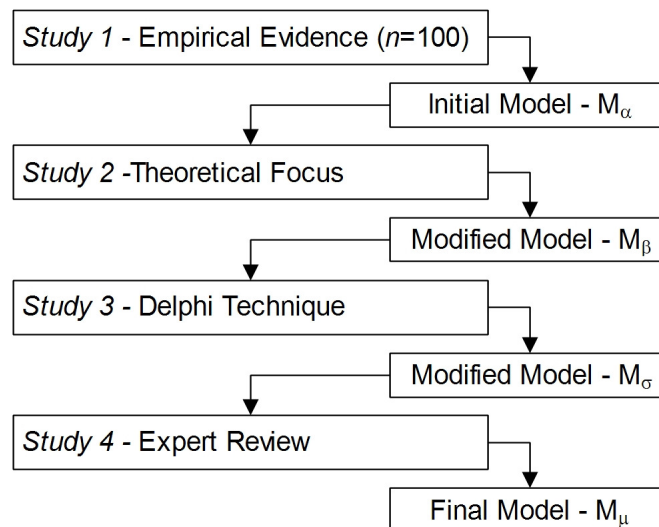
Furthermore, through a closer examination of the existing literature, four major domain areas, namely, consumer characteristics (Chan et al., 2003; Chang, Cheung & Lai, 2005 and Kandambi & Wijayanayake, 2017a), retailer characteristics (Chan et al., 2003; Chang et al., 2005 and Kandambi & Wijayanayake, 2017b), web characteristics (Chan et al., 2003 and Chang et al., 2005) and social characteristic (Chan et al., 2003 and Chang et al., 2005) can be identified within the concept of e-commerce. According to Ajzen (1991); Davis (1989); Venkatesh et al. (2003); Taylor and Todd (1995); and Venkatesh and Davis (2000), technology acceptance theories have not considered retailer characteristics, website characteristics and some customer characteristics.

The impacts of several constructs of TPB, TRA and TAM such as attitude, subjective norms and perceived behavioral control have been widely studied, while other important factors have been ignored. Thus, according to the analysis of the gap, there has been **no proper theory, so far, to explain online purchasing intention in the context of e-commerce.**

## Objective

Therefore, the time has come for IS researchers to start building their own theories instead of applying theories from other disciplines (Chan et al., 2003). Therefore, IS researchers should work out behavioral models, declaring what is unique and specific to the context of consumer-based electronic commerce (Chan et al., 2003). The main objective is to develop an integrated conceptual framework to explain online purchasing intention in the context of e-commerce.

## Conceptual Framework Development Methodology



**Figure 1: Conceptual Framework Development Process**

Source: Developed by the Researcher

## Study 1 – Empirical Evidence

### Inputs for Study 1

One hundred twelve ( $n=112$ ) empirical research frameworks were evaluated through a comprehensive thematic literature survey in the exploratory study. That thematic literature review recognized two hundred forty-two ( $n=242$ ) variables, four significant clusters and relationships among variables with multiple pieces of evidence [hundred ( $n=100$ )], and the relationships among the variables were justified by a single piece of evidence [one

The sequential process was carried out to develop a conceptual framework by four separate studies (see Figure 1). The initial model ( $M_\alpha$ ) was developed by an exploratory study based on the thematic literature review in study 1. Second, the modified model ( $M_\beta$ ) was generated based on the initial model ( $M_\alpha$ ), using the main technology acceptance and e-service quality models named as study 2. Third, the modified model ( $M_\beta$ ) was further modified and generated model ( $M_\sigma$ ) in study 3, using the Delphi technique. Finally, model ( $M_\mu$ ) was developed from model ( $M_\sigma$ ) in study 4, based on interviews with experts.

hundred eighty-one ( $n=181$ )] (Kandambi & Wijayanayaka, 2017a and Kandambi & Wijayanayaka, 2017b).

### Variables Identified

Different researchers use different terminologies for the same variable. Variables with the similar working definition are grouped into one category. Among these, three variables ( $n=3$ ) are in a dependent variable category, and forty ( $n=40$ ) variables are in an independent variable category.

**Table 1: Variable Identification Summary**

Cluster	Variable	Articles	Variable
Customer	Knowledge, Commitment, Perceived Technology, Innovativeness, Life Style, Involvement, Personality, Self-efficacy, Shopping Orientation, Demographics, Loyalty, Perceived Enjoyment, Value, Perceived Benefit, Experience, Attitude, Perceived Ease of Use, Satisfaction, Perceived Usefulness, Perceived Risk, Trust	71	22
Retailer	Method of Payment, Social Presence, Third Party Security, Price, After-Sales Service, Logistics, Promotion, Product, Customer Service, Reputation	43	10
Medium	Compatibility, Information, Web Quality, Security/Privacy	32	4
Macro	E-Review, Infrastructure, Regulatory Framework, Social Influence.	13	4

Source: Developed by the Researcher

Twenty-one ( $n=21$ ) consumer characteristics were identified from seventy-one ( $n=71$ ) articles. Ten ( $n=10$ ) retailer characteristics were found from forty-three articles ( $n=43$ ). Thirty-two ( $n=32$ ) articles contributed to identify four ( $n=4$ ) medium characteristics. Thirteen ( $n=13$ ) articles contributed to identify four ( $n=4$ ) macro environmental characteristics. Three ( $n=3$ ) dependent variables (Purchase actual, Purchasing Intention and Repurchase Intention) were extracted.

#### Cluster Identification

The consumer, the retailer, the web, as a medium of communication between them, and the macro environment, where the dynamics play out, are all involved in the process of ecommerce. The thematic analysis identified four themes, namely, Consumer characteristics as Theme<sub>A</sub> with twenty two ( $n=22$ ) variables, Retailer characteristics as Theme<sub>B</sub> with ten ( $n=10$ ) variables, Medium characteristics as Theme<sub>C</sub> with four ( $n=4$ ) variables, and Macro environmental characteristics as Theme<sub>D</sub> with four ( $n=4$ ) variables.

Retailer characteristics include factors influencing the online consumer behavior such as service quality, privacy and security, control, brand/reputation, delivery/logistics, and after-sales services. Individual or consumer characteristics denote factors specific to the consumer, such as demographics, personality, value,

lifestyle, attitude, consumer resources, consumer psychological factors and experience. In addition to personal characteristics, macro environmental characteristics like culture, social influence, peer influence and mass media play an important role in consumer purchasing decisions. Finally, such medium characteristics as compatibility, information, web quality and security/privacy are some of the critical components that affect online purchasing intention.

#### Identified Relationships

Fifty-one ( $n=51$ ) different relationships found between these variables were supported by multiple sources of the empirical evidence in the category of consumer characteristics and many were supported by a single source of the empirical evidence. Sixteen ( $n=16$ ) relationships found between variables belonging to the retailer characteristics were supported by multiple sources of the empirical evidence. Moreover, eleven ( $n=11$ ) relationships between variables of medium characteristics were supported by multiple sources of the empirical evidence and by a single source of the empirical evidence. Four ( $n=4$ ) relationships involving variables under macro environmental characteristics are supported by multiple sources of the empirical evidence and by a single source of

the empirical evidence, as per the thematic review.

