Information Management and Business Review
Vol. 5, No. 3, pp. 144-154, Mar 2013 (ISSN 2220-3796)

Applying Diffusion of Innovation in Online Purchase Intention through Social Network: A Focus Group Study of Facebook in Thailand

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Abstract: Although there are several studies on factors affecting online purchase intention in social media website using the Technology Acceptance Model (TAM), little research exists with respect to the study using different theories. This research is one of the studies that using an alternative theory, Diffusion of Innovation Model. This paper reports the findings of recent focus group research among working adult (ages 25 to 34), which examined the factors that influence their online purchase decision through online social network, particularly Facebook. The findings are presented and discussed in order to refine the preliminary research model that was developed from an extensive review of literature. Methods: Two focus groups involving 15 participants were recruited in Trang, Thailand. Researchers analyzed and coded the data according to research model and hypotheses. Results: Focus group respondents ranked in order of importance relative advantage, trust, perceived risk, compatibility as the factors that encouraged or discouraged them from purchasing product through Facebook. The findings of factors and their attributes from this study are in line with the findings in the literature with slight variation. Conclusions: This research makes a contribution to the development of a theoretical understanding of online purchase intention through social network.

Keywords: *Social network, Facebook, trust, risk, subjective norm, diffusion of innovation*

1. Introduction

Information Technology has invented a platform for the digital economy, which the emergence of e-commerce has taken place. According to Casaló et al. (2007), the internet has became the most important communication channels in the world and consumer purchasing process has changed as the result of the growth in the internet usage. With the latest development of Web 2.0, various Web technologies are being introduced to the end users. Online Social Networks (OSNs) are growing as a new key application on the Internet, which can be deemed as an extension of Web applications that administer relationships between users (Pallis et al, 2011). According to Laudon & Traver (2010), OSN has became the new channel of e-commerce in this century by presenting new values of service to online users to express themselves and contact with others. Consumers have increasingly utilized OSN to learn more about brands and to visit retail websites. While many business owners acknowledge the importance of using the OSN in their marketing mixes, only a few researchers has studied what factors encourage and discourage consumers when purchasing products or services online. Most previous studies were based on Technology Acceptance Model (TAM). Hence, there is a gap in the literature surrounding factors influencing purchase decision through online social network explained on different models. For this study, the researcher has intentionally chosen Facebook (FB) as the target OSN and several reasons justify this choice. Firstly, FB is the most popular OSN in Thailand (Table 1). FB penetration in Thailand is 21.42% compared to the country's population and 81.33% in relation to number of Internet users (Table 2). 81.33% of Internet users which can become potential consumers are hard to ignore. This makes FB particularly a good OSN to market the products. Secondly, people have been buying virtual goods within FB since 2007.

Table 1: Social media usage in Thailand year 2011(adapted from Nielsen, 2011)

Social Media	No. of people
Facebook	14, 235,700
Hi5	2,611,000
Twitter	720,000
Linkedin	295,000
Foursquare	152,000

Table 2: Thailand Facebook Statistic (adapted from Social Bakers, 2012)

Measure	%
Facebook Penetration of population	21.42
Facebook Penetration of online population	81.33

The purpose of this research was to develop a theoretical model of the determinants of the purchase intention of working adult (ages 25 to 34) consumers through FB. The proposed theoretical model based on Diffusion of Innovation (DoI) Model which suggests that 49-87 per cent of the variance of the rate of adoption is explained by five of the perceived characteristics of innovations, which are relative advantage, compability, complexity, observability and trialibility. To adapt DoI to the online purchase intention through social network context, it is extended with four important ecommerce constructs: trust, risk, subjective norm and past online purchase experience. As this research problem has not previously been studied in Thailand, the study began with a literature review of previous studies on related subjects in order to develop a theoretical model for this study. It is closely followed by an exploratory study conducted to generate working adult consumer insight and to refine and explore additional factors, attitudes and intentions toward the online purchase through FB.

