Online Purchase Intention: Effects of Trust and Security Perception

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Abstract: The fast growth of e-commerce and online transaction motivate many companies to set up business over Internet. Since using Internet to purchase online is still poor in comparison with other online activities, exploring factors that effect on online purchase intention is necessary. Theory of Planned Behavior (TPB), Theory of Reasoned Action (TRA) and Theory Acceptance Model (TAM) are the underpinning theories involved in investigating factors that affect online purchase intention. Trust and security are known as two main factors that affect online purchase intention based on related literatures, so it is believed that antecedents of trust and security are imperative in improving online purchase intention. This paper seeks to explore the antecedents of trust and security and proposes a comprehensive model for online purchase intention taking into consideration its direct effect factors.

Key words: E-commerce; Online purchase intention; Trust; Security.

INTRODUCTION

The number of online users has increased rapidly. According to an estimation by an Online Retail Forecast in 2012, online shoppers in the United States will spend $327 billion in 2016, an upward growth of 45% from $226 billion in 2012 and 62% growth from $202 billion in 2011 (Forrester analyst, Sucharita Mulpuru, 2011). The growth of online shopping in other Asian countries such as Malaysia is also placed in the ‘high rate’ category. It was stated that Malaysians spent RM 1.8 billion on online shopping in 2011, and this figure is expected to almost triple in three years, according to the Nielsen Company study which was commissioned by PayPal. Alternatively, there seems to be huge number of online users that use Internet for other online activities particularly, checking email. It was noted that the use of Internet centered on information seeking about products instead of online purchasing. A study done by Hamid and Khatibi (2006) revealed that slightly over three quarter (76%) of Malaysian, especially younger people were using the Internet largely for non-shopping activities such as seeking information, playing games, entertainment, or communicating with friends. Subsequently Nielsen (2011) report confirms that Email was found to be the most popular online activity undertaken by Malaysian digital consumers. Communicating via social networks, accessing online news and using search engines follows.

Security issues are known to be of topmost concern for online shoppers according to Neilson’s study in Malaysia (2011), where seven out of ten shoppers are willing to spend more via online if the safety measures were to be increased. Building online trust and managing the risks of the online transactions with the objective of increasing online purchases is identified to be the most important limitations for online purchase intention. Besides these challenges, security, authentication, fraud, and risk of loss are also known as main concerns (Rao, 2002). Consumers perceive online shopping as being more risky than the offline mode provides the satisfaction of physical purchase where a customer can see, feel and touch the products prior to the purchase made (Heijden et al., 2003)

With increasing number of studies (Ranganthan and Sanjeev, 2007; Chen and Barnes, 2007; Delafrooz et al., 2011) focusing on online purchasing and the prevalent issues on trust and security, customers’ awareness on the limitations of e-commerce while demand for more secured online environment. Therefore, this paper seeks to explore factors that affect online purchase intention based on basic theories (TRA, TPB and TAM), and attempts to propose a comprehensive model. In addition, antecedents of trust and security will be considered taking into consideration of any direct effect factors.

This paper begins with an introduction. Section 2 follows with the definition of online purchase intention. Related works on online purchase intention including related theories and factors that affect online purchase intention will be reviewed in section 3. Section 4 follows, in reviewing current models for online purchase intention. In next section, a comprehensive model is designed. Finally, the paper concludes this study.

Definition of Online Purchase Intention:

Online purchase intention can be defined as a situation where a consumer is willing and intends to make online transactions (Pavlou, 2003). This term is used when customers willingness to search, select and purchase products via the Internet. George (2004) and similarly, Khalifa and Limayem (2003) defined internet purchasing behavior as a process of purchasing products, services and information via the Internet, they defined
this term based on earlier definition of Azjen and Fishbein (1980) on customer behavior and intention. George (2004) stated that because of customer concerns about personal information and privacy, many consumers do not shop online. The buying behavior of online customers is related to how customers make their decisions on what product or services to purchase online. The Internet affects customer decision-making behavior in all three stages of pre-purchase, purchase and post purchase (Sheth and Mittal, 2004). Therefore, customer online purchase intention in the web-shopping environment will determine the power of a consumer’s intention to do a purchasing behavior via the Internet (Salisbury et al., 2001). By virtue of past works, this paper defines online purchase intention as customer’s willingness with intention to purchase behavior via the Internet.