### **The Process of Study 1**

Each cluster was taken separately in the initial stage. The most frequently used variable in the cluster was taken, and the relationship involving that variable and purchase intention was considered at the very beginning. Similarly, the frequency priority of the variables used was utilized to develop the model.

Fifteen (n=15) variables were used and seven (n=7) variables were removed from the initial development from twenty-two (n=22) customer characteristics. Perceived price (Delafrooz et al., 2011 and Kim et al., 2012) does not relate to purchasing intention. Satisfaction (Sharma & Lijuan, 2015) does not have a relationship with purchasing intention, but it has a relationship with (He & Bai, 2011) repurchase intention. Similarly, the researcher could not find any relationship between involvement, commitment and loyalty, with online purchasing intention. The variable knowledge and experience also does not have a relationship with online purchasing, however, it was found to be a moderator in the model development stage. The variable perceived technology represents both perceived usefulness and perceived ease of use, and stood for a combination of PU and PEAU (Ling et al.,

2011). Hence, perceived technology was removed from the model development process.

Among ten (n=10) retailer characteristics, seven (n=7) were involved with the model development and three (n=3) variables were removed from the development. The price was removed, since it is not a significant variable (Delafrooz et al., 2011 and Kim et al., 2012). After-sales service was also removed, since it does not have a relationship with purchase intention. Although product has a significant relationship with purchase intention, it worked better as a moderator rather than in a direct relationship. Hence, the remaining seven (n=7) variables were used to develop the model.

Four (n=4) variables from medium characteristics, which had a relationship with purchase intention, were used to develop the model. Similarly, four (n=4) variables from macro environmental characteristics, which had a relationship with purchase intention, were used to develop the model.

### **The Output of Study 1 - Initial Model Alfa (M<sub>α</sub>)**

The four partial models described above were integrated to develop the initial model M<sub>α</sub>.

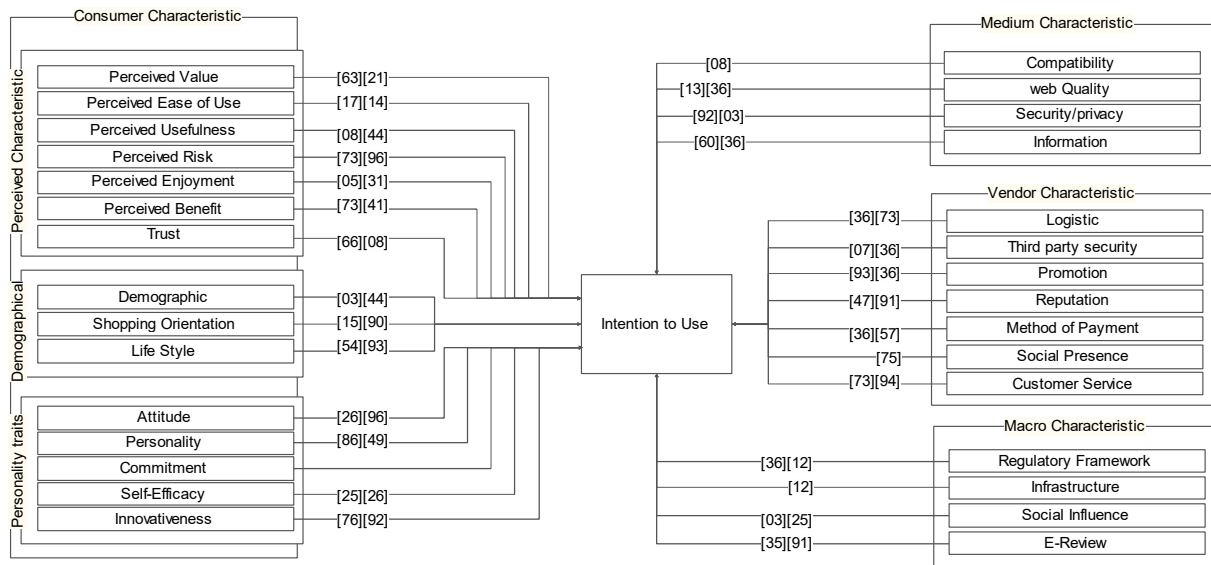


Figure 2: Initial Research Model Ma

Source: Developed by the Researcher  
 Note: Citation Reference for Relationship – Appendix 1

**Study 2 – Evaluation of the Main Extant Theoretical Models**

This section evaluates both reviews of Technology acceptance models and E-service quality models. Technology acceptance models were critically reviewed in four ways. They were compared with the proposed model in this study. Through a closer examination of the existing literature, four major domain areas, namely, Consumer characteristic (Chan et al., 2003; Chang et al., 2005 and Kandambi &

Wijenayake, 2017a), Retailer characteristics (Chan et al., 2003; Chang et al., 2005 and Kandambi & Wijenayake, 2017b), Web characteristics (Chan et al., 2003 and Chang et al., 2005) and Social characteristics (Chan et al., 2003 and Chang et al., 2005) can be identified in the concept of e-commerce. Extant Technology Acceptance theories do not consider retailer characteristics, website characteristics and some customer characteristics.

**Review of Technology Acceptance Models**

Table 2: Variables Grid of Technology Acceptance Theories vs. Proposed Model

	Construct	Main Theories											Proposed Model	
		TRA	TAM	E-TAM	TAM2	MM	TPB	C-TAM-TPB	MPCU	IDT	SCT	UTAUT		UTAUT2
Remain from Main theories	Anxiety													
	Habit													
	Observability													
	Output quality													
	Result Demonstrability													
	Trialability													
Consumer	Commitment													
	Perceived Benefit													
	Perceived ease of use													

	Attitude towards Behavior												
	Enjoyment												
	Self-Efficacy												
	Price value												
	Perceived Usefulness												
	Innovativeness												
	Life Style												
	Personality												
	Shopping Orientation												
	Demographic												
	Perceived Risk												
	Trust												
Retailer	Method of Payment												
	Social presence												
	Third party security												
	Logistics												
	Promotion												
	Customer Service												
	Reputation												
Medium	Information												
	Web Quality												
	Compatibility												
	Security/privacy												
Macro	E-Review												
	Regulatory Framework												
	Subjective norms												
	Facilitating Condition												
	<b>Total variable (n=36)</b>	2	3	4	5	4	3	6	6	5	4	6	9
	<b>Percentage %</b>	5.6	8.3	11.1	13.9	11.1	8.3	16.7	16.7	13.9	11.1	16.7	25.0

Source: Developed by the Researcher

The above thematic evaluation compared the concept and its constructs belonging to each model. All constructs from each prior technology acceptance model were taken into consideration. Both constructs emerging from the thematic review and those included in prior models were listed, and identical constructs were merged and renamed to remove redundancy. Hence, perceived usefulness (TAM, and combined TAM-TPB), extrinsic motivation (MM), job fit (MPCU), outcome expectation (SCT) and relative advantage (IDT) were merged because they measured the same construct. Hence, perceived usefulness was used to represent all the above constructs because of the similarities between them. Attitude towards behavior, affect, affect towards behavior and instructional motivation were all constructs used to measure the attitude of an individual, according to their working definitions. Hence, attitude was used to represent all these constructs.

