An Empirical Study of Customer Adoption of E-Commerce: A Customer Trust Model to Support the Adoption of E-Commerce Among Small- and Medium-Sized Enterprises in Sri Lanka

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ABSTRACT

With the end of its 30-year civil war, Sri Lanka is on the path to revitalize its economy. In this endeavor, small- and medium-sized enterprises (SMEs) play a crucial role. Like all businesses, SMEs can benefit greatly from new e-commerce technology, a fact that has motivated many of them to establish their presence online through company websites. Sri Lankan users, however, are reluctant to adopt this technology. Little research has been done regarding factors that affect the adoption of e-commerce among Sri Lankan consumers. This study examines factors that affect consumer buying behavior, with a view to helping Sri Lankan SMEs attract and retain customers through online transactions. Based on an extensive literature review, the study formulated six hypotheses and developed a proposed framework for successful adoption of online SMEs from the consumer’s perspective. The methodology included a simple random sampling approach for an online survey of 408 Internet users in Sri Lanka. The data collected was analyzed using SPSS. The results indicate that all six hypotheses are supported.

Keywords: E-commerce, technology adoption, SME, technology acceptance model, TAM, trust
1. INTRODUCTION

With the end of the 30-year civil war in Sri Lanka, the government of that country is seeking means to recover from the severe economic impact that the war has had on the country. In this endeavor, the Sri Lankan government recognizes that small- and medium-sized enterprises (SMEs) can play a crucial role in the country’s development [World Bank Group, 2011]. The Sri Lanka Department of National Planning [2010], in particular, has recognized the importance of e-commerce in providing job and business opportunities and encouraging start-ups. An extensive framework for infrastructure development has therefore been developed by the government.

Though often underestimated, SMEs are the backbone of a country’s economy and a crucial part of economic growth. Berry [2007] states that SMEs are a driving force in any global economy. For a post-war developing country like Sri Lanka, investing in the development of SMEs is critical. A survey conducted by the Sri Lanka Ministry of Finance and Planning [2010] revealed that SMEs comprise 80% to 90% of local establishments in the country and account for 70% of employment in the business sector and 35% [Ishii, 2008] of employment in the country overall.

Because SMEs have a particularly significant impact in developing countries, they can be considered a “nursery for larger firms in the future” [Berry, 2007]. Others have described them as the “economic growth engine” of a country [Brouthers, 1998, cited by Kapurubandara and Lawson, 2006; U.N. Conference on Trade and Development (UNCTAD), 2001, cited by Kapurubandara, 2007; and Gunawardana, 2006].

Considering the competitive nature of larger enterprises, SMEs are often at a disadvantage. They lack the infrastructure, knowledge, acceptance, and recognition that many of their larger competitors possess. E-commerce enables SMEs to enter and compete in the market with a significant reduction of overhead and minimal resource requirements. In this regard, SMEs can benefit greatly by incorporating information and communications technology (ICT) into their businesses [United Nations Development Program (UNDP), 2005], but it has been found that, although SMEs increasingly invest in e-commerce, consumers are slow to adopt the technology [Kapurubandara, 2007; Sri Lanka Business Development Centre (SLBDC), 2002].

A survey by SLBDC [2002] found that 84% of SMEs in Sri Lanka use the Internet for business purposes, that 51% of SMEs have their own website, and that...
70% of SMEs prefer to sell goods and services through their own website [SLBDC, 2002]. Clearly, there has been vast growth in the e-readiness of companies in Sri Lanka [The Economist, 2008]. Sri Lankan organizations are actively making investments in e-commerce [Laisuzzaman et al., 2010]. It is also evident that, in recent years, various telecommunication companies have developed a supportive infrastructure for e-commerce within the country [Klein, 2011]. Yet, when one considers the volume of sales conducted via the e-commerce websites of Sri Lankan SMEs, one finds that the majority has a volume of 10% or less [SLBDC, 2002]. This figure is considerably low, compared with the investment made by these companies in establishing and maintaining their e-commerce websites. The bottom line is that these e-commerce initiatives often lack return on investment.

Further investigation of the causes for the low level of e-commerce adoption in Sri Lanka reveals that the major factors are:

- The increasing number of credit card frauds and poor security measures to protect transactions [Gunawardena, 2006, cited by Sri Lankan newspapers, 2001; privacy clearing house, 2011; Business Times, 2011; LUK, 2011; Nielson, 2007; and Mudalige, 2001]
- The decline in the use of credit cards [E-Biz Sri Lanka, 2011]

These factors can have a negative impact on the growth of e-commerce among SMEs, which often lack the brand identity, infrastructure, technical know-how, and even the reputation that most major companies have. Among those investigating the adoption of e-commerce by SMEs in Sri Lanka are Kapurubandara [2007], Gunawardana [2006], and Kapurubandara and Lawson [2009]. These researchers stress the importance of focusing on Sri Lanka because of rapid growth in its telecommunication sector in recent years. Sri Lankans are actively participating in online environments, and many opportunities exist for businesses to attract this untapped market share.