**Online Purchase Intention and Recent Studies:**

The intentional measures are more effective than behavioral measures to getting customer’s mind as customer may make purchases due to limitations instead of real preference when purchase is considered (Day, 1969). Many researchers have attempted to investigate factors influencing the online purchasing process over the past decade. The following sub-section presents the related empirical studies.

1. **Related Theories:**

   The most frequently used theories for studying behavioral intention in technological studies were the Technology Acceptance Model (TAM) is adopted by Davis in (1998), Theory of Planned Behavior (TPB) is adopted by Ajzen in (1985) and Theory of Reasoned Action (TRA) by Fishben and Ajzen in (1975).

   TRA is one of the most fundamental and influential theories of human behavior. It has been used to predict a wide range of behaviors. It is applied to individual acceptance of technology. The TRA specifies that behavioral intention is a function of two factors: ‘attitude towards behavior’ and ‘subjective norm’. Attitude refers to the person’s own performance of the behavior rather that to his/her performance in general. Subjective norm is a function of a set of beliefs termed as normative beliefs. Normative beliefs “are concerned with the likelihood that important referent individuals or groups would approve or disapprove of performing the behavior”.

   TPB extended TRA by adding the “perceived behavioral control”. In TPB, perceived behavioral control is theorized to be an additional determinant of intention and behavior. It is an extension of TRA for conditions where individuals do not have full control over the situation. According to this theory, every human action is based on three factors including: behavioral beliefs about the likely outcomes of the behavior and the evaluations of these outcomes, normative beliefs about the normative expectations of others and motivation to comply with these expectations and control beliefs about the resources and opportunities observed (or not observed) by the individual, and the anticipated obstacles or barriers towards performing the target behavior.

   TAM also is a development of TRA; it is tailored to IS contexts, and was designed to predict information technology acceptance and usage on the job. Unlike TRA, the final conceptualization of TAM excludes the attitude construct in order to better explain intention economically. TAM has been widely applied to a diverse set of technologies and users. In this theory, intention is determined by the person’s attitude toward the use of that technology and his/ her perception concerning its usefulness. Attitudes are formed from the beliefs a person holds about the use of the technology. The first belief perceived usefulness (PU) is the user’s “subjective probability that using a specific application system will increase his or her job performance”. Perceived ease of use (PEU), is “the degree to which the user expects the target system to be free of efforts”.

   These three theories are used for better understanding on the relationships between belief, attitude, and behavioral intention of consumers when buying products online too. A summary of these three theories is depicted in Table 1. The first column showed the theory model involved while second column outlines the related concepts. The third column highlights the factors that affect behavior intention. Researchers that had recognized these theories in their work were listed in the last column.

   TRA has been used in many consumer behavior studies, but it does not consider as external variables. The TPB has been used in studies looking in to attitude and beliefs in complex situation or not well understood concepts. Past researches had shown TAM is found to be suitable for situations involving social pressure in adopt technology, therefore, it maybe apply to online purchasing setting. Many Information Systems studies have been conducted based on the TAM (Choi et al., 2003; Wen et al., 2011; Delafrooz et al., 2011). Table 1 summarizes attitude as the only factor that effects on behavior intention directly. However, work of Davis et al., 1989 found that attitude is a non-significant factor on online purchase intention. More recent researches of Lin et al., 2010 and Wen et al., 2011 have eliminated the role of attitude from their model too. Figure.1 shows the factors that effect on online purchase Intention based on the three main theories.
Table 1: Theories used in the literature (Developed for this paper).

<table>
<thead>
<tr>
<th>Theory</th>
<th>Related Concepts</th>
<th>Effective factor on behavior intention</th>
<th>Theory cited by</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRA</td>
<td>Behavior is preceded by intentions and the intentions are determined by the individual’s attitude toward the behavior and the individual’s subjective norms.</td>
<td>Attitude Subject norm</td>
<td>Chen and Well 1999; Bezjian et al., 1998; Goerge, 2004; Battacherjee, 2000</td>
</tr>
<tr>
<td>TPB</td>
<td>Perceived behavioral control influences both intentions and behavior. Behavior is also affected by habit and encouragement.</td>
<td>Attitude Subject norm Perceived behavioral control</td>
<td>Shim et al. 2001; Limayen, et al., 2000; Choi et al., 2003; Barnett and Presley, 2004; Delafrooz et al., 2011; Goerge, 2004; Battacherjee, 2000; Timothy and Sulaiman, 2008; Swidi et al., 2012</td>
</tr>
<tr>
<td>TAM</td>
<td>Perceived usefulness (PU) and perceived ease of use (PEOU) effect on individual intention.</td>
<td></td>
<td>Lin et al., 2010; Choi et al., 2003; Park and Kim, 2003; Heijden et al., 2003; Delafrooz et al., 2011; Wen et al., 2011</td>
</tr>
</tbody>
</table>