Complexity (MPCU) and ease of use (IDT) are similar constructs that measure perceived ease of use (TAM). Hence, perceived ease of use was retained to represent these constructs. Enjoyment, perceived enjoyment and hedonic motivation are all similar concepts according to their working definitions. Hence, the term perceived enjoyment was retained for further work. Finally, psychological attachment (E-TAM), subjective norms (TRA, TAM2, TPB/DTPB, and combined TAM-TPB), social factors (MPCU) and image (IDT) are all determinants of social influence. Hence, social influence was used as the main variable for the further model development.

All major technology acceptance theories discuss only fourteen ( $n=14$ ) constructs. However, from the thematic evaluation conducted in Chapter 2, thirty ( $n=30$ ) constructs have been identified as

influencing online purchasing. Eight ( $n=8$ ) out of the fourteen ( $n=14$ ) constructs from previous theories were similar to some of the thirty variables identified by the thematic evaluation of this study. Moreover, those variables were very commonly used in the research context.

Hence, the total number of constructs identified by both thematic evaluation and prior Technology Acceptance theories are thirty-six ( $n=36$ ). According to the table, the minimum number of constructs from the available range of constructs was used by TRA, which was two constructs ( $n=2$ ,  $p=5.6\%$ ). That was the beginning of Technology Acceptance theories. Then TAM and TPB used three constructs ( $n=3$ ,  $p=8.3\%$ ) per model. Four constructs ( $n=4$ ,  $p=11.1\%$ ) were employed by the E-TAM, MM and SCT theories in their models. The TAM2 and IDT models used five constructs ( $n=5$ ,  $p=13.9\%$ ) to measure technology acceptance. Another three models, C-TAM-TPB, MPCU and UTAUT employed six constructs ( $n=6$ ,  $p=16.7\%$ ) in their studies. UTAUT was crafted as an essence of previous technology acceptance theories. It

evaluated and integrated all aspects of extant technology acceptance theories. Hence, UTAUT uses the maximum number of constructs associated with its model. UTAUT2 has nine constructs ( $n=9$ ) employed in its model, and the percentage of variance explained is calculated as twenty-five percent ( $p=25.0\%$ ). It must be emphasized here that the model proposed by this study introduces thirty ( $n=30$ ) different variables in the context of consumer-based electronic commerce, which explains eighty-three-point three percent of the total variance ( $p=83.3\%$ ).

### Review of E-Service Quality Model

E-service quality plays a significant role in the context of e-commerce (Santos, 2003). E-service quality directly influences attractiveness, hit rate, customer retention, stickiness and positive word-of-mouth, and can enhance online purchasing considerably. Hence, the result of this evaluation takes e-service quality model review into consideration.

**Table 3: Review of E-Service Quality Model**

Study	Dimension
<b>e-SERVQUAL Zeithaml et al (2000)</b>	1) access 2) assurance/trust 3) ease of navigation 4) efficiency 5) flexibility 6) customization/personalization 7) price knowledge 8) security/privacy 9) site aesthetics 10) reliability 11) responsiveness
<b>Cox and Dale (2001)</b>	1) accessibility 2) communication 3) credibility 4) understanding 5) appearance 6) availability
<b>Zeithaml et al (2002)</b>	1) information availability and content 2) ease of use, 3) privacy/security 4) graphic style 5) reliability/fulfillment
<b>Madu and Madu (2002)</b>	1) performance 2) features 3) structure 4) aesthetics 5) reliability 6) storage capability 7) serviceability 8) security and system integrity 9) trust 10) responsiveness 11) product/service differentiation and customization 12) web store policies 13) reputation 14) assurance 15) empathy
<b>eTailQ Wolfenbarger and Gilly (2003)</b>	1) web site design 2) reliability/fulfillment 3) privacy/security 4) customer service
<b>Santos (2003)</b>	1) ease of use 2) appearance 3) linkage 4) structure and layout 5) content 6) reliability 7) efficiency 8) support 9) security 10) communication 11) incentive
<b>e-S-QUAL/ e-RecS-QUAL Parasuraman et al (2005)</b>	1) efficiency 2) fulfillment 3) system availability 4) privacy 5) responsiveness 6) compensation 7) contact



<b>Collier and Bienstock (2006)</b>	1) functionality 2) information accuracy 3) design 4) privacy 5) ease of use 6) order accuracy 7) order condition 8) order timeliness 9) interactive fairness 10) procedural fairness 11) outcome fairness
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Source: Developed by the Researcher

E-service quality models mainly deal with the dimensions of customer service, privacy and security, website quality and after-sales service. Even the construct E-S-QUAL e-RecS-QUAL, in the model of Parasuraman et al. (2005), can be regrouped into the above four main categories. For example, efficiency and system availability are grouped into website quality, while responsiveness, compensation and contact are grouped into after-sales service. Also, privacy is grouped with privacy and security, and fulfillment is grouped into customer service. Most of the constructs from e-service models can be regrouped based on their working definitions. Web site design, appearance, structure and layout, graphic style, aesthetics, appearance and site aesthetics from all e-service models define slightly different or similar aspects of web design and interface design.

Information accuracy, content and information availability are similar dimensions, which represent or are formulated by the construct 'information'. Similarly, system availability, accessibility, availability and access represent the construct termed 'system availability'. Though functionality, linkage, support, storage capability, web store policies and features, have different names, they all represent the functionality of the web site. Further, efficiency and performance of the website represent the speed of the website. Assurance/trust, contact, responsiveness, empathy, reliability, customization/personalization and fulfillment, are all dimensions of customer service, based on their working definitions. Similarly, compensation, outcome fairness, customer service, responsiveness, serviceability, interactive fairness and procedural fairness, all represent the dimension of after-sales service.

**Table 3: Variable Grid of E-service Quality Theories vs. Proposed Model**

	Construct	Main e-Service Quality Theories								Proposed Model	
		e-S-QUAL e-RecS-QUAL Parasuraman et al. (2005)	Cox and Dale (2001)	WebQ Woelfel et al. (2003)	eTailQ Ifinbarger & Gilly (2003)	e-SERVQUAL Zeithaml et al. (2000)	Zeithaml et al. (2002)	Madu and Madu (2002)	Collier and Bienstock (2006)		Santos (2003)
<b>Consumer Characteristics</b>	Commitment										
	Perceived Benefit										
	Perceived ease of use										
	Attitude towards										
	Enjoyment										
	Self Efficacy										
	Price Value										
	Perceived Usefulness										
	Innovativeness										
	Life Style										
	Personality										
	Shopping Orientation										
	Demography										
	Perceived Risk										

	Trust									
Retailer Characteristics	Method of Payment									
	Social presence									
	Third party security									
	Logistics									
	Promotion									
	Customer Service									
	After-sales Service									
	Reputation									
		Information								
Medium	Web Quality									
	Compatibility									
	Security/Privacy									
Macro	E-Review									
	Regulatory Framework									
	Subjective Norms									
	Facilitating Conditions									
	<b>Total variables (n=31)</b>	<b>4</b>	<b>5</b>	<b>4</b>	<b>7</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>31</b>
	<b>Percentage %</b>	<b>12.9</b>	<b>16.1</b>	<b>12.9</b>	<b>22.5</b>	<b>16.1</b>	<b>19.3</b>	<b>22.5</b>	<b>22.5</b>	<b>100</b>

Source: Developed by the Researcher

The evaluation grid shows four different variables clusters, where all e-service models were highlighted. Privacy and security, web quality, information, customer service, and after-sales service can be identified as separate categories, which are used repeatedly in the e-service models. Furthermore, trust, method of payment, social presence, logistics and reputation can be identified as constructs separate from those of the grid. Based on this result, the researcher formulated four main concepts; 1. Transaction safety, consisting of privacy and security, 2. Web quality, 3. E-commerce service, consisting of customer service and after-sales service and 4. All other constructs grouped under vendor quality.

