Research on Transactional Principle in Taiwan’s B2C Electronic Business

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Abstract
The revolution of Information Systems, along with the advent of the Electronic business era, helps explain the development of today’s interactive business environment of online transactions. Website business practitioners are constantly seeking ways to improve the reliability of electronic commerce and are guiding consumers to engage in web-based businesses more successfully. This study explores the principles and strategies for offering consumers reliability in web-based transactions in Taiwan. The data collected from Taiwan show that customer service, security, fair contract and problem resolutions strongly influence personal relationships with web related stores and sellers. All factors that improve the element of trust are important in developing a successful electronic business system. Results suggest that buyers who have encountered successful relationships with website vendors display higher trust levels when dealing with that certain website. Similarly, a buyers’ knowledge about trust seals may positively influence their degree of trust in online purchase transactions. This study suggests that Taiwan’s government and other business organizations can accomplish their goals of the development of greater efficiency and profits of electronic businesses by learning to apply certain successful strategies in the areas of infrastructure, education, fair legislation, globalization, customer protection, and problem arbitration. Although the data in this study focuses on development by using a Taiwanese model, the general research method and analysis procedures provide a valuable model for research in different areas with customers in other places.

Keywords: Electronic Business, Web-based Business, Web-based Transactions, B2C (Business to Customer)
Introduction

As the competitiveness of the Internet trade situation intensifies, governments and organizations should place increased importance on the performance of successful electronic business. They should repeatedly strive to search for new methods to override existing techniques and situations and to invent new and better strategies and skills. As governments and organizations become more technically advanced, the Internet is becoming popular everywhere. The situation of extended use and commerce over the Internet has an effect on a broad range of transactions, not only for young students at educational or recreational websites, but also for adults on business and electronic trade sites. This causes a significant change in social operations for society. Unfortunately, there are some major problems with E-business that cannot be easily solved. Outdated legislative definitions, security and privacy, customer service, and social mechanisms are not easily fit into new Internet business situations. There are inconsistencies of principle in the published literature concerning the solutions of Electronic Business Technology (EBT) as providing successful strategies for customer, seller, corporation, and government. Consideration of the competitive opportunities offered by E-business does, however, keep coming up in the published literature. Heygate (1994) said that Internet technology had already led to the reengineering or restructuring of organizations, as Electronic Business Systems (EBSs) perform more of the middle management jobs. This transformation has resulted in the development of flatter, less hierarchical organizational structures. The E-business system and cable and telecommuting technologies are changing the work and shopping place (Bidgoli, 1997). The EBSs guide classic trade from certain retail points to anywhere. A government, corporation, employee, customer, or citizen may utilize E-business systems for successful business transactions. The web store or office makes it easy for customers to search for and find what they need. The process is convenient. The payment system is easy, as a customer can either pay by check or credit card. But, there is fraud as well as other obstacles for Internet business operations, and these can slow down the performance of an E-business. Although security, performance, convenience, customer service, and privacy remain major concerns of consumers while they are trading online, these issues are being addressed adequately with current principles and technologies. Acceptable strategies will continue to be found to increase the satisfaction of even the most skeptical E-business customers (Buenzli et al., 2000).

The early 2000s will probably be known as the “electronic business era” in business history. Many organizations and academics have turned their concerns to E-business but there are many related issues coming up, which include the changes in the relationships between purchasers and online sellers, the influence of awareness of or opinion on Internet business methods, and the legal dilemmas of E-business. Legislation, security, trust, and customer service are four of the most common issues. This study will identify E-business factors for customers, organizations, governments, or business practitioners,
and it will include solutions for E-business and substantiate the value of building relationships. It will add to the evolving knowledge base of mature E-business websites by developing research to measure the importance of good practical relationships between customers and sellers, end-users and administrators. Relationships, experience, trust, and online purchase decisions were studied to recommend how strategies may be developed in future research. Internet business is regarded as a brand-new method of foregoing traditional business; the methods change business activities and social interactions. Internet business allows for rapidly extending business operations, from anywhere at anytime to global levels by changing the style of work and eliminating the obstacles of distance and regulation. The growth of E-business has occurred on an extraordinary scale. New Internet forces are changing the style of business. It is difficult to predict the impact of E-business. The Internet business system provides a new E-commerce model that changes the method in which people purchase or do business (Dyche, 2000). People have more information, choice, and uncertainty than ever before with Internet business. This situation causes a large change in social relationships.