2. Theoretical Background

Diffusion of Innovation Model: According to DoI (Rogers, 1983), the adoption of a new product or technology is a determining process that moves through different stages over time. The decision process begins with knowledge of the existence of the innovation or technology. It is followed by a persuasion period. During this phase, potential adopters gather information from various sources and attempt to determine the utility of the innovations. If the decision is in favor of adoption, an implementation phase follows. Implementation is a critical period in the diffusion process since it requires overt action on the part of adopters to put the new idea into practice. The second stage, perceived characteristics of innovations, has been studied more frequently and is generally considered most significant of the five in explaining rate of adoption. They are (1) relative advantage, the degree to which an innovation is perceived as being better than its precursor; (2) compatibility, the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters; (3) complexity, the degree to which an innovation is perceived as relatively difficult to understand and use by its potential adopters; (4) trialability, the degree to which an innovation may be experimented with on a limited basis by its potential adopters; (5) observability, the degree to which the results of an innovation are visible to others and to potential adopters. Diffusion of Innovation Theory is chosen as the theoretical basis to develop a conceptual model for testing behavioral intention in this research for the following reasons. First, this theory has been extensively applied as a theoretical foundation for researches in the adoption of new technology. Second, our intention is to measure individual adoption decision of a new idea (online purchasing through Facebook), not on belief and acceptance attitudes among users, as what has been done in intention-based studies. Thus, we need to measuring perceived characteristics that would influence individual intention to adopt (Rogers, 1995) in order to understand factors that influence the adoption decision. DoI (Rogers, 1995) focused on a narrower view of innovators (Swanson, 1994) and on individual adoption.

Subjective Norm: The origin of the term subjective norm or social influence lies in the social psychology research back in the early fifties of the 20th century. According to Franzoi(2003), subjective norm is an individual's judgment about whether most people who are important to the individual will approve of a particular behavior under consideration. As the definition implies, people consider the normative expectations of others they view as important, such as friends, coworkers, and schoolmates, when they decide whether to perform particular behaviors.Subjective norm is an important factor for this research because FB is a social network where people connect with their friends, families, groups etc. When others who they view as important recommend them a particular FB shop to purchase products, it may encourage people to purchase in order to avoid being an outsider.

Trust: In e-commerce research, trust implies a belief that a Web vendor will perform some activities in accordance with consumers' confidence (Gefen, 2002; Pavlou& Gefen, 2004). Consumers often feel more uncertain about online vendors and the outcome of online transactions as the impersonal relationship of the online environment. Many researchers argue that trust is the foundation of e-commerce (Fukuyama, 1995; Keen, 1999) and is the most important factor in the success of an online vendor (McKnight et. al.; 2002). Trust is important in the online purchase intention through social network, specially FB context of

the following reasons. First, FB users must provide personal information when they register to FB. Such personal information is subject to potential abuse as the data might be used for marketing solicitations or shared with third parties. Thus, players may have concerns about the misuse of their personal information. Second, there are unclear security settings (such as https, SSL, or third party certificate) in FB. Thus, when the companies ask for payment information using credit card or account information, the buyer may worry about fraud. Finally, anybody can open a shop in FB as long as they are registered member. Therefore, buyers may have concerns about whether the sellers are reliable. Such concerns and worries call for the involvement of trust in online purchase intention through social network context.

Risk and perceive risk: An individual is met with many situations in which a decision must be made. Typically, the individual simply determines the situation, immediately evaluates possible alternatives, selects a decision, and acts according to that decision. Risk involves an element of uncertainty and the cost that are related with each alternative. Each alternative will also differ in the extent of perceived risk. Theoretically, an individual will choose the alternative that is perceived to gain the most favorable outcome. A consumer will experience the amount of risk that consists of the individuals feeling of subjective certainty of success or failure and the amount at stake (consequences)(Jahankhani, 2009).The amount at stake refers to what will be lost if the situation is unsuccessful or if the wrong decision is chosen. Another important concept of risk perception is that subjectivity of risk. Two different individuals when presented with the same purchase situation may result in two very different levels of risk perception (Jahankhani, 2009). The customer will not complete the transaction if he perceives the level of risk related with purchasing a product or service is too high. Otherwise, the consumer may initiate risk-reducing behavior by either reducing the amount at stake or the perceived uncertainty of the situation. Reducing the amount at stake can be done by comparison shopping, trying a product sample, or purchasing insurance. On the other hand, by seeking more information from past experiences of others published consumer reports and test studies, manufacturer's brochures, commercials and advertisements, news reports and on-line consumer groups, a consumer will reduce levels of uncertainty. Two main reasons surface for studying perceive risk in this research. First, purchasing product through FB is considered risky as there are no specific guidelines requirements to be a seller in FB. Second, there are no protections for the buyers if the sellers did not fulfill what they have promised to the buyers.