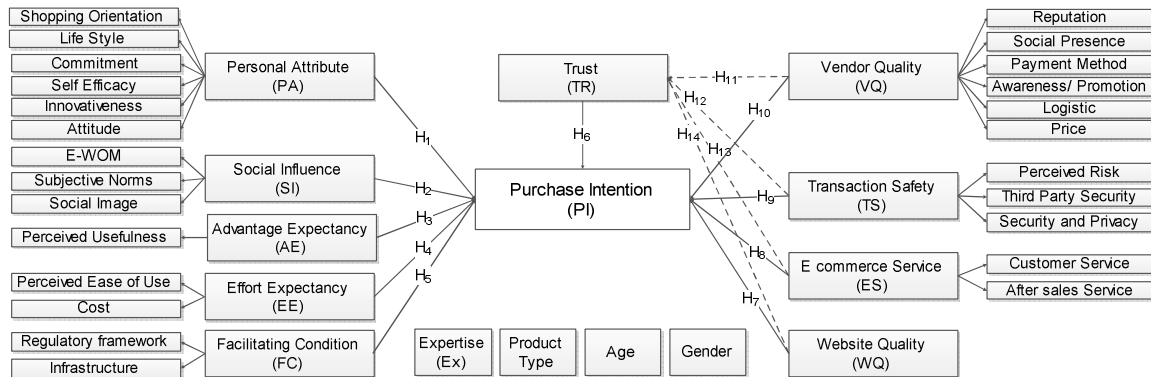
#### Secondary Model Development: Model Beta ( $M_{\beta}$ )

The initial model alfa ( $M_{\alpha}$ ) was derived from the empirical evidence found in the literature survey, and it was used to build the secondary model, model beta ( $M_{\beta}$ ). The result of the evaluation of the Technology Acceptance models and the result of the evaluation of e-Service models are the foundation for developing the secondary

model, beta ( $M_{\beta}$ ). All technology acceptance theories are accepted in the context of the organization. However, e-commerce engages with both technology acceptance and e-service quality, as per the technology acceptance model review. Hence, UTAUT by Venkatesh et al. (2005) was used to measure technology acceptance, and models E-S-QUAL, E-RecS-QUAL by Parasuraman et al. (2005) and eTailQ by Wolfinbarger and Gilly (2003) were used with modification in the context of e-commerce. Personal attributes, advantage expectancy, effort expectancy, facilitating conditions and social influence constructs were adopted from UTAUT by Venkatesh et al. (2005) with an adjustment to the context of e-commerce. Similarly, web quality, transaction safety, vendor quality and customer service constructs were adopted from E-S-QUAL, E-RecS-QUAL by Parasuraman et al. (2005) and eTailQ by Wolfinbarger and Gilly (2003), with modifications.

#### Modified Model $M_{\beta}$

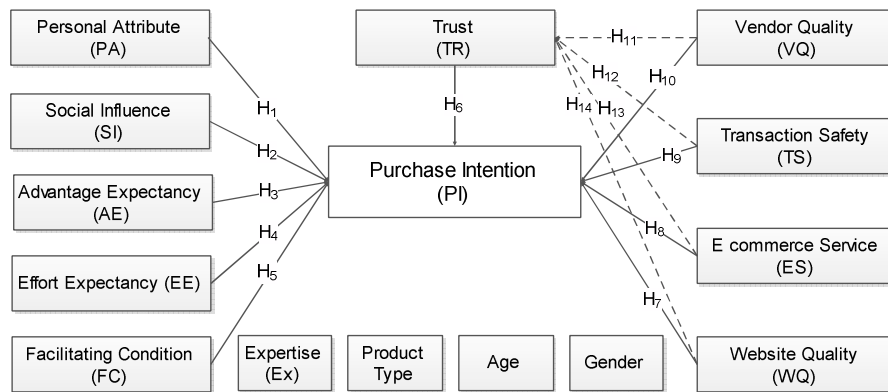
Output of study 2 with second order level constructs.



**Figure 3: Second Research Model M<sub>β</sub> - Second Order**

Source: Developed by the Researcher

Output of study 2 with first order level constructs.



**Figure 4: Second Research Model M<sub>β</sub> - First Order**

Source: Developed by the Researcher

**Study 3 - Model Verification by the Delphi Method**

The Delphi technique is a structured brainstorming session with a series of sequential questionnaires with ‘rounds’ and a controlled feedback that seeks to gain the most reliable opinions of a group of experts (Powell, 2003). Hence, this technique is suitable for validating the findings and will contribute to the credibility of the research as well (Powell, 2003). The researcher was not involved in the problem-solving process, but worked as a facilitator. The researcher invited five members from three state universities and one private university. A research assistant was

appointed as a coordinator to report the feedback of the panel members.

**Delphi Process**

**Introduction and explanation:** The researcher, as a facilitator, welcomed the participants and explained to them the purpose and the procedures of the meeting. The research gap, the objective of the research and the research questions were provided in a document form for reference. **Silent generation of ideas (10 minutes):** The Facilitator provided each participant with a sheet of paper with the question to be addressed, and asked them to write down all the ideas that came to their minds when

considering the question without discussing. **Round 1 (15–30 minutes):** The first-round questionnaire is usually unstructured and seeks an open response (Powell, 2003). The question arose about factors, their grouping and the relationships between factors to confirm the allocation of marks in the Likert scale. That round helped to identify the issues in the constructs of the model when panel members allocated marks to the Likert scale which ranged from strongly disagree to strongly agree. Panel members had to decide whether to retain, to remove, to add elsewhere or to merge the given constructs. **Round 2 (15–30 minutes):** The second and subsequent rounds included more specific questions, with questionnaires seeking a quantification of earlier findings. In the second round, each delphi participant received another (second) questionnaire and was asked to review the items summarized by the experts, based on the information provided in the first round. Thereafter, their answers, including all modifications, were collected and the issues were summarized into one sheet, and the copies of that sheet were distributed to all the members for debate. The members were instructed to reproduce the model including the factors that were problematic. Again, there was a mark allocation for the model to extract further issues. As a result of round two, areas of disagreement and agreement were identified. The round did not end until all members of the panel reached an agreement. **Round 3 (15–30 minutes):** In the third round, each delphi panelist received a questionnaire that included the items and ratings summarized by the experts in the previous round and was asked to revise his judgment. This round gave delphi panelists an opportunity to make further clarifications of both the information and their judgments of the relative importance of the items. In this round, major modifications were not allowed. This round provided a final opportunity for panelists to revise their judgments. The round should end in consensus. **Group Discussion (30–45 minutes):** Participants were invited to verbalize their explanations or further discuss any of the ideas that their colleagues have brought up, and which might have not

been clear to them. The group suggested some new items for discussion and combined items into categories, but no ideas were eliminated.