Figure1. Influencing factors on online purchase intention based on three main theories (TRA, TPB and TAM)

2. Perceived Trust:

Trust is known as an important factor in the buyer-seller relationships and online purchase intention in electronic commerce (Jarvenpaa et al., 1998; Zhou et al., 2007; Naveed and Eddaoudi 2009; Yulihasri et al. 2011; Swidi et al., 2012). In the context of e-commerce, trust includes the online consumer beliefs and expectancies of characteristics of the online seller (McKnight et al., 2002). Kraeuter (2002) identifies trust as the most significant long-term barrier for understanding the potential of e-commerce to consumers in online environment. People make important buying decisions based on their level of trust in the product, salesperson, and/or the company (Kim et al., 2008). Alternatively, trust can be defined as willingness of consumer to interpretation to the possibility of loss during shopping process, according to this definition, trust can be considered as a kind of behavioral intention too (Gefen et al., 2003).

Some studies identified trust as a factor that affects attitude and risk (Jarvenpaa et al., 1999; Heijden et al., 2003; Thompson and Liu, 2007; Kim et al., 2008; Meskaran et al., 2010). Consequently, willingness to buy is influenced by attitude and risk. It is found that lack of trust generates a negative effect on willingness to online purchasing activities. NECTEC (2006) affirmed that more than 63 percent of online users do not shop online due to lack of trust. Trust is a factor with strong direct effect on online purchase intention too (Tariq and Eddaoudi, 2009). Similarly, Heijden et al., 2003; Kim et al., 2008 and Delafrooz et al., 2011 have viewed trust as one of the antecedents of online purchase intention. In addition, only works of Heijden et al., (2003) and Delafrooz et al., 2011 revealed trust as the most significant factor influencing online purchase intention. Table 2 iterates the list of trust antecedent itemizing the factors and the related works.
Table 2: Antecedents of trust perception.

<table>
<thead>
<tr>
<th>No</th>
<th>Factor</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reputation</td>
<td>Jarvenpaa et al., 1999; Peszynski and Thanasankit, 2002; Thomson and Liu, 2007; Kim et al., 2008; Meskaran et al., 2010.</td>
</tr>
<tr>
<td>3</td>
<td>Risk</td>
<td>Peszynski and Thanasankit, 2002; Jarvenpaa et al., 1999; Gefen et al., 2003; Thompson and Liu, 2007; Kim et al., 2008; Meskaran et al., 2010.</td>
</tr>
<tr>
<td>5</td>
<td>Attitude</td>
<td>Jarvenpaa et al., 1999; Thomson and Liu, 2007; Heijden et al., 2003; Meskaran et al., 2010.</td>
</tr>
<tr>
<td>6</td>
<td>Type of payment</td>
<td>Efendioglu et al., 2003; Hawak, 2004; Meskaran et al., 2010.</td>
</tr>
</tbody>
</table>

3. Consumer Perception on Security:

Security issue as one of the customer concerns has been cited in online purchasing studies (Flavian et al., 2006; Chang and Chen, 2008; Naveed and Addoudi, 2009). It is agreed by researchers that security is not only a technical challenge, and it includes human and organizational aspects too. It means that even when the best technical approaches and solutions are used by a company, without considering the perception of customers on secured website, then these technical solutions may be irrelevant.

Security perception is defined as the degree to which person believes that the online vendor or website is secure. It is a considerable issue for transferring important information like credit card details (Salisbury, 2001). Perception of security is classified as objective and subjective security issues. Customer objective refers to measures like security policy statement and technical protection, while subjective security refers to overall perceived security (Chellappa and Pavlou, 2002). Chang and Chen (2008) emphasize that the Internet is not an environment for a secure online shopping, so security must be utilized and considered by online websites to protect customers’ data, they mentioned that online websites are the main target of attackers.