Past Online Purchase Experience: Shim &Drake (1990) claim that consumers' past purchase experiences will help to reduce their uncertainties which lead them to have strong online purchase intention in web shopping. Thus, consumers will be more likely to purchase through on line if they have past online purchase experience compared than those who lack such experience. Seckler (2000) describes this trend that as individual acquire online shopping experience, probably with small purchases in the beginnings, they will develop more confidence and skills in purchasing more expensive items through online. Consumers will continue to purchase on the Internet in the future if past online shopping experiences resulted in satisfactory outcomes and were judged positively as past experiences decrease consumers' perceived risk levels linked with online purchasing(Shim et. al., 2001).In contrast, consumers are less likely to engage in online purchasing if the past experiences are evaluated negatively, In addition, online shoppers can learn the capability of an Internet vendorfrom past online purchasing experiences. Capability is believed as one of the sources of trust (Barber, 1983).The main reason that past online purchase experience is included in this study is because FB is another online shopping channel even though it is original purpose is a social network. There are more risks and trust involved in the social network compared to normal e-commerce website when the customers purchasing products. Thus, it will be interesting to know whether users' confidence and skills in online effect can overcome those trust and risks.

Hypotheses: Drawing upon the prior empirical studies, we propose conceptual hypotheses that combines the strength of DoI theory and the additional new factors that capture the characteristic of the online purchase intention through social network namely, risk, trust, subjective norm, past online purchase intention. Tornatzky and Klein (1982) found relative advantage to be an important determinant in determining new innovations adoption. Typically, perceived relative advantage of an innovation is positively associated to its rank of adoption [58]. Likewise, as online purchase through FB allows customers to access from any location, at any time of the day, it provides tremendous advantage and convenience to users. In view of the advantages that online purchase through FB offers, it would thus be expected that individuals who perceive online purchase through FB as advantageous would also be likely to adopt the service. This leads to the hypothesis:
H1: Perceived relative advantage positively affects the online purchase intention (PI) through FB.

Tornatzky and Klein (1982) discovered that an innovation is more likely to be adopted when it is compatible with individuals' job responsibilities and value system. It is expected that the more the individual uses FB, and the more he or she perceives the online purchase through FB as compatible with his or her lifestyle, the more likely that the individual will adopt the service. Thus, the hypotheses are:
H2A: The greater the perceived compatibility of online purchase through FB with one's values positively affects the online purchase intention (PI) through FB
H2B: The greater the experience with using FB positively affects the online purchase intention (PI) through FB.

Previous research has presented that an innovation with significant complexity requires more technical skills and needs greater implementation and operational efforts to increase its chances of adoption (Cooper & Zmud, 1990). As consumers perceived something with innovative features as complex and difficult to adopt, the tendency to adopt would certainly be reduced. It may also be assumed that consumers perceived their adopted technology to be complex, would tend to diffuse it slowly and in limited capacity, thus not realizing its full benefits. It is expected that a negative relationship between complexity and adoption decision may exists. This leads to the hypothesis:
H3: Perceived complexity by consumers negatively affects the online purchase intention (PI) through FB.

Rogers theory (1983) states that observability has a positive relationship with adoption decision. It is believed that when potential adopters observe the new technology being introduced as visible, they are likely to adopt the innovation. This leads to the hypothesis:
H4: Perceived observability positively affects the online purchase intention (PI) through FB.

Several researchers agreed that trialability is one of the most important components in the process of adopting new technology (Martins et al. 2004; Kendall et. al., 2001). However, it was felt that this attribute would be redundant in this research as once a person had made an online purchase, they would classify themselves as an adopter. Bauer (1960)and Ostlund (1974) introduced risk as an additional dimension in diffusion and adoption. A common and widely recognized obstacle to electronic commerce adoption has been the lack of security and privacy over the Internet (Bhimani, 1996; Quelch & Klein, 1996). This has led many to view Internet commerce as a risky undertaking. Thus, it is expected that only individuals who perceive using FB to purchase products as a low risk undertaking would be inclined to adopt it. This leads to the hypothesis:
H5: Perceived risk negatively affects the online purchase intention (PI) through FB.