Although various researchers have revealed how SMEs can adopt e-commerce into their operations, little attention has been given as to why consumers fail to embrace online shopping in Sri Lanka. The objective of the current study, therefore, is to identify the factors influencing the adoption of online shopping from a consumer’s perspective. The study also proposes a framework to encourage adoption of SME ecommerce websites among consumers.
2. BACKGROUND

This section contains a discussion of consumer buying behavior, SME adoption of e-commerce, theoretical background, and justification of selected e-commerce adoption constructs.

2.1. Consumer Buying Behavior

The main goal of the current study is to identify the factors that affect consumer buying behavior, with a view to helping SMEs not only attract and encourage online purchases, but also retain customers on their e-commerce websites. Many researchers in many fields of study have delved into the subject of consumer behavior. Cant et al. [2007] define consumer behavior as "how individuals, groups and organizations select, use and purchase services, goods and even experiences to satisfy their needs and desires." Hoyer and Maclnnis [2010], on the other hand, define consumer behavior as a collection of traits: acquisition, use, and disposition of a product or service.

Four categories of factors affecting consumer behavior have been identified: cultural factors, social factors, demographics, and psychological factors [Hawkins et al., 1995; Armstrong and Kotler, 2003; Peter and Donelley, 2001; Wu, 2003; Adcock et al., 1995; Kotler and Armstrong, 1996, cited by Sarigiannidis and Kesidou, 2009]. Taking these factors into consideration would assist research on the subject. Although purchasing online deviates from the norms associated with purchasing in a conventional environment, the factors that influence the buyer’s decision-making process may be of great importance when motivating the buyer to complete a transaction.

Roehrich [2004] discusses customer innovativeness as one of the main motives for consumers to make purchases. His research is supported by Pearson [1970, cited by Roehrick, 2004] and Venkatraman and Price [1990, cited by Roehrick, 2004], who state that innovativeness can also be caused by the need for stimulation, novelty seeking, independence from the communicated experience of others, and the need to be unique. Michaut [2009] states that consumer innovation is an important element in the adoption of new products and services. This element is an important consideration for SMEs seeking to attract consumers to purchase their products or services. Such action would require that the consumer have some willingness to explore services provided by vendors that do not fall into the category of conventional or more popular players in the market.
A consumer’s lifestyle has a significant impact on his or her buying behavior. Consumer lifestyle has been categorized by Sjoberg and Engelberg [2005] as an individual’s price sensitivity, brand sensitivity, quality focus, and value. Pappas [2004] adds another characteristic: convenience. Pappas [2004] and Maditinos et al. [2009] provide an ample discussion of the categorization of e-shopper behavior according to lifestyle.

Risk is another popular concept in consumer behavior research. Risk can be categorized as subjective (or perceived) risk and objective (or real world) risk [Bauer, 1960, cited by Mitchell, 1999]. Bauer [1960] notes that "objective risk must exist in theory" because of it cannot be measured. The relationship between lifestyle and risk has been established by other researchers as well [Sjoberg and Engelberg, 2005; Pappas, 2004].

Looking at another dimension, Yang et al. [2007] states that social influence and reference groups provide a push toward a consumer’s intention to purchase products and services and that social approval plays an important role in whether consumers feel motivated to try new products and services. The reason for social approval can be justified in several ways. If a consumer wishes to acquire a product or service, he or she may seek the opinion of others, whether it be similar or dissimilar [Mullen and Johnson, 1990].

With regard to the willingness of a consumer to make a purchase, the level of trust between the merchant and buyer also has a significant impact. Lodorfos et al. [2006] state that the consumer’s trust mediates between attitude and loyalty to a product or service. Consumer willingness to disclose information is another attribute discussed by researchers [Gupta et al., 2010; Agarwal and Anderson, 2008].

From our review, it is evident that the factors identified in the general domain of consumer behavior have been considered in the consumer’s online purchasing behavior. Consumer innovativeness is influential, especially with regard to the initial purchase made by the consumer from a particular vendor [Rodrı́guez, Rodrı́guez, and Rodrı́guez, 2008]. Lifestyle can also be related to the consumer’s behavior or intention to perform a transaction online. Cheung et al. [2003] state that factors such as demographics, behavior, values, lifestyle, consumer resources, motivation, and security concerns are all popular attributes of online consumer behavior.