### ***Analysis of the Rounds***

#### **Results of Round 1 (Appendix 2, Table 1):**

Based on the mark allocation made by each member of the panel for each construct, the mean value was calculated. Each construct that had a mean value below and equal to three ( $m=3.0$ ) was identified as problematic. Hence, from the first round of the Delphi study, innovativeness, lifestyle, shopping orientation, cost, social presence, price, payment method and logistics were identified as constructs that needed resolution. After the discussion in the second round, it was decided to remove lifestyle, shopping orientation and product type from being designated as moderators. In the second round, after the debate, based on the first-round results, an outcome and unanimous mark allocation were generated.

#### **Results of Round 2 (Appendix 2, Table 1):**

Based on the mark allocation of each member of the panel for each construct, the mean value was calculated. Each construct that had a mean value below or equal to three (mean=3.00) was identified as problematic. Hence, in the second round of the Delphi study, social presence, payment method and logistics were identified as constructs to be resolved. After the discussion in the second round, it was decided to resend the social presence, payment method and logistics constructs to vendor quality. The third round, after the debate based on the second round results, generated a consensual outcome and mark allocation.

#### **Results of Round 3 (Appendix 2, Table 1):**

The result indicates that no mean value scored below 3.0. Hence, the delphi panel agreed to the model with the above mentioned modifications.

### ***Summary of the Discussion***

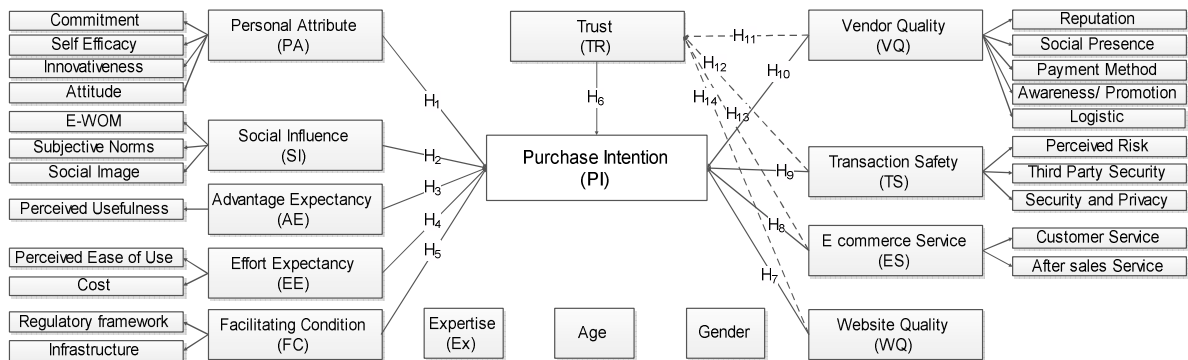
Based on the mark allocation, innovativeness, lifestyle, shopping orientation, cost, social presence, price,

payment method and logistics were identified as constructs to be resolved in the first round of the Delphi study. After the discussions in the second round, it was decided to stop lifestyle, shopping orientation and product type from being designated as moderators. Then, based on the mark allocation of each member of the panel, social presence, payment method and logistics were identified as constructs to be resolved in the second round of the Delphi study. After the discussion in the second round, it was decided to resend the social presence, payment method and logistics

constructs to vendor quality. In the third round, the results indicated that no mean value scored below 3.0. Hence, the Delphi panel agreed to the model with the modifications made in round 2, and this modified model was termed model gamma ( $M_{\sigma}$ )

**Model  $M_{\sigma}$**

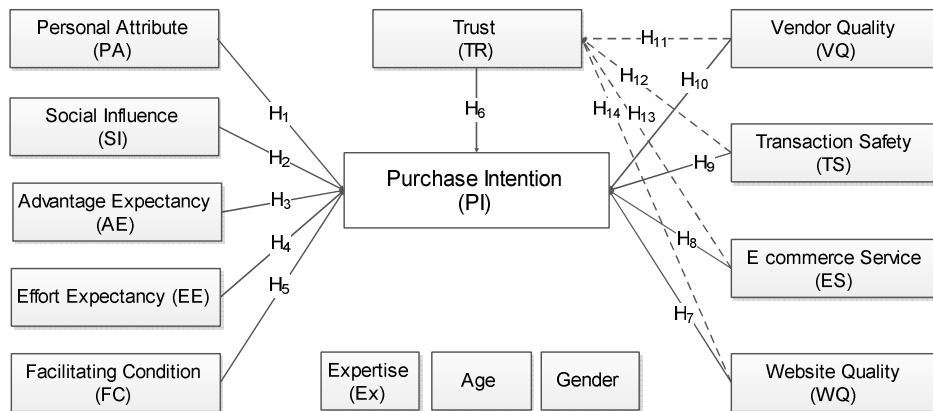
Output of study 3 with second order level constructs.



**Figure 5: Second Research Model  $M_{\sigma}$ - Second Order**

Source: Developed by the Researcher

Output of study 3 with first order level constructs.



**Figure 6: Second Research Model  $M_{\sigma}$ - First Order**

Source: Developed by the Researcher

**Study 4 - Nominal Group Technique Involving Industrial Experts**

This study was done to reconfirm the output model of the Delphi study using the opinions of industrial experts. Ten industrial experts from the leading online shopping business founders and CEOs were invited for the study. The output model ( $M_{\sigma}$ ) of the Delphi technique in study 3 was tested in this study.