Trust is an important factor in decision whether an individual chooses to, or not to acquire products or services via the Web (Quelch & Klein, 1996). Mayer et al. (1995) gave definition of trust as a behavioral one person based on his/her beliefs about the characteristics of another person. Based on this definition, Mayer et al. (1995) proposed a model of dyadic trust in organizational relationships that includes characteristics of both the trustor and trustee that influence the pattern of trust. The logic of this model is if the level of trust in a vendor surpasses a threshold of perceived risk, then the trustor will engage in a risky relationship with the vendor. In other words, trust is a main factor of activity which has a negative effect in perceived risk (Luhmann, 1988). In conclusion, trust can perform in two ways to assuage the effect of risk on online purchase decisions. First, trust is relevant in situations where one must enter into risks but has incomplete control over the result (Deutsch, 1960). Thus, as trust increases, consumers are likely to perceive less risk than if trust were absent; the consequence of trust is mediated by risk on the consumer's intention to purchase. Second, several studies have shown a direct relationship between trust and willingness to buy online from Internet vendors (Bhattacherjee, 2002). Therefore, we expect that increases in trust will directly and positively affect purchase intentions. Based on the arguments above, we propose:
H6A: A consumer's trust (TR) positively affects the consumer's intention to purchase (PI).
H6B: A consumer's trust (TR) negatively affects the consumer's perceived risk (PR) of a transaction.

According to Venkatesh and Morris (2000), Subjective Norm or social influence is related to intention since people often perform based on their perception of what others think they should do. In the term of purchasing intention in social media settings, it means that a person can be influenced by someone who is important to him or her who think he or she should perform or not to perform the transaction online. Since this study is con-ducted in the context of social media, subjective norm would be an important influencing factor as social influence among users is very high in the social media website. Subjective norms have been studied to be positively associated with perceptions of usefulness and intentions to use a system (Venkatesh and Morris, 2000). This leads to the hypothesis:

H7: Subjective norm positively affects the purchase intention through FB.

Ranganathan & Jha (2007) found that past online shopping experience has the strongest association with purchase intention compared to other factors in their models. Thus the first hypothesis:
H8A: A consumer's past online shopping experience (POSE) positively affects the consumer's intention to purchase (PI).

According to Urban et al. (2001), the most important capability in an e-commerce enterprise is fulfillment, which can be learned from past online shopping experience. Fulfillment involves types of products provided, product quality, price advantages, payment channels, logistics, and after sales services. These factors are proved to have a significant effect on building customers' e-trust (Urban et. al. , 2001). Therefore, we hypothesize:
H8B: A consumer's past online shopping experience (POSE) negatively affects the consumer's perceived risk (PR) of a transaction.
H8C: A consumer's past online shopping experience (POSE) positively affects the consumer's trust (TR) of a transaction.

3. Discussion

The focus group respondents of this research were 15 working adults aged between 25 -34 years old. Characteristics of the respondents are summarized in Table 5.Both male and female respondents agreed that FB was considered to be convenient, and also saved time and money traveling to conventional stores. Furthermore, they emphasized the uniqueness of the product in FB that may not available anywhere, and the possibility of getting cheaper products over the FB. According to the respondents, FB's design can be obstacle for the new users as the most sellers provide the information of the products in their FB's walls or status. Inexperienced users found it that it is difficult to search the walls in order to find the products that they would like to purchase. Some respondents joined the FB group related to their hobbies or interest before they purchased the products from FB. After they met the people who shared the same hobbies or interest, they exchanged information and it encouraged them to purchase products that are related with their hobbies or interest through FB. It shows that their lifestyle is consistent with their online purchase intention through FB. Respondents agreed that purchasing products through FB was suitable for their busy lifestyle and working schedule in two ways. First, they could see the sellers' new products through the news feed without having to search through search engine. Second, they could contact and find the information of the sellers that sell products of their interest through FB groups.

Both female and male respondents agreed that the result of online purchase done by other people will affect their buying decisions. If the comments regarding the sellers or the products were positive, they were more likely to purchase the product from that seller. On the other hand, negative comments would discourage them to buy the products from the same seller. The respondent who joined FB group will see the comments based on the group members regarding a particular seller before they continue with their purchase. Many respondents in the focus group believed trust in the online retailer affected their' perceived risk of transaction and their intention to undertake a transaction The respondents would purchase the product from that FB seller if they believed that the seller was capable of providing a safe environment and quality service. Most respondents are particularly worry with personal information (such as mailing address, telephone number) collected during the shopping process that was disclosed in FB as they did not know how secure FB was and how FB would use their data. They also suffered the risk of products or services not matching the description on the FB as there was little or no assurance that they would receive the same products or services that they ordered according to the description and image on FB.