Among the current models for online purchase intention, Belanger et al., 2002; Park and Kim, 2003 and Delafrooz et al., 2011 regarded security issue as a factor that effect on online purchase intention. Sharma and Yurcik (2004) have mentioned attitude toward security, experience about security features, features of website and showing third party security seal as the factors that affect security perception. They suggested that security issue can be studied like trust as a perception issue from consumer view. Furnell (2004) mentions that showing policy statements and also presenting third party seals like Verisign in website are effective factors on perception of security from the consumer viewpoint. In another study by Tsai and Yeh (2010), consumers’ perception of security of online vendors is known as a major concern of decision making by consumers. They found that website design (website features), efficiency service quality, product quality information and transaction and delivery capability as factors that are related to perceived risk of information security and purchase intention. A summary of antecedents for security is presenting in Table 3. The names of factors that affect security are shown in first column. In second column, list of references that are studied those factors are showing.

Table 3: Antecedents of security perception.

<table>
<thead>
<tr>
<th>No</th>
<th>Factors</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Attitude</td>
<td>Sharma and Yurcik, 2004</td>
</tr>
<tr>
<td>2</td>
<td>Experience about security features</td>
<td>Sharma and Yurcik, 2004</td>
</tr>
<tr>
<td>3</td>
<td>Features of website</td>
<td>Sharma and Yurcik, 2004; Tsai and Yeh, 2010</td>
</tr>
<tr>
<td>4</td>
<td>Showing third party seals</td>
<td>Sharma and Yurcik, 2004; Furnell, 2005</td>
</tr>
<tr>
<td>5</td>
<td>Efficiency service quality</td>
<td>Tsai and Yeh, 2010</td>
</tr>
<tr>
<td>6</td>
<td>Product quality</td>
<td>Tsai and Yeh, 2010</td>
</tr>
<tr>
<td>7</td>
<td>Showing policy statement</td>
<td>Furnell, 2005</td>
</tr>
</tbody>
</table>

4. Perceived Risk Influencing on Online Purchase Intention:

The perceived risk concept was introduced by Bauer (1960). He defined it as amount of risk that is perceived by consumer in selecting or making decision in a purchasing process. Liang and Huang (1998) found that online shopping intention depends on the degree of perceived risk. Consumers generally associate a higher level of risk with non-store purchase rather than store purchase. Unlike offline consumers, online consumers are concerned with risks involved in buying on the Web such as credit card, fraud and not receiving the right products after ordering (Heijden et al., 2003).

Perceived risk is known as a factor that affects online purchase intention significantly (Choi et al., 2003; Zhou et al., 2007). In addition there is a list of studies that have mentioned to risk as an important factor that is
in a strong relationship with trust (Jarvenpaa et al., 1998; Thompson and Liu, 2007; Meskaran et al., 2010), they mention to a negative effect of trust on risk and risk on trust. Since risk is a factor that significantly effect on online purchase intention, trust and security, this study will consider it as factor to be included in the comprehensive model.

5. Other Factors That Affect Online Purchase Intention:

Besides factor considered in three basic theories (TRA, TPB and TAM), other studies have included the following variables:

- **Privacy**: it is the willingness of consumers to share information via the Internet that allows purchases to be decided. There are researches that have addressed privacy as factor that affect online purchase intention (Belanger et al., 2002; Tariq and Eddaoudi, 2009).

- **Web features**: it is a factor that is defined differently by different researchers. For example, according to Cheskin and SA, in 1999 web features include factors like ease of navigation, the professionalism of the Website or user interface quality. Balanger et al., in 2002 is considered web feature as a group including categories of privacy, security, and pleasure site. This factor is considered as website quality (Ranganthan and Sanjeev, 2007) or user interface quality (Park and Kim, 2003). There are some studies that are considering this factor as an effective factor on online purchase intention (Park and Kim, 2003; Belanger et al., 2002).

- **Past online experience**: some of the studies believe that web-shopping consumer’s behavior will depend on experience quality in which the experience quality can be obtained only through prior purchase experience, and prior experiences will strongly affect future behavior. There are some studies that have mentioned to past online experience as one of the antecedents of online purchase intention (Laroche et al., 2005; Ranganthan and Sanjeev, 2007; Kwon and Noh, 2010).