**Process**

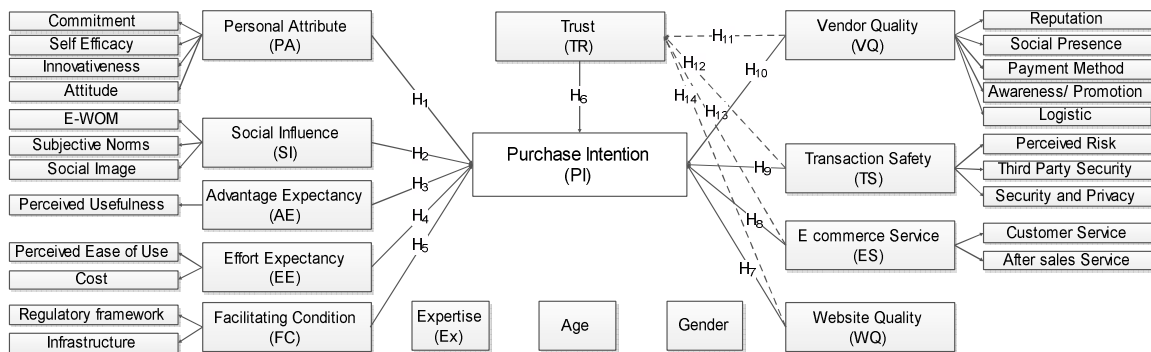
**Introduction and Explanation:** The researcher explained the purpose and procedures of the meeting to each industrial expert. Then, he asked each expert an open-ended question and recorded it on a voice recorder. That was supposed to help the expert change his focus from his/her business to this study. Then, he/she was allocated 15-minutes to generate ideas related to the question in his/her mind. Then, he/she was provided with the model, all constructs and the associations between the constructs. Then, the facilitator provided them with a sheet of paper with

the question to be addressed and asked the experts to write down all the ideas that came to their minds when considering the question. Based on that, each expert was requested to fill in a structured questionnaire to rank the appropriateness of the model according to his/her judgment. Every modification requested by an expert needed validation in writing. The researcher collected the opinions of every industrial expert in the panel separately for the evaluation.

The mean value of eight opinions on the constructs of the model was above three. Hence, no issues were found in the model ( $M_{\sigma}$ ), and it was accepted. There was no modification required to the model generated from study 3 ( $M_{\sigma}$ ), since study 4 generated a model ( $M_{\mu}$ ) without modifications.

**Final Conceptual Framework**

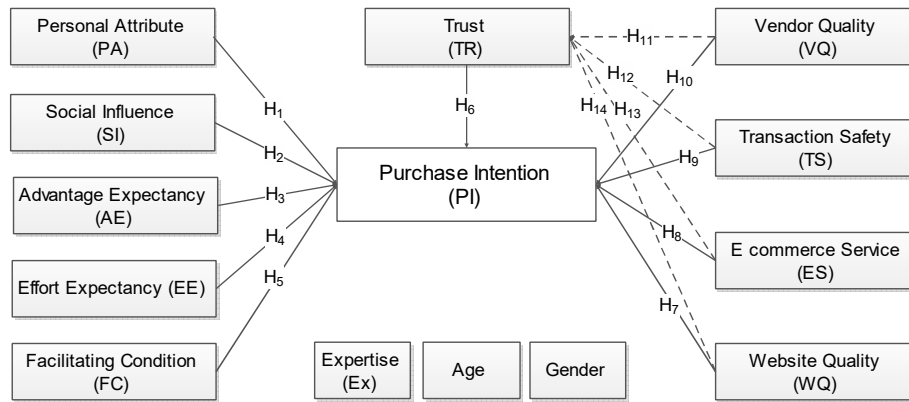
*Output of study 4 with second order constructs*



**Figure 7: Final Conceptual Framework - Second Order**

*Source: Developed by the Researcher*

Output of study 4 with first order level constructs



**Figure 8: Final Conceptual Framework - First Order**

Source: Developed by the Researcher

**Table4: Constructs**

<b>Advantage Expectancy</b>			
The degree to which the user expects that using online purchasing will help him or her attain shopping advantage.		Adopted from UTAUT	
Perceived Usefulness	Consumer’s perception that the Internet facilitates purchasing more efficiently than traditional shopping. Adopted from IDT (Venkatesh et al., 2003)	Convenience	Al-Debei et al., 2015; Ranjbarian et al., 2012; Amaro & Duarte, 2015
		Financial Advantages	
		Time-Saving	
		Enjoyment	
		Product Variety	
<b>Effort Expectancy</b>			
The degree of ease associated with the use of online purchasing		Adopted from UTAUT	
Perceived Ease of Use	The degree to which an online purchasing site is perceived to be easy to understand, learn or operate. (Lin, 2007)	Understand	Lin, 2007
		Learn	
		Operate	
Cost	Total time, money and effort sacrificed to complete the transaction (Huang & Chang, 2017)	Money- return	Chen, 2012; Huang & Chang, 2017
		Time - waiting	
		Effort-communicate	
<b>Social Influence</b>			
Social influence is defined as the degree to which an individual perceives that important others believe he or she should use the online system to purchase goods and/or services.		Adopted from UTAUT	
E-WOM	e-WOM is any statement made by potential, actual, or former customers about a product or a company which is made available to a multitude of people and institutes via the Internet. (Hennig-Thurau et al., 2004)	Motivation	Alfina et al., 2014
		Following information	
		Agree with information	
Subjective Norms	Subjective norms is defined as the person’s perception that most	Family	Lin, 2007; Javadi et al., 2012
		Peers	

	people who are important to him/her think he/she should or should not use the online system to purchase the item. (Williams, Rana and Dwivedi, 2015)	Authority Figure	
		Media	
Social Image	Social image is defined as the degree to which online purchasing is perceived to enhance one's image or status in a social system.		Li, 2010
<b>Personal Attribute</b>			
	Personality is described as the level of individual differences in characteristic patterns of thinking, feeling and behaving towards online purchasing	Adopted from TRA, TPB,TAM, UTAUT	
Attitude	One's positive or negative feelings about participating in online shopping. (Hsu et al., 2014)	Positive feeling	Hsu et al., 2014
		Opinion	
Commitment	The degree to which a person is willing to invest his/her time, energy and resources to purchase goods/services online. (Pratminingsih, Lipuringtyas & Rimenta, 2013)	Spend time	Pratminingsih, Lipuringtyas & Rimenta, 2013
		Spend resource	
		Spend energy	
Self Efficacy	An individual's level of confidence in his or her ability to use a new technology in the accomplishment of an online purchase. (Hung, Cheng & Hsieh, 2015)	Search product	Khalouzadeh et al., 2014
		Pay online	
Innovativeness	Innovativeness is defined as the level of willingness of an individual to try out any new idea in information technology. (Thakur & Srivastava, 2015)	Products innovative	Thakur & Srivastava, 2015
		Services innovative	
		Processes innovative	
<b>Facilitating Conditions</b>			
	The degree to which a person believes that the regulatory framework and other managerial and technical infrastructures exist to support and motivate him/her to use online purchasing	Adopted by UTAUT	
Infrastructure	The degree to which an individual believes that technical equipment and software exist to support the use of online purchasing. (Ajazn,1991and Taylor & Todd, 1995).	Resource	Venkatesh et al., 2012
		Assistance	
		Technology	
Regulation/ Rule	Regulatory framework is the rules and regulations in a country that govern and protect the relationships between vendors and consumers who transact online. (Tuteja, Gupta & Garg, 2016)	Acceptance of government regulations	Javadi et al., 2012
		The commitment of government regulations	
<b>Transaction Safety</b>			
	The degree of consumer's perception about protection and the lack of unexpected results from the entire online purchasing process, including business practices, transaction integrity and information protection.		
Third Party Security	Third party security is the degree of consumers' beliefs in online transaction protection or guaranteed confirmation from a	Protection	
		Guarantee	Tuteja, Gupta and Garg, 2016