Table 3: Focus group demographic

Measure	Items	%
Gender	Male	46.67
	Female	53.33
Age (years)	25- 29	26.67
	30-34	73.33
Marital Status	Single	73.33
	Married without children	0
	Married with children	26.67

Times per week using Internet	1-2	0
	3-4	0
	>4	100
Years of Internet experience	1-2	0
	>2	100
Times per week using FB	1-2	0
	3-4	13.33
	>4	86.67
Years of FB experience	1-2	20
	>2	80

Only one respondent mentioned the approval of friends or acquaintances will affect their purchase decision directly. Most respondents listed subjective norm as the least important factor that will affect their purchase intention. However, some respondents admitted that this factor influence the way they perceive the advantages of purchasing products from FB. According to respondents, social pressures did not affect them to purchase product from Facebook. Nevertheless, it was the factor that influenced their trust with the FB seller. There were mixed results for the effect of frequency and comfort of online shopping with the purchase intention through FB as these factors did not directly encourage the respondents to purchase product through FB. They indirectly affect respondents' purchase intention by contributing to the respondents' assumption of perceived risk in purchasing product from FB. It might be because respondents considered other factors, such as trust and perceived risk, more important for them. The relative importances of factors that encourage or discourage respondents from purchasing products through FB are listed in the table 4. The weighted column (wt.) in each focus group is a calculated based on the ranking of factors from each respondent in the group. Respondents regarded relative advantage, trust, and risk as the top three most important factors in making purchase decisions online. These three factors were important for both groups and their consistency in order of importance was the same. It is possible that the similar age of the respondents is one of the factors explaining the similarities. Variables of the factors that influence online purchase experience are summarized in Table 5. The variables from the focus group are compared with the attributes from the literature reviews.

Table 4: Average weighted score of each factor

Factors	Female (25-34)	Male (25-34)	Average
Relative Advantage	6.50	6.25	6.38
Compatibility	5.25	4.13	4.69
Complexity	5.25	3.25	4.25
Observability	4.50	4.00	4.25
Risk	5.00	4.88	4.94
Subjective Norm	1.88	2.38	2.13
Trust	6.38	5.75	6.06
Online shopping experience	1.25	0.88	1.06

Table 5: Variables of each factor mentioned by focus groups

Factor	Variable	Found in the literature	References
Relative Advantage (6.38)	Convenience	√	Raijas & Tuunainen (2001) ; Sin & Tse (2002); Liang, & Huang (1998); Moore & Benbasat, I. (1991)
	Save time and money	√	
	Cheaper	√	
	Easy to order	√	
	Unique	X	
	Have a variety of information	X	
	Get discount	X	
	Entertaining	X	
	Informative	X	
	Larger assortments	X	
	Fast	X	
	Enjoyable	X	
Trust (6.06)	Products or services purchased by using Facebook will be	√	Gefen & Straub (2004); Hwang & Kim (2007);

	trustworthy		Gefen et al. (2003)
	The seller is reliable	√	
	Seller is committed to send the product after payment	√	
Perceived Risk (4.94)	Lose money	√	Burroughs & Sabherwal (2001); Miyazaki & Fernan-dez (2001); Ranganathan & Ganapathy, (2002); Sin & Tse (2002); Bhatnagar, et. al.(2000)
	Did not receive goods	√	
	Afraid of being cheated	√	
	Safety	√	
	Product not as good as expected	√	
	Difficult to return goods	X	
	Do not get the right product	√	
	No warranty	X	
	Not confident	X	
	Do not dare to give credit card info.	√	
	Products nearly expired	√	
	No guarantee	X	
Compatibility (4.69)	Suitable with my lifestyle		ıbasat, 1991
	Suitable with my busy schedule		
	Suitable with my social status		
	Fits well with the way I like to purchase products		
	Fits into my working lifestyle		
Complexity (4.25)	Not difficult to use		Van der Heijden (2003); Van der Heijden et. al. (2003) ; Moore & Benbasat, I. (1991)
	Not complicated		
	Quick process		
	Easy to read or understand		
	Not confusing		
	Provide picture and details		
	Don't have to drill down layers		
	Accessibility		
	Quick access		
	Interactive		
	Not boring		
	Not waste time		
	Easy to download		
Observability (4.25)	Can see other people have receive the product.		l. (2001)
	Can see other peoples' comments about the received product.		
	Can see other peoples' comments about the seller.		
	See the photo of the sellers' postage receipt.		
	See the photo of the sellers' packaged the product.		
Subjective Norm (2.13)	Most of my friends and acquaintances think that buy products through this Facebook seller is a good idea		Crespo& Rodríguez del Bosque (2008)
	Most of my families think that buy products through this Facebook seller is a good idea.		
	Most people in my social network want me to buy products from Facebook.		
Past Online shopping experience (1.06)	Frequency of online shopping		Park & Jun (2003);Yang & Lester (2004)
	Comfort of online shopping		