Research by Naiyi [2004] found that, because of the nature of the Internet, consumers have increased concerns about conducting transactions online. Risk, therefore, goes beyond the consumer’s perceived risk regarding the product or
service. It includes also the consumer’s perceived risk regarding the shopping medium, which is the Internet. In a more recent study, Samadi and Yaghoob-Nejadi [2009] discuss the impact of perceived risk on e-shopping. They state that the shopping experience can be a key element in reducing risk perception, which in turn can increase purchase probability.

Pavlou and Chai [2002] and Gupta et al. [2010] state that, in contrast to the situation in a traditional transaction, a consumer is often reluctant to disclose personal information online. This reluctance has a significant impact on purchasing behavior since electronic transactions depend heavily on the information provided by the consumer.

To determine which factors affect consumer online purchasing behavior, Constantinides [2004] explores the nature of the Internet and concludes that the three most controllable factors that can manipulate consumer behavior are: product and service characteristics, medium characteristics, and the merchant or intermediary characteristics.

2.2. SME Adoption of E-Commerce

Botha et al. [2004] state that e-commerce enables a company to ascertain its position in a marketplace and to expand the barriers to entry, thus giving it a competitive stance in regard to other companies. SMEs, with their limited resources, are often exposed to the intense competition imposed by larger firms in the market. The literature reveals that challenges faced by SMEs often prevent them from experiencing the benefits enjoyed by larger competitors. E-commerce can be a method for overcoming many of these challenges faced by SMEs [Payne, 2002]. There are barriers, however, to e-commerce adoption by these firms. Gunawardana [2006], Kapurubandara [2007], and Kapurubandara and Lawson [2008] focus on the internal and external barriers to e-commerce adoption in Sri Lanka. A review of the literature reveals, however, that little attention has been given to the consumer’s willingness to take part in an online transaction with an SME. In order to propose a model that would enable SMEs to motivate consumers to perform transactions online, the current study investigates the empirical and theoretical research conducted to identify the factors that affect consumer willingness to adopt e-commerce.
2.4. **Theoretical Background**

Consumer behavior with regard to the use of computer technology has been an area of significant research. In our review of the literature, we identified several dimensions of research, including these main categories of schools of thought:

- Theory of reasoned action (TRA) proposed by Fishbein and Ajzen [1975]
- Theory of planned behavior (TPB) proposed by Ajzen [1985, 1991]
- Technology acceptance model (TAM) proposed by Davis et al. [1989, 1992]
- Expectation-confirmation theory (ECT) proposed by Oliver [1977, 1980]
- Unified theory of acceptance and use of technology (UTAUT) proposed by Venkatesh et al. [2003, 2011]

2.4.1. **Theory of Reasoned Action (TRA)**

As discussed by Klopping and McKinney [2004], Park et al. [2004], and Lui and Jamieson [2003], TRA is based on the premise that beliefs influence attitudes, which, in turn, leads to the intention to use and finally to the actual performance of the behavior. Klopping and McKinney [2004] further state that a person’s attitude toward behavior is determined by his or her most significant beliefs and by the consequences of performing specific behaviors. With regard to e-commerce, the theory implies that the user’s actual behavior of performing transactions online is influenced by the intention the user may have to use the particular service. According to Ajzen [1991], the stronger the intention, the more likely it will lead to the actual behavior. It can be concluded, therefore, that the most important factor impacting e-vendors is the relationship between the consumer’s intention and the attitude and belief the consumer may have toward online transactions/e-vendors.

Table 1 presents a brief description of the constructs used in TRA. The constructs of *attitude* and *subjective norm* are related to the discussion by Lodorfos et al. [2006] and Yang et al. [2007].
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### Table 1
Constructs of the Theory of Reasoned Action (TRA)
[Klopping and McKinney, 2004; Appalachian State University, 2005]

<table>
<thead>
<tr>
<th>Construct</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>Person’s positive or negative feelings toward performing a behavior; measured in terms of desirability and consequences of action</td>
</tr>
<tr>
<td>Subjective Norm</td>
<td>Belief that people or groups important to the individual approve or disapprove performing a particular belief</td>
</tr>
<tr>
<td>Behavioral Intention</td>
<td>Individual’s intention to perform behavior.</td>
</tr>
<tr>
<td>Behavior</td>
<td>Performing the actual behavior</td>
</tr>
</tbody>
</table>

2.4.2. Theory of Planned Behavior (TPB)

Klopping and McKinney [2004] state that TPB is an expansion of TRA, in which the construct behavior is expanded to perceived behavioral control. Ajzen [1991] states that the change is an attempt to overcome a weakness in the original model with regard to the individual’s perception that he or she has control over whether to perform the action, or not. In relation to e-commerce, one can derive that the user’s belief that he or she has total control over the transaction can indeed be a significant influence in motivating the person to perform the transaction online. Table 2 presents a description of the constructs used in TPB.