	reputed organization other than the seller. (Tuteja, Gupta and Garg , 2016)		
Security and Privacy	Security is defined as consumers' perceptions about the protection of online transactions as well as the protection of financial information from unauthorized access in an online retailing context. eTailQ (Wolfinbarger and Gilly, 2003) /privacy is the degree to which the online shopping web site is safe and protects customers' information (Parasuraman et al., 2005)	Financial security	Wolfinbarger and Gilly, 2003
		Information security	Parasuraman et al., 2005
Perceived Risk	Perceived risk is the uncertainty faced by consumers when they are unable to predict the results of their online transactional activities. (Santos, 2003)	Delivery risk	Santos, 2003
		Financial risk	
		Time risk	
		Performance risk	
		Product risk	
<b>Trust</b>			
Trust is the confidence in and dependence on the reliability, integrity and truth of another party (Chen & Chou, 2012)			
<b>E commerce Service</b>			
E-commerce service quality is the extent to which a retailer facilitates efficient and effective shopping, purchasing, delivery and after-sales service. (Parasuraman et al., 2005)			
Customer Service	Customer service is the extent to which a vendor facilitates efficient and effective purchasing and delivery. (Parasuraman et al., 2005)	Fulfillment	Wolfinbarger & Gilly , 2003
		Contact/ Representative	Parasuraman et al., 2005
After-sales Service	After-sales service is the extent to which a vendor facilitates an efficient and effective service to the consumer once the product is delivered. (Parasuraman et al., 2005)	Compensation	Parasuraman et al., 2005 and Wolfinbarger & Gilly, 2003
		Responsiveness	Parasuraman et al., 2005
<b>Web Quality</b>			
Web Quality is the extent to which an online medium facilitates an efficient and effective shopping experience.			
Web Quality	Web site quality is the extent to which an online medium facilitates an efficient and effective shopping experience.	Functionality	Parasuraman et al., 2005
		Web design and interface	
		Fast presentation	
		Updated information	
		Easy and quick navigation	
<b>Expertise</b>			
Expertise is defined as the basis of credibility of a person who is perceived to be knowledgeable in online purchasing due to his or her study,training, or experience in the field. (Oxford Dictionary)			
Experience	Experience is the consumer's skill and ability obtained by visiting an online purchasing site and making a transaction online.	Shopping experience	By Researcher
		Internet experience	By Researcher

	(Nysveen & Pedersen, 2004; and Soto-Acosta et al., 2014)		
Knowledge	Knowledge is the skill and ability to use a software application, Internet and an email using a computer and understanding online purchasing processes and methods. (Li, Kim & Park, 2007)	Shopping knowledge	Li, Kim & Park, 2007
			Chang et al., 2005
		Internet knowledge	By Researcher
			By Researcher

Source: Developed by the Researcher

### Purchase Intention

Zhu et al. (2011) defined online purchasing intention as a consumer's willingness to purchase online. Furthermore, the intention to buy products online is defined by some other researchers as the likelihood that a consumer plans to buy online in the near future. (Chen, 2012). Online purchase intention is also defined as a customer's willingness and intention to purchase products via the Internet (Meskaran, Ismail & Shanmugam, 2013). Wu et al. (2013) define online purchase intention as the probability and willingness to buy online. Taking all these prior definitions into account, this study defines online purchasing intention as a consumer's desire or willingness to purchase online in the future.

### Discussion

A conceptual framework development study was conducted specifically to find a method to measure online purchasing intention, since there is no comprehensive theory to explain online purchasing intention in the context of e-commerce. In order to solve this problem, the following steps were carried out. Leading peer-reviewed conferences and indexed journals published between the years 2010 and 2015 were used to evaluate the frameworks thematically. The identified factors were grouped as consumer, retailer, medium and external environmental characteristics, and these were used to build the initial model ( $M_{\alpha}$ ).

Technology acceptance models and E-service quality models were critically reviewed to identify a major component in

the context of e-commerce in study two. Results from study one and study two were integrated, and constructs were regenerated to build the second model beta ( $M_{\beta}$ ). The results of the delphi method confirm that the second model beta ( $M_{\beta}$ ), with minor modifications, was used to generate the third model gamma ( $M_{\gamma}$ ). Further, model gamma ( $M_{\gamma}$ ) was tested utilizing the nominal group technique with industrial experts, and those results confirm model gamma, without modifications, and this was then called model mu ( $M_{\mu}$ ). The constructs of the model, Personal Attributes, Social Influence, Advantage Expectancy, Effort expectancy, Facilitating Conditions, Vendor Quality, Transaction Safety, E-commerce Services, Web Quality and Trust had a direct association with online purchasing intention. Furthermore, Vendor Quality, Transaction Safety, E-commerce Services and Web Quality had an indirect association with online purchasing intention through Trust. Age, Gender and Expertise were the moderators of the relationships between the constructs of the model and online purchasing intention.

### Conclusion

This holistic and integrated conceptual framework addresses the entire e-commerce process. Not only the technology acceptance but also the consumer aspect and environmental aspect considered in the model. This comprehensive model is ready to measure online purchasing intention. Hence, this model should be empirically tested before commercialized.

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## Appendix 1

### Citation Reference for Relationship

Citation Tag	Citation
3	(Cha, 2011)
5	(Bente, Baptist and Leuschner, 2012)
8	(Ayo, Adewoye and Oni, 2011)
12	(Aminu, 2013)
13	(Ariff et al., 2013)
15	(Ling, Chai and Piew, 2010)
17	(Cho and Sagynov, 2015)
21	(Chen, 2012)
25	(Eri, Aminul Islam and Ku Daud, 2011)
26	(Delafrooz, Paim and Khatibi, 2011)
31	(Hajiha, Shahriari and Vakilian, 2014)
35	(Fang, Zhu and Zhang, 2011)
36	(Aghdaie, Piraman and Fathi, 2011)
41	(Adnan, 2014)
44	(Gong, Stump and Maddox, 2013)
47	(Kim and Forsythe, 2010)
49	(Kim and Lennon, 2013)
54	(Shadkamet <i>et al.</i> , 2013)
57	(Tabatabayiet <i>et al.</i> , 2012)
60	(Zhang, Li and Azamat, 2012)
63	(Kim, Xu and Gupta, 2012)
66	(Wang <i>et al.</i> , 2012)
73	(Naovarat and Juntongjin, 2015)
75	(Mohmed, Azizan and Jali, 2013)
76	(Javadiet <i>et al.</i> , 2012)
86	(Wu <i>et al.</i> , 2013)
90	(Thamizhvanan and Xavier, 2013)
91	(Nabil and Rose, 2015)

92	(Thakur and Srivastava, 2015)
93	(Sahney, Ghosh and Shrivastava, 2013)
94	(Sharma and Lijuan, 2015)
96	(Zhu <i>et al.</i> , 2011)