This study explores the principles of Electronic Business Technology (EBT). In doing so, two contrasting theoretical perspectives were employed. First, traditional hypotheses of principles were used to secure theoretical insights about the new relationship between the consumer and the seller in an electronic business (E-business) environment. Second, strategy and corporate theories were used to develop a model of an E-business System (EBS) which examines the E-business management practices that contribute to the success of an E-business. The use of a theoretical overview illustrates the importance of certain strategies which are crucial to the success of any E-business environment. As the general business environment has become more complicated, corporations and governments have turned to E-business Technology as a convenient way of accomplishing their business purposes. The seller demands effective skills, combined with the divergence in price, service, policy, and performance of EBT systems, which all have a certain degree of importance in contributing to the varying levels of investment in electronic commerce (E-commerce) transactions.

**Literature review**

In the literature review of this section, we will focus on the current issues, principles, and strategies of E-business as discussed in textbooks, papers, and Internet sources.

**New Method of Business**

EBT is exploring new business models, all of which change the way people purchase and sell goods (Dyche, 2000). However, the E-business processes of many companies are lagging behind because of lifestyle. The major issues include: purchase style, profit structure, business opportunity, and relationships with customers (Hosoi, 2000). Ticoll &
Lowy (1998) said that there were large forces in the digital revolution that were driving the E-commerce society. Customer needs, communication technologies, and the nature of competition changed the activities and relationships of the business structure (Barabba, 1998). An E-business system should ideally provide sellers and purchasers with an effective forum for interaction (Arnbjerg, 2001). New digital technologies change the traditional organization and administration environment. Governments play a prominent role in national network security, personal security, infrastructure, commercial law, business and public safety, education and knowledge management, research and development, economic development, disaster assistance, and environmental protection (Nelson, 1998). Defining and analyzing the business model are methods of making a successful business. According to Mann (2000), an E-business model includes website/customers, products/services, trust/decision, and channels of distribution (Radcliffe & Brinson, 2000).

The Issues of E-business

After making changes to the business operation, there are some serious challenges caused by the new Internet business process that cannot be easily overcome in a short time (Rogerson, 1997). Although privacy, convenience, and delivery are serious issues for consumers, the related issues of trust and security are also critical components of any E-business scenario. It has been shown that consumers hesitate to make purchases online due to these uncertainties (Martin, 2000). A large percentage of shoppers feel that the web is unsafe because of high-profile security breaches (Rogerson, 1997). Because of the complexities of implementation, time-to-market pressure, and just plain sloppy data security, a lot of customer goodwill is being put at risk (Martin, 2000). Despite great advances in the method by which payment details are handled, there is still a high risk of fraud. This causes a lack of consumer confidence as well as costing the seller money. Customers still care about submitting accurate personal information to a website (Rogerson, 1997). A survey by E-BuyersGuide.com (1999) found that while the aptitude to shop online is expanding, there are still many online shoppers that find customer service online unsatisfactory. Hurst (1999) did a study of seven hundred global E-commerce sites and found that 62% of them had no information on their return policy or procedure. Do customers need to disclose information on finance agreements as a pre-contract requirement with regard to consumers’ lack of financial experience (Schu, 1997)? Another situation of insufficient information is customers’ not knowing how to use a new product because of unclear explanations on the web, which cause large numbers of unsuccessful trades. What are the next steps in protecting customers’ rights? Who has jurisdiction when laws are broken over the Internet? Should the World Trade Organization have proper regulations for E-business? How do you get more people around the world online? These are serious concerns of governments, sellers, and customers. These issues continue to undermine consumer confidence in the online
marketplace and function as barriers to the growth of business-to-customer E-commerce (Kee, 2002).