### Table 2
Constructs of the Theory of Planned Behavior [TPB]
[Yayla and Qing, 2007]

<table>
<thead>
<tr>
<th>Construct</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>Person’s positive or negative feelings toward performing behavior; measured in terms of desirability and consequences of action</td>
</tr>
<tr>
<td>Subjective Norm</td>
<td>Belief that people or groups important to the individual approve or disapprove performing a particular belief</td>
</tr>
<tr>
<td>Behavioral Intention</td>
<td>Individual’s intention to perform behavior.</td>
</tr>
<tr>
<td>Perceived Behavioral Control</td>
<td>“Perceived ease difficulty of performing the behavior and reflects past experience as well as anticipated impediments and obstacles” [Ajzen, 1988, cited by Yayla and Qing, 2007]</td>
</tr>
</tbody>
</table>
2.4.4. **Technology Acceptance Model (TAM)**

This model is built on the fundamental concept of TRA and TPB, focusing on the “Belief – Attitude – Intention” relationship [Park et al., 2004]. The main purpose of TAM is to predict the consumer’s acceptance of technology [Park et al., 2004]. According to Yayla and Qing [2007], the prediction is made by investigating the characteristics of the system, documentation, and training, and by forming a relationship depicting how these factors influence the user’s attitude, intention, and beliefs. In the context of e-commerce, it can be said that the interface through which the consumer interacts with the e-vendor has a significant impact on the adoption. Table 3 presents a description of the constructs used in TAM.

### Table 3

**Constructs of the Technology Acceptance Model (TAM)**

[Yayla and Qing, 2007]

<table>
<thead>
<tr>
<th>Construct</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral Intention</td>
<td>Individual’s intention to perform behavior</td>
</tr>
<tr>
<td>Attitude</td>
<td>Evaluation of the behavior (may be a positive or negative evaluation)</td>
</tr>
<tr>
<td>Perceived Usefulness</td>
<td>Belief that using the system enhances his or her job performance</td>
</tr>
<tr>
<td>Perceived Ease of Use</td>
<td>Belief that using the system is free of effort</td>
</tr>
</tbody>
</table>

A review of the literature indicates that the constructs of TAM have often been merged with other factors that are particular to the area of e-commerce, resulting in various models. Table 4 summarizes the variables considered in these models built on the constructs of TAM which are used to predict the adoption of e-commerce. It can be seen that, in many cases, the models reflect attributes of TRA and TPB. The reason is that TAM is a combination of the two theories. The information in Table 4 also reveals that TTF, trust, and perceived risk are prominent common attributes in the various models built on the constructs of TAM.
Table 4
Application of the Technology Acceptance Model (TAM)

<table>
<thead>
<tr>
<th>Study</th>
<th>Variables Considered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lee et al. [2001]</td>
<td>Perceived risk in the context of transaction, Perceived risk with product/service, Perceived ease of use (PEOU), Perceived usefulness (PU)</td>
</tr>
<tr>
<td>Gefen et al. [2003a; 2003b]</td>
<td>Trust, Perceived ease of use (PEOU), Perceived usefulness (PU), Calculative-based (indirect), Institutional-based structural assurance (indirect), Institution-based situation normality (indirect), Knowledge-based familiarity (indirect)</td>
</tr>
<tr>
<td>Gefen et al. [2003a; 2003b]</td>
<td>Trust, Perceived ease of use (PEOU) (indirect), Perceived usefulness (PU), Familiarity, Disposition to trust (indirect)</td>
</tr>
<tr>
<td>Klopping and McKinney [2004]</td>
<td>Task technology fit (TTF) (indirect), Perceived ease of use (PEOU) (indirect), Perceived usefulness (PU), Behavioral intention</td>
</tr>
<tr>
<td>Tang and Chi [2005]</td>
<td>Perceived ease of use (PEOU) (indirect), Perceived usefulness (PU), Trust</td>
</tr>
<tr>
<td>Maditinos et al. [2007]</td>
<td>Perceived risk, Perceived ease of use (PEOU) (indirect), Perceived usefulness (PU), Attitude toward use</td>
</tr>
<tr>
<td>Li and Huang [2009]</td>
<td>Perceived ease of use (PEOU) (indirect), Perceived usefulness (PU), Perceived risk, Behavioral intention</td>
</tr>
<tr>
<td>Usoro [2010]</td>
<td>PEOU, PU, trust, TTF, behavioral intention to use</td>
</tr>
<tr>
<td>Ahmed [2011]</td>
<td>Perceived reputation of e-shop, Perceived trust of e-shop, Perceived ease of use (PEOU), Perceived usefulness (PU), Perceived familiarity with e-commerce, Perceived security risk of e-transactions, Income, educational level, age</td>
</tr>
<tr>
<td>Ayo et al. [2011]</td>
<td>Task technology fit (TTF), Perceived ease of use (PEOU), Perceived usefulness (PU), Trust, Perceived risk</td>
</tr>
</tbody>
</table>
2.4.6. **Expectation-Confirmation Theory (ECT)**