## Appendix 2

### Results of Round 2

**Table 1: Mark Allocation for the Constructs of the Model – Round 1**

Question		Final Result	Question		Final Result
First Order Construct	Second Order Construct		First Order Construct	Second Order Construct	
<b>Personality</b>		4.6	<b>Vendor Quality</b>		4.4
	Attitude	5.0		Reputation	4.4
	Commitment	4.0		Social Presence	3.2*
	Self-Efficacy	5.0		Payment Method	3.0*
	Innovativeness	3.0*		Awareness/ Promotion	4.0
	Life Style	2.2*		Logistic	2.8*
	Shopping Orientation	1.8*		Price	2.4*
<b>Social Influence</b>		5.0	<b>Transaction Safety</b>		5.0
	E-WOM	3.6		Third Party Security	3.4
	Subjective Norms	5.0		Security and Privacy	5.0
	Social Image	4.0		Perceived Risk	3.6
<b>Advantage Expectancy</b>		5.0	<b>Trust</b>		5.0
	Perceived Usefulness	5.0	<b>Web Quality</b>		5.0
<b>Effort Expectancy</b>		5.0	<b>E-commerce Service</b>		5.0
	Perceived Ease of Use	4.0		Customer Service	5.0
	Cost	2.8*		After-sales Service	5.0
<b>Facilitating Condition</b>		5.0	<b>Expertise</b>		5.0
	Infrastructure	5.0		Internet Expertise	4.0
	Regulation/Rule	5.0		Online shopping Expertise	4.0
<b>Purchase intention</b>		5.0			

Source: Developed by the Researcher

**Table 2: Mark Allocation for the Moderators of the Model –Round 1**

Moderators	Final Result
Age	5.0
Gender	4.2
Expertise	4.8
Product Type	3.0*

Source: Developed by the Researcher

## Results of Round 2

Table 3: Agreement on Modifications

Question		Modification
First Order Construct	Second Order Construct	
<b>Personality</b>		
	Innovativeness	Retained
	Lifestyle	Removed
	Shopping Orientation	Removed
<b>Effort Expectancy</b>		
	Cost	Retained
<b>Vendor Quality</b>		
	Social Presence	Sent to E-Service Quality
	Payment Method	Sent to Web Quality
	Logistics	Sent to Facilitating conditions
	Price	Retained
<b>Moderator</b>		
	Product Type	Removed

Source: Developed by the Researcher

Table 4: Mark Allocation for the Constructs of the Model – Round 2

Question		Final Result	Question		Final Result
First Order	Second Order Construct		First Order	Second Order Construct	
<b>Personality</b>		4.6	<b>Vendor Quality</b>		4.4
	Attitude	5.0		Reputation	4.4
	Commitment	4.0		Awareness/	4.0
	Self-Efficacy	5.0		Price	2.4*
	Innovativeness	4.0			
<b>Social Influence</b>		5.0	<b>Transaction Safety</b>		5.0
	E-WOM	3.6		Third Party Security	3.4
	Subjective Norms	5.0		Security and Privacy	5.0
	Social Image	4.0		Perceived Risk	3.6
<b>Advantage Expectancy</b>		5.0	<b>Trust</b>		5.0
	Perceived	5.0	<b>Web Quality</b>		5.0
<b>Effort Expectancy</b>		5.0		Payment Method	2.0*
	Perceived Ease of Use	4.0	<b>E-commerce Service</b>		5.0
	Cost	4.0		Customer Service	5.0
<b>Facilitating Condition</b>		5.0		After-sales Service	5.0
	Infrastructure	5.0		Social Presence	2.2*
	Regulation/Rule	5.0	<b>Expertise</b>		5.0
	Logistic	2.2*		Internet Expertise	4.0
<b>Purchase intention</b>		5.0		Online shopping	4.0

Source: Developed by the Researcher

**Table 5: Mark Allocation for the Moderators of the Model – Round 2**

Moderators	Final Result
Age	5.0
Gender	4.2
Expertise	4.8

Source: Developed by the Researcher

**Results of Round 3****Table 6: Agreement on Modifications**

Question		Modification
First Order Construct	Second Order Construct	
<b>Web Quality</b>		
	Payment Method	Resent to Vendor Quality
<b>E-commerce Service</b>		
	Social Presence	Resent to Vendor Quality
<b>Facilitation condition</b>		
	Logistic	Resent to Vendor Quality
<b>Vendor Quality</b>		
	Price	Removed

Source: Developed by the Researcher

**Table 7: Mark Allocation for the Constructs of the Model –Round 3**

Question		Final Result	Question		Final Result
First Order Construct	Second Order Construct		First Order	Second Order Construct	
<b>Personality</b>		4.6	<b>Vendor Quality</b>		4.4
	Attitude	5.0		Reputation	4.4
	Commitment	4.0		Awareness/ Promotion	4.0
	Self Efficacy	5.0		Logistic	4.0
	Innovativeness	4.0		Social Presence	4.0
<b>Social Influence</b>		5.0		Payment Method	4.0
	E-WOM	3.6	<b>Transaction Safety</b>		3.4
	Subjective Norms	5.0		Third Party Security	5.0
	Social Image	4.0		Security and Privacy	3.6
<b>Advantage Expectancy</b>		5.0		Perceived Risk	5.0
	Perceived	5.0	<b>Trust</b>		5.0
<b>Effort Expectancy</b>		5.0	<b>Web Quality</b>		5.0
	Perceived Ease of Use	4.0			5.0
	Cost	4.0	<b>E-commerce Service</b>		5.0
<b>Facilitating Condition</b>		5.0		Customer Service	5.0
	Infrastructure	5.0		After-sales Service	5.0
	Regulation/Rule	5.0	<b>Expertise</b>		5.0
				Internet Expertise	4.0



<b>Purchase intention</b>	5.0		Online shopping	4.0
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Source: Developed by the Researcher

**Table 8: Mark Allocation for the Moderators of the Model -Round 3**

Moderators	Final Result
Age	5
Gender	4.2
Expertise	4.8

Source: Developed by the Researcher

### Appendix 3

**Table9: Results Generated from NGT**

First Order Construct	Second Order Construct	Mean	First Order Construct	Second Order Construct	Mean
<b>Personality</b>		3.88	<b>Vendor Quality</b>		4.13
	Attitude	3.50		Reputation	4.00
	Commitment	4.50		Social Presence	4.13
	Self-Efficacy	4.00		Payment Method	4.13
	Innovativeness	4.13		Awareness/	4.38
<b>Social Influence</b>		4.25		Logistic	4.13
	E-WOM	3.75	<b>Transaction Safety</b>		4.38
	Subjective Norms	3.88		Third Party Security	3.75
	Social Image	3.88		Security and Privacy	4.25
<b>Advantage Expectancy</b>		3.88		Perceived Risk	4.00
	Perceived Usefulness	3.75	<b>Trust</b>		4.75
<b>Effort Expectancy</b>		3.75	<b>Web Quality</b>		3.50
	Perceived Ease of	3.75	<b>E-commerce Service</b>		3.88
	Cost	3.88		Customer Service	4.13
<b>Facilitating Conditions</b>		3.88		After-Sales Service	3.50
	Infrastructure	4.00	<b>Expertise</b>		4.00
	Regulations/Rules	4.13		Internet Expertise	4.00
<b>Purchase intention</b>		4.63		Online Shopping	4.38

Source: Developed by the Researcher