**Strategies of E-business**

Realizing E-business principles and legislation are the main strategies for solving E-business problems or improving E-business performance to increase revenue for an organization or country. For example, the National Conference of Commissioners on Uniform State Laws (NCCUSL) and the United Nations Commission on International Trade Law (UNCITRAL) have completed work on their law model for E-commerce and are currently at work on international legislation (Smedinghoff, 1999). New strategies of management within the E-commerce model have scores of practitioners and academics turning their attention to the concept of relationship marketing and its principle of customer interfaces with sellers, distribution channel members, internal functions, and even competitors (Gronroos, 1994). In Strategies of Improving Performance of E-business, Stanford provided protocols, which include payment, trust management, security, object transfer, and data communication (Roscheisen, 1997). In this new electronic marketplace, responding to the consumer’s confidence is a very important goal of customer service. For example, WebTrust Principles and CriteriaTM has developed a consumers reference. The other strategies include the development of “a neutral governing mechanism to enhance the role which plays in international law to resolve Internet-related disputes and clarify jurisdiction of responsibility both in domestic and abroad” (Hong, 2001), and a customer service system and domestic dispute arbitration mechanism. Achieving an electronic society is the basic motivation for a government to deploy strategies for improving E-commerce performance. Korea and Taiwan already stress information technology education for the general population. Putting all government services online is a project involving the entire population of these countries. Japan’s plan calls for ultra high-speed access networks to 10 million households and additional high-speed access to 30 million households at low rates by fiscal 2005. By fiscal year 2003, the Japanese government also plans to become an E-government, handling electronic data in the same manner as paper-based information (“Japanese govt.”, 2001).

**Theory and Hypotheses**

Empirical investigation of the relationship with web marketing channels is complex and challenging. There are many different ways of defining and measuring relationships: friendliness, awareness, expectations, purchase intention, experience with a site, and decision-making (Jarvenpaa et al., 2000). The factors of seller’s strategies (search and link, advertisement, security, delivery, payment system, and customer service) that would affect the relationships in current web business on the Internet are the main streams discussed in this study (Engel et al., 1995). Trust is one important factor in the
relationship between buyers and sellers in a traditional store. In E-business, there is no face-to-face contact between buyer and seller. Thus, an attractive web presentation and an effective EBS are essential to improve the degree of trust and affect customer’s online purchase intentions or decisions (Kee, 2002). As a first step in empirical investigation, and according to the general flow of E-business transactional procedure, this paper develops an online purchase decision model (see Figure 1) in order to examine the impact that an EBS has on trust or the relationship between users and websites. This concerns how a user’s background knowledge and experience affect the online purchase intention, and how web presentation and transactional procedure in web-shops affect ongoing trade awareness, degree of trust, and final decisions.

Figure 1: Research Model for B2C Online Purchase Decision-making
Model Analysis

This research model partially refers to but is different from four models that explain online purchase decisions: A Model of User Acceptance by Davis (1989) and Davis et al. (1989); A Model of Initial Trust Formation in New Organizational Relationships by McKnight et al. (1998); the Trust-Oriented Model by Jarvenpaa et al. (2000); and the Website-Oriented Model by Chau et al. (2000). Jarvenpaa et al. (2000) see risk evaluation as a dependent variable of trust for a customer who already has trust in web-stores. But it is different in our model; we reverse risk evaluation as an antecedent variable of trust for any customer searching for a product using the search engine of a third-party website. Depending on customers’ Internet background knowledge and shopping experience, they may not be willing to buy a product from a web-shop recognized as being high risk (Jarvenpaa et al., 2000). The most crucial barrier for Internet marketing is the lack of consumer trust (Kee, 1997). Trust is an important factor in creating a credible relationship between a web-shop and a customer (McKnight et al., 1998). This paper focuses on the consumer’s perceptions of trust and purchase decision-making in web-stores, which includes intermediaries or third parties that might mediate between the consumer and the seller. In the research of E-business, we presume that the measurements of friendliness, awareness, expectations, purchase intention, experience with a site, security, delivery, payment system, and customer service are the factors that would affect customer trust and confidence in making purchases on the Internet (Engel et al., 1995; Ticoll & Lowy, 1998; Buenzli et al., 2000).