This model embodies the concept that expectations with perceived performance lead to post-purchase satisfaction [Appalachian State University, 2005]. The ECT model is often used to predict the consumer’s continuance of technology use. This factor is important because it is crucial for an organization to identify what motivates a first-time visitor to continue performing transactions with the company, as well as what motivates a first-time visitor to discontinue use. Bhattacherjee [2001] states that, although identifying the motivational factors that encourage a user to initially adopt a technology is of great importance, a system’s eventual success is determined by long-term viability rather than its first-time use. Table 5 presents a description of the constructs of ECT.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expectation</td>
<td>The customer’s prior expectation of the product or service prior to purchase</td>
</tr>
<tr>
<td>Perceived Performance</td>
<td>After initial consumption, the customer forms his or her own perceptions regarding the performance of the products or service.</td>
</tr>
<tr>
<td>Confirmation</td>
<td>Assessment of the expectation in regard to the perceived performance in order to distinguish to what level the actual performance meets the expectation of the customer</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>Based on the level of achievement, the customer forms an affect or opinion of the product or service.</td>
</tr>
<tr>
<td>Repurchase Intention</td>
<td>This results in the satisfied customers’ continued use whereas dissatisfied customers discontinue use.</td>
</tr>
</tbody>
</table>

2.4.7. **Unified Theory of Acceptance and Use of Technology (UTAUT)**

This model was proposed by Venkatesh et al. [2003, cited by Appalachian State University, 2005] to predict the user’s intention to adopt and subsequently use a technology. It explores beyond the factors affecting the adoption of a technology as highlighted in TAM, and introduces some constructs from ECT, such as performance expectancy. Oshlyansky et al. [2007] validate the model in a cross-cultural study and conclude that it is robust enough to be applied to countries outside its origin. Table 6 presents a description of the constructs in UTAUT.
Table 6

Constructs of Unified Theory of Acceptance and Use of Technology (UTAUT)

[Venkatesh, 2011]

<table>
<thead>
<tr>
<th>Construct</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Expectancy</td>
<td>The degree to which the individual believes that using the system will allow him or her to achieve job performance</td>
</tr>
<tr>
<td>Effort Expectancy</td>
<td>The degree of ease associated with using the system</td>
</tr>
<tr>
<td>Social Influence</td>
<td>Degree of perception that people or groups important to the individual thinks he or she should use the system</td>
</tr>
<tr>
<td>Facilitating Conditions</td>
<td>Belief that organizational and technical infrastructure is in place to support the system</td>
</tr>
<tr>
<td>Behavioral Intention</td>
<td>The degree to which an individual has made a conscious plan to perform or not perform a future behavior</td>
</tr>
<tr>
<td>Voluntariness</td>
<td>Degree to which potential adopters believe that the adoption decision is non-mandatory</td>
</tr>
</tbody>
</table>

2.5. Justification of Selected E-Commerce Adoption Constructs

Our review of the literature indicates that many factors have been considered in diverse contexts in terms of determining the factors that influence a consumer to conduct a transaction through electronic media with a vendor who does not have any physical contact with them. As discussed by Ramayah and Ignatius [2005], one of the major setbacks of TAM is that it considers e-commerce as a communication medium but ignores the consumer’s behavior. In our review of TRA and TPB, we found a major weakness; namely, that both models ignore the characteristic of the communication medium through which the consumer performs the transaction. From the ECT model, we see that the consumer’s expectation and the actual performance will indeed be important in his or her decision to participate in a transaction with an e-vendor. We also observed that UTAUT uses properties of ECT, but again overlooks some vital properties of the communication medium. Based on our review, we determined that a combination of variables with TAM would be used in this study to predict the factors that influence Sri Lankan consumers to perform a transaction with an online SME.

We selected a set of criteria that is appropriate for the context under consideration. In so doing, we added several factors to the initial TAM model. The
rationale for selecting perceived security risk as a variable was twofold. One relates to trust, and the other to social norm. With regard to trust, it is known that the awareness of security vulnerabilities and threats has been increasing in the Sri Lankan web community in recent years. Furthermore, Bauer [1960, cited by Mitchell, 1999] identifies risk as being closely associated with consumer behavior. The information presented earlier in Table 4 indicates that many researchers have considered trust when applying TAM to an online environment and that past research has considered trust to be closely associated with the online shopping environment. With regard to social norm, it is believed that this factor will have a strong influence on online purchasing in Sri Lanka because the country is a collective society. Furthermore, Yang et al. [2007] found that social approval is often an influential factor in consumer buying behavior.