**Related Models on Online Purchase Intention:**

Recent models on online purchase intention have referred to the three basic theories (TRA, TPB and TAM). Since this study focuses on trust and security, Table 4 consolidates the models with the direct and indirect factors involve for online purchase intention. The factors that are related to one of the basic theories (TRA, TPB and TAM) and also security and trust factors are highlighted. TAM was found to be the underpinning theory used in most online purchase intention studies (Gefen and Straubin, 2005; Heijden et al., 2003; Choi et al., 2003; Delafrooz et al., 2011; Wen et al., 2011). Although, trust and security are known as important factor that affect online purchase intention only Belanger et al., 2002; Tariq and Eddaoudi, 2009 and Delafrooz et al., 2011 are considering both of trust and security as direct effective factor. Nonetheless, Delafrooz et al., 2011 have considered trust and security under perceived behavioral control.

### Table 4: List of construct considered for the proposed model of online purchase intention.

<table>
<thead>
<tr>
<th>No</th>
<th>Model</th>
<th>Direct Factors</th>
<th>Indirect factor</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Model of purchase intention and willingness to give information</td>
<td>Trustworthiness; Privacy; Security; Pleasure; Web features</td>
<td>---</td>
<td>Belanger et al., 2002</td>
</tr>
<tr>
<td>2</td>
<td>Model of Purchase intentions</td>
<td>Ease of use; Usefulness; Social presence; Trust</td>
<td>---</td>
<td>Gefen and Straubin, 2005</td>
</tr>
<tr>
<td>3</td>
<td>Model of Intention to purchase from website</td>
<td>Risk, Usefulness of website; Perceive ease of use; Subject norm</td>
<td>Third party assurance seal; Trust</td>
<td>Choi et al., 2003</td>
</tr>
<tr>
<td>4</td>
<td>Model of Actual purchase behavior</td>
<td>Information quality; User Interface quality; Security</td>
<td>---</td>
<td>Park and Kim, 2003</td>
</tr>
<tr>
<td>5</td>
<td>Model of online purchase intention</td>
<td>Attitude</td>
<td>Perceived ease of use; Perceived usefulness; Trust in online store; Perceived risk</td>
<td>Heijden et al., 2003</td>
</tr>
<tr>
<td>6</td>
<td>Model of purchase intention</td>
<td>Perceived risk; Consumer trust</td>
<td>Online transaction self-efficacy; Disposition to Trust</td>
<td>Kim and Kim 2005</td>
</tr>
<tr>
<td>7</td>
<td>Model of willingness to shop online</td>
<td>Age; trust; security; Awareness; Privacy</td>
<td>---</td>
<td>Tariq and Eddaoudi, 2009</td>
</tr>
<tr>
<td>8</td>
<td>Model of Purchase intention</td>
<td>Attitude; Perceived behavioral control (Trust, Security)</td>
<td>Online shopping orientation; Demographic; Consumer perceived benefits</td>
<td>Delafrooz et al., 2011</td>
</tr>
<tr>
<td>9</td>
<td>Model of Intention</td>
<td>Attitude; Normative belief; Self efficacy</td>
<td>Usefulness; Ease of use; Compatibility; Privacy; Security</td>
<td>Yulihastri et al., 2011</td>
</tr>
</tbody>
</table>

**Comprehensive Proposed Model:**

Based on existing studies of antecedents of online purchase intention, trust and security a comprehensive model for online purchase intention is presented. Figure 2 illustrated the proposed model, whereby, all factors
that affect directly on online purchase intention are presented: Factors such as; attitude, behavioral intention, security, trust, risk, perceived usefulness, ease of use and subject norm are factor influencing on online purchase intention. Model of Heijden et al., (2003), Choi et al., (2003) and Delafrooz et al., 2011 model are models that are used in this comprehensive model.

Fig. 2: The Proposed Comprehensive Model.

**Conclusion:**

Online shopping is slowly gaining acceptance among Internet users. However, there are still limitations that cause customers shying away from online purchasing, hence, affect consumer intention to use online purchasing. This study successfully identified the variables that are important in promoting on-line purchasing. A comprehensive model was design showing factors that effect on online purchase intention. It is built upon three main theories (TRA, TPB and TAM) and also antecedents of trust and security. The proposed comprehensive model will be further tested through a survey in concluding its appropriateness. Perceived of usefulness, perceived ease of use, attitude, security, trust, subject norm and risk are possible factors that may affect online purchase intention. Similarly, antecedents of trust and security were also be examined.

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