Based on the procedure of online purchases, personal background, worth evaluation, and purchase decision, we have derived a customer Online Purchase Trust-Decision model from four factors (see Figure 1): personal background experience, site presentation perception, transaction evaluation, and trust/decision-making. In Chau et al.’s model, product navigation and information presentation are identified as two major elements in online purchases. Our B2C model will elaborate on the factor of trust/decision-making which is influenced by the factors of consumer’s background, navigation experience, the perception of site presentation and transaction evaluation. Navigation relates to product organization and the indexing structure behind it, and the presentation shows how easily the product information can be comprehended to help the shopping process (Chau et al., 2000). For the factor of worth evaluation, Jarvenpaa et al.’s model assumes that greater consumer trust of a web-store will reduce the perceived risks associated with buying from that store (Jarvenpaa et al., 2000). But in a real E-business model, we found that customers always evaluate the security of a transaction or Product Value after searching for a product on the Internet, and then make a judgment of trust or purchase. So we see the evaluation of the transaction as the antecedent of trust. For the factor of trust, McKnight’s trust model assumes that web-community members only communicate with each other with web tools. It seems appropriate trust for the Internet that impersonal relationships characterize most web seller/consumer trust (McKnight et al., 1998). But in
our B2C purchase model, trust means that customers trust the site presentation, security of transaction, and service. We use the term “trust/decision-making” to describe the different combinations of trust and decision-making that are caused by different antecedent reasons (trust the safety of transactions and decide to purchase online; trust but do not purchase online because of inconvenient service or delivery; or not know the risk but purchase online). The initiatory pilot survey was tested and executed by faculty and college students for clearness and completeness. Based on these initiatory tests, we modified the questionnaire to make it a concise and easy instrument for a student.

**Buyer’s Behavior, Measurement, and Assumptions/Limitations**

This experiment focuses on the impact on business websites of information exchange technology (i.e., email, search engines, security, service, and B2C EBSs) between web-shops and consumers. It focuses on how certain elements of online purchasing systems can be used to build customer relationships between web-stores and consumers. The study adopts the customer’s standpoint for several reasons. First, the Internet provides standardized technology for information exchange (Dyche, 2000). Second, Internet business shows sensitivity on a new trade structure, which can have a direct impact on the customers benefit through the process of trading. This is proper for web-based information systems (Rogerson, 1997). Third, empirical studies on E-business web-shops are currently very easy to obtain. Fourth, the Internet is popular today and widely used (Vradenburg, 2001). The research of E-business actions is conducted by the FIRM, which is one of the Stanford protocols that include payment, trust management, security, object transfer, and data communication (Roscheisen, 1997). Trust is one of the most important factors in an EBS (Engel et al., 1995), which is affected by the other factors (credibility and product quality). In the traditional business model, research on f2f interaction strategies between channel members has been limited to the use of business students in laboratory settings who are asked to mimic channel members bargaining and communication behaviors. In the Internet business model, the researcher has a better opportunity to employ the Internet to survey buyers or to get data with different measurements directly through an experiment or interview (Roscheisen, 1997). The following section will provide descriptions of the assumptions and limitations of these measurements.

**Personal Background and Skills**

This research assumes that the personal background experience will affect the intention of online purchase. Searching is part of the website user experience. Customers want to be able to easily find the correct information on a given product. Though some people shop knowing exactly what they want, many others are looking for advice (Buenzli et al., 2000). But customers who are not proficient in searching have a hard time finding what they want from a website. More specifically, they want human or human-like interaction.
A customer who types a few keywords into most of today’s search engines wants to get a fast result. However, this search often results in the retrieval of thousands of web pages that are related to the query only because the keywords appear somewhere on those pages (WiseNut, 2001). If a customer cannot find information about a product they are interested in, their intention to purchase it on the Internet may subside. Do users (with experience in searching) find more clear information than the inexperienced users find, and how does searching result influence customer’s purchase intention? With the responses to this question, we will analyze the measurement of “purchase intention after search”, “I have good search skills,” and “purchase intention before search.” The limitation of this assumption is the consideration that only under the significant difference of these measurements. We don’t know whether the purchase intention is influenced by the search skills or by other factors such as “security awareness.” In order to produce a solution for this limitation, multi-regression analysis will be used to modify the assumption. The following assumptions and usage of measurements share that limitation.