2.5.1. Perceived Ease of Use (PEOU) and Perceived Usefulness (PU)

The variable perceived ease of use (PEOU) is defined by Davis [1989, cited by Shen et al., 2006] as “the degree to which a person believes that using a particular system is free of effort.” In this regard, Wu et al. [2007] stress the importance of website usability in e-commerce adoption. The ease with which a customer can perform an activity online plays a crucial role in how well he or she perceives its importance and in the customer’s decision to incorporate it into his or her lifestyle. The usefulness of the communication medium is also an influencing factor, according to Ramayah and Ignatius [2005], who state that the degree to which the customer believes that the technology will improve his or her performance will have a strong positive influence on adoption. The variable perceived usefulness (PU) is defined by Davis [1989, cited by Shen et al., 2006] as “the degree to which a person believes that using a particular system would enhance his or her job performance.”

Since PEOU and PU have both been proved to be main constructs of TAM, the current study tests whether PEOU and PU play an important role in how well the user wishes to adopt and use an SME website. In this study, adoption is considered from two dimensions; namely, the intention to conduct a transaction online, and continuation of the transaction with the online vendor. In this regard, we developed Hypothesis 1 and Hypothesis 2:

*Hypothesis 1: The consumer’s perceived ease of use will have a positive impact on the consumer’s adoption of e-commerce.*
Hypothesis 2: The consumer’s perceived usefulness will have a positive impact on the adoption of e-commerce.

2.5.2. Perceived Security Risk (PSR) and Trust

The construct perceived security risk (PSR) is defined as “the degree to which a person feels vulnerable when participating in an online transaction in terms of personal and financial information.” The consumer’s perception of the degree of risk associated with the online transaction will tend to predominate in his or her decision to engage in a transaction and to successfully complete the transaction.

Many SMEs lack the knowledge and infrastructure to enforce e-commerce security. Research by Gurung et al. [2008] provides some insight into the matter of perceived security risk. The authors relate the user’s privacy concern levels in terms of how the recipient will use, treat, and potentially transfer the user’s private information. The research states that online information privacy is among the main concerns of users when performing an online transaction. Privacy is closely related to the anticipation of security that the user will have when performing a transaction with a merchant.

Lee et al. [2006] define trust in terms of two parties – the “trustee” and the “truster.” Their definition incorporates multiple dimensions appropriate to the current study:

- Trust embodies the truster’s confidence in the trustee’s actions.
- Trust is an expectation that the trustee’s promise can be relied on and that the trustee will act in the spirit of goodwill.
- Trust is based on previous actions.

Patton and Josang [2004] follow a common belief that trust is a behavior built over time; thus, the vendor must use means to gradually build the customer’s trust. In the case of SMEs, it can be said that the level of security and risk plays a much stronger role in comparison with the situation for other e-vendors, because SMEs often lack consumer confidence in their benevolence, integrity, and competence [McKnight et al., 2002], thereby reducing consumer trust. With the increased number of online security breaches and the decline of credit card use, the issue of trust is a significant factor. Terms relating to consumer trust are defined in Table 7.
Table 7
Definition of Terms Relating to Consumer Trust

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benevolence</td>
<td>The term means that the seller cares about the buyer and is motivated to work in the buyer’s interest. The seller is wholeheartedly willing to provide good products and services to the buyer [Rofiq and Mula, 2009].</td>
</tr>
<tr>
<td>Integrity</td>
<td>Kim et al. [2003, cited by Rofiq and Mula, 2009] define integrity according to fairness, fulfilment, loyalty, honesty, dependability, and reliability.</td>
</tr>
<tr>
<td>Competence</td>
<td>The term refers to the seller’s ability. The seller has the capability and capacity to fulfil the needs of the buyer.</td>
</tr>
</tbody>
</table>

With regard to trust, the current study developed Hypothesis 3 and Hypothesis 4:

*Hypothesis 3: The consumer’s perceived security risk will have a negative impact on the consumer’s adoption of e-commerce.*

*Hypothesis 4: The consumer’s level of trust will have a positive impact on the adoption of e-commerce.*

2.5.3. **Willingness to Disclose Personal Information (WDPI)**

Research by Chong and Treiblmaier [2010] found that information privacy is among the main concerns of consumers when performing a transaction online. The explosive growth in the use of social media and social networking, however, seems to contradict this statement. The issue is whether the use of social media means that Sri Lankan consumers are comfortable disclosing information online. The question is to what degree do customers feel comfortable disclosing private information when they are aware that the e-vendor is an SME. Based on the literature, the construct *willingness to disclose personal information* (WDPI) can be defined as “the degree to which the person feels willing or open to exposing his or her personal information online to a merchant.” With regard to this issue, we developed Hypothesis 5:

*Hypothesis 5: A consumer’s willingness to disclose information has a positive impact on the consumer’s adoption of e-commerce.*
2.5.5. **Social Influence (SI)**

Social influence is another significant factor considered in the literature. Pavlou and Chai [2002] state that social influence is often considered a sub-set of the subjective norm. Based on the research by Pavlou and Chai [2002], the construct *social influence* can be defined as “indicating the degree to which the opinions of individuals or groups close to the decision-maker influences his or her individual opinions.” In a collectivist society like Sri Lanka, trust has been identified as the factor that may influence a consumer positively or negatively with regard to adopting e-commerce. The opinions of those closest to the consumer with regard to the SME or with regard to making an online purchase would indeed influence the actual adoption. When considering the environment within Sri Lanka, several institutions have discussed the role of the Sri Lankan government and other institutions with regard to supporting SMEs and encouraging consumers to transact with stakeholders [Institute for Global Environmental Strategies, 2011; UNEP/Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production gGmbH, 2011; The World Bank Group, 2010]. The current study, therefore, assumes that social influence has a positive impact, as set forth in Hypothesis 6:

*Hypothesis 6: Social influence has a positive impact on the consumer’s adoption of e-commerce.*

3. **THEORETICAL MODEL**

Based on an extensive review of the literature, we formulated six hypotheses regarding the constructs of *perceived ease of use* (PEOU), *perceived usefulness* (PU), *perceived security risk* (PSR), *willingness to disclose person information* (WDPI), and *social influence* (SI). These hypotheses are presented and discussed in the preceding section. Table 8, which follows, summarizes the constructs, and Figure 1 depicts our proposed theoretical model.
Table 8  
Description of Constructs in Theoretical Model

<table>
<thead>
<tr>
<th>Construct</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEOU</td>
<td>Perceived ease of use has a positive impact, denoted by (+).</td>
</tr>
<tr>
<td>PU</td>
<td>Perceived usefulness has a positive impact, denoted by (+).</td>
</tr>
<tr>
<td>PSR</td>
<td>Perceived security risk has a negative influence, denoted by (-).</td>
</tr>
<tr>
<td>WDPI</td>
<td>Willingness to disclose personal information has a positive influence thus denoted by (+).</td>
</tr>
<tr>
<td>SI</td>
<td>Social influence has a positive influence, denoted by (+).</td>
</tr>
</tbody>
</table>

---

Figure 1. Proposed Theoretical Model for Current Study
4. METHODOLOGY

This section discusses selection of the survey sample and the development and implementation of the survey instrument for the current study, and addresses the issues of reliability and validity.

4.1. Survey Sample and Research Instrument

Our review of the literature indicated that both positivist (quantitative) and interpretive (qualitative) concepts are used in information science (IS) research. In the current study, we explore the factors that motivate a Sri Lankan consumer to perform an online transaction with a small- and medium-sized enterprise (SME). If we were to apply qualitative methods (interpretivism), several factors must be considered because the interpretation of a single case may not be substantial enough to propose a model to assist the adoption of an SME by the entire target population. Positivism or quantitative methods, however, would be beneficial in capturing a snapshot of the population as a whole and in formulating a collective understanding of the segment considered. Among those who have successfully used quantitative methods (positivism) in IS-related research – more specifically, TAM-related research – are Gefen et al., 2003a; 2003b; Klopping and McKinney, 2004; McKnight et al., 2002; Ahmed, 2011; Usoro, 2010; and Maditinos et al., 2007].

After considering these issues, we selected positivism as the most suitable method for our study. We followed a simple random sampling approach for the survey. The population under consideration would consist mainly of Internet users and credit card holders in Sri Lanka. According to statistics, there are about 1,777,000 Internet users in Sri Lanka and 60,228 credit card holders [Range and Mudalige, 2011], for a total of 1,837,228. According to Saunders et al. [2003], the sample size for a population of more than a million should be a minimum of 384 in order to attain results with a 5% margin of error. For our study, therefore, we estimated a sample size of at least 384. As it turns out, the actual response to our online questionnaire totaled 408.

Our survey questionnaire consisted of two sections. Part A was designed to collect demographic information about the respondents, and Part B was designed to collect their opinions on the variables identified in our hypotheses, using multiple questions. For optimum results, we used both an online and offline approach to distribute the questionnaires. The online questionnaire was distributed
via SurveyGismo, and the offline survey was distributed to several governmental and non-governmental entities.