Table 8: Constructs and their relationships

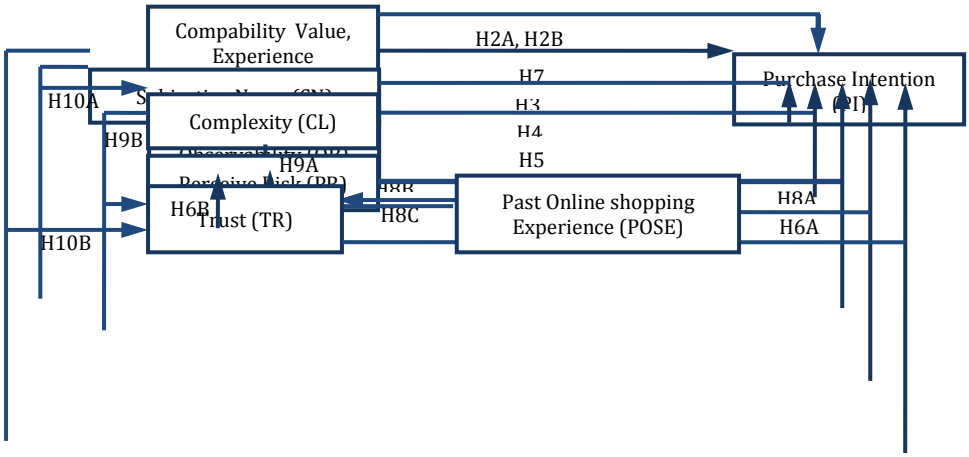
Hypothesis	Constructs	Literature Review	References	Focus Group
H1	Relative Advantage (RA) →Purchase Intention (PI)	√	Moore and Benbasat (1995); Tornatzky and Klein (1982)	√
H2A, H2B	Compability (CL) →Purchase Intention (PI)	√	Moore and Benbasat (1995); Tornatzky and Klein (1982)	√
H3	Complexity (CL) → Purchase Intention (PI) (negative relationship)	√	Moore and Benbasat (1995);Cooper and Zmud (1990);	√
H4A	Observability (OB) → Purchase Intention (PI)	√	Moore and Benbasat (1995)	√
H4B	Observability (OB) → Perceived Risk (PR)			√
H4C	Observability (OB) → Trust (TR)			√
H5	Perceived Risk (PR) → Purchase Intention (PI) (negative relationship)	√	Bhimani (1996); Antony, et. al. (2006)	√
H6A	Trust (TR) → Purchase Intention (PI)	√	Gefen (2002); McKnight et. al, (1998)	√
H6B	Trust (TR) → Perceived Risk (PR)	√	Deutsch (1960); Ratnasingam (1998); Rousseau et.al. (1998	√
H7A	Subjective Norm (SN) → Purchase Intention (PI)	√	Fishbein and Ajzen (1975); Schifter & Ajzen (1985)	√
H7B	Subjective Norm (SN) → Trust (TR)			√
H7C	Subjective Norm (SN) → Relative Advantage (RA)			√
H8A	Past Online Shopping Experience (POSE) → Purchase Intention (PI)	√	Shim & Drake (1990); Seckler (2000)	√
H8B	Past Online Shopping Experience (POSE) → Perceived Risk (PR)	√	Shim et al. (2001)	√
H8C	Past Online Shopping Experience (POSE) → Trust (TR)	√	Urban et al. (2001)	√

4. Conclusion

In general, the findings of factors and their attributes from this study are in line with the findings in the literature. The differences mainly come from details of the descriptions and expressions of each attribute. The findings from the exploratory research that are not being found from the literature reviews are the significant relationships between subjective norm (SN) and trust (TR); subjective norm (SN) and perceived risk (PR); observability (OB) and trust (TR); observability (OB) and perceived risk (PR) . Summary of constructs and their relationships identified from the literature review and focus group were described in Table 8 and its final modified model was in Fig. 1.

Limitations: This study was conducted to explore the factors influencing online purchase intention through social network using focus group. As such, the limited numbers of sample might not be the correct representatives of the real situations. Following are some recommendations for future studies. First, the sample should be increased to gather more data. Second, the final research model should be analyzed using the increased sample using different type of research method, such as questionnaire. In this way, a more comprehensive investigation of online purchase intention can be conducted.

Figure 1: Final Research Model



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