**Information, Awareness, the WebTrust Seal, and Purchase Intention**

This study assumes that a clear awareness of Internet risks and solutions or product information will affect the purchase intention (Jarvenpaa et al., 2000). Do people who have experience with and knowledge of the Internet or making purchases on the Internet have a greater intention to make purchases online? Awareness means that customers realize the circumstances in which they benefit or are vulnerable in E-business. They know their rights and obligations, and gain background knowledge to minimize risk (Kee, 2002). Does all of this awareness increase the intention to purchase online? We want to find out whether customers’ awareness of the WebTrust Seal affects their decision to purchase online.

**Customer Service**

Will Internet email, interactive web-stores, and telecommunication systems improve the relationship between buyers and sellers in E-business? Do customers think that email and phone communication can substitute for the traditional relationship in the E-business relationship between buyers and sellers? The E-business processes of many companies have lagged behind because of some major changes in the areas of purchasing style, customer service, and relationships with customers (Hosoi, 2000). In an E-business store, do customers develop a good relationship with sellers? Can we predict that the traditional relationship between buyers and sellers will become less common due to the impact of email, interactive web-stores, and telecommunication purchasing systems? Currently, consumers have difficulty with f2f interactions in real time with company representatives via the web, and even the most professionally designed websites do not offer human interaction (Buenzli et al., 2000). Do EBSs still conveniently construct a
new relationship between buyers and sellers? Do these factors, taken together, give most E-commerce sites low credibility? In speaking with a sales representative, f2f establishes a level of accountability because the salesperson is responsible for what he/she recommends. Though this accountability leads to consumer trust on behalf of the retailer in traditional business, do email, telecommunication and web systems, which provide digital records of service and promises, make sellers behave more responsibly?

E-business Relationships, Price, and Security

Will the lower prices and convenient delivery of E-business attract traditional customers who will not give up traditional stores entirely? Will new E-business relationships (convenience or lower price) overcome customers’ concerns about risks during E-business process? Suppose E-business is a convenient process and has lower costs. Will this influence customers? But finding trustworthy web-stores and guaranteeing the security of the business process is more difficult in online business. Will new E-business relationships (service) decrease the difficulties? According to the price analysis in the above section, price is a more important source of competitiveness for E-business stores than for traditional stores. Though many customers have no experience making purchases online, a lower price for a product of the same quality may encourage new customers to overcome their fear of making an online purchase at home. The limitation of this assumption is that respondents should have the same level of intention or perseverance in comparing prices and product features.

Contract Law

Suppose that the contract law in E-business is an important factor in a customer’s decision to purchase online or not. Most online contracts are executory and non-negotiable in the transaction process. The sellers demand all terms of the contract. Once, the goods or services are delivered, only the contract and payment have been affected. These contracts often contain terms that are disadvantageous to consumers, such as limitations on warranties and remedies (Kee, 2002). If customers do not know or care about the contract, it is either because the contract is too complicated for them to understand or it is so non-negotiable that the buyer has no way to mitigate its effects. If this assumption is true, what should the government do?

Delivery, Return, Security, and Trust

Suppose that online purchases and subsequent product delivery will be more convenient and attractive than in traditional business, especially when customers purchase a product from abroad or from far away if the online process is secure and trustworthy. One of the benefits of online purchases is the time saved on window-shopping and the time or money saved on transportation, in addition to the price of the product and the
convenience of delivery. A web-store with clear information about its return policy and procedures should be more likely to gain the trust of customers. Another important element of customer service is the set of associated actions after a sale takes place. These actions include the RMA process, refunds, exchanges, and customer support.

**Friendliness, Familiarity, and Good Relationships**

When a web-store is friendlier and more familiar with customers, it increases their confidence in it and their likelihood of making a purchase online (Dyche, 2000). Customers may have good relationships with a traditional store because they have visited it many times or have a good impression of the store and its service. Customers who are familiar with and have good relationships with a web-store may purchase products there without even bothering to look at other web-store offerings (Dyche, 2000).