4.2. **Reliability and Validity**

Before administering the questionnaire, we conducted four pilot studies in four iterations to test the reliability of the questionnaire. The 69 pilot study responses came from the online survey distributed via SurveyGizmo. These responses were analyzed using SPSS. The Cronbach's alpha value was used to check reliability. The results of the final pilot study, which are presented in Table 9, indicate that all variables reflect a Cronbach's alpha value > 0.7, indicating a very strong consistency among the variables. Once we confirmed the internal consistency of the questionnaire, we distributed the instrument to a sample of 408 respondents.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cronbach’s Alpha Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived usefulness</td>
<td>0.804</td>
</tr>
<tr>
<td>Perceived ease of use</td>
<td>0.810</td>
</tr>
<tr>
<td>Perceived security risk</td>
<td>0.888</td>
</tr>
<tr>
<td>Willingness to disclose information</td>
<td>0.808</td>
</tr>
<tr>
<td>Social influence</td>
<td>0.788</td>
</tr>
<tr>
<td>Trust</td>
<td>0.923</td>
</tr>
<tr>
<td>Intention to use</td>
<td>0.876</td>
</tr>
</tbody>
</table>

5. **ANALYSIS AND RESULTS**

We used SPSS to analyze the data collected from the questionnaires. The responses were coded using a five-point Likert scale:

1 = strongly disagree
2 = disagree
3 = neutral
4 = agree
5 = strongly agree

To test the normality of the data set, we used the skewness and kurtosis values, along with the Kolmogorov-Smirnov test. The analysis revealed that the data was not normally distributed. We then used Spearman’s correlation coefficient to
measure the degree of variance of a dependant variable in relation to the independent variable. The results (Table 10) indicate that all hypotheses were found to be valid. The two highest correlation coefficient values were for Hypothesis 1 ("The consumer’s perceived ease of use will have a positive impact on the consumer’s adoption of e-commerce") and for Hypothesis 4 ("The consumer’s level of trust will have a positive impact on the adoption of e-commerce.") The high values indicate a strong relationship between trust and the consumer’s intention to use e-commerce.

Table 10
Results of Correlation Coefficient Measurement, by Hypothesis

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Correlation Coefficient</th>
<th>Accept/ Reject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 1</td>
<td>0.702</td>
<td>Accept</td>
</tr>
<tr>
<td>Hypothesis 2</td>
<td>0.509</td>
<td>Accept</td>
</tr>
<tr>
<td>Hypothesis 3</td>
<td>-0.601</td>
<td>Accept</td>
</tr>
<tr>
<td>Hypothesis 4</td>
<td>0.783</td>
<td>Accept</td>
</tr>
<tr>
<td>Hypothesis 5</td>
<td>0.647</td>
<td>Accept</td>
</tr>
<tr>
<td>Hypothesis 6</td>
<td>0.520</td>
<td>Accept</td>
</tr>
</tbody>
</table>

6. FINDINGS AND DISCUSSION

The overall analysis of the data revealed that the identified variables have an influence on the consumer’s intention to purchase from an online SME vendor (Figure 2). The findings show that the variables perceived usefulness, perceived ease of use, perceived security risk, willingness to disclose personal information, social influence, and trust all have an influence on the dependent variable, behavioral intention to use. Two variables – trust and perceived ease of use – have the most significant relationship to the behavioral intention to use. The latter finding implies that SMEs must invest more effort in building consumer’s perception of benevolence, integrity, and competence, as well as their perception of ease in using the technology. The findings of this study should encourage SMEs in Sri Lanka to look at their e-commerce websites from a different perspective. In addition to communicating their product and service portfolio, the SMEs must also consider ways of creating user-friendly interfaces that can improve the user’s
experience when browsing the company website. In this regard, they must consider trust mechanisms – whether affective or cognitive – to ensure the integrity and trustworthiness of their website.

7. CONCLUSION

Our study provides meaningful insight into why consumer adoption rates of e-commerce in Sri Lanka are so low. One reason for consumer reluctance is their concern about security risks – a valid concern in view of the increasing number of security vulnerabilities and poor security measures to protect personal information. The challenge facing SMEs is to determine how their commerce portals can implement factors to support perceived ease of use, perceived usefulness, and trust, while improving willingness to disclose personal information, incorporating social norms, and minimizing perceived security risks.

Figure 2. Proposed Theoretical Model Reflecting the Significance of Influence
The study has several implications. First, it suggests that further research is needed with regard to the factors that would increase consumer perception with respect to ease of use, usefulness, and trust. Second, it points to the need for future research focusing on technologies to reduce the increased concern with respect to security and risk. Third, it highlights the need for additional research into ways that e-commerce can improve its adoption rates, building on the findings of previous studies by Shneiderman [cited by Department of Computer Science, University of Texas at Austin, 2009]; Riegelsberger [2003]; Riegelsberger and Sasse [2001]; Riegelsberger and Sasse [2002]; and Riegelsberger and Sasse [2003].

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