**Purchase Decision, Product Quality, Awareness, and Trust**

We want to know whether finding a product, search skills, product knowledge, and brand awareness will influence the purchase intention. The purchase intention includes purchasing from a website or a traditional store. Will customers decide to take the risk of making a purchase online if (a) the product price is not too high, (b) the product cannot be found in a traditional store, (c) customers’ purchase intention is high, (d) customers think that it is not safe because they have no experience with E-commerce, or (e) customers know nothing about the result after payment? Will price, service, awareness, risk (incorrect or missing products), and intention to purchase influence the final decision to purchase online? The assumptions are that a combination of those measurements is involved. In this study, as shown in Figure 2: **H1**: Personal background experiences do affect customers’ initial online purchase intention; **H2**: Web presentation and/or personal background do affect the purchase intention after a search; **H3**: Personal background, web presentation and/or worth evaluation do affect web trust; **H4**: Personal background, web presentation and/or worth evaluation do affect the decision to purchase online; **H5**: Trust does affect the decision to make a purchase online. For example, one assumption of this research is that “the purchaser has more awareness of E-business then they have an intention to make a purchase on the Internet.” All the assumptions are described in the section on research design. All the measurements are regarded as statistical variables, which are divided into dependent variables or independent variables. In this assumption, we define awareness as an independent variable and intention as a dependent variable. The t-test was used to determine whether the two groups (awareness or unawareness) under consideration in relation to the variable (purchase intention) being studied were statistically different. The statistical method, multi-regression, was used to create a Reliability Model for an enterprise to evaluate its Electronic Website Reliability, or to discover which factors affect the purchaser’s decision to make an online purchase from the web-store.
Figure 2: Hypotheses of Research
Methodology

Sample
The process undertaken involves willing verify this B2C E-business model. In order to ensure customers’ needs are taken into account, this research identifies the key issues which affect customers final trust or purchase decision with our questionnaires. The first stage of the survey process encourages the customer involved in the B2C online purchase experiment to consider customer issues. In the case of this research, this has involved the exploration of the key issues affecting customers using the Internet, before developing several relevant measurements that should help to develop an E-business system. These are the seller’s friendliness, convenience, trust, security, and service based upon customer’s own views. In the development of an Internet business, these issues affecting the customer have often been a concern; therefore, knowledge of the key issues can help to make a successful E-business. In order to identify the relationship between the customer and E-business, each respondent answers a questionnaire after they finish an online purchasing experiment. The survey, involving a range of methods, is carried out with customers in Taiwan. Some of the principles of Internet usage had already been documented in the literature and in previous studies which established that customers have a number of issues with regard to an E-business. However, there were not enough solutions or strategies for E-business sellers or customers to achieve a successful E-business. The current experiment addresses the present lack of a detailed awareness of situations in which customers took part in Internet business usage. The methodology of this research comprises several sections. First, in order to know the relationships in and principles of E-business, this research is interested in the group that has been surfing the Internet. Before taking part in the online experiment, purchasers should fill in their budget, the product name, the purchase intention, and their experience on the questionnaire. Accompanying this survey is an experiment designed for a respondent to pretend to search for and purchase a product on an E-commerce website. In the purchasing situation, the respondent should consider their budget, their expectation, security, payment, delivery, and customer service. After this online purchase experiment, respondents fill out the second part of the questionnaire, in which the relationship between purchasers and sellers is considered. In this survey, the respondent sits in front of a computer that is connected to the Internet, and searches for and purchases a product as a purchaser. The relationship measurements of this survey include trust, awareness, experience, search skills, security, customer protection, advertisements, delivery, price, legislation, and intention. All of these measurements are included in the 28 answers for the questionnaire, in which the respondents’ dissatisfaction with or recommendation of an E-business are clearly presented.
Selection of Subjects

The purpose of the study is to identify degrees of relationship between a website and the website’s potential Taiwanese customers. For each factor, sample groups were compared for any significant differences (users with a good impression of a web-store were compared with users who had a negative impression of the web-store). It was hypothesized that significant differences in experience, awareness, decision-making, or strategies would exist between the two groups of subjects (i.e., trust or do not trust, will buy or will not buy). In addition, all the measurements/factors were discussed to decide which are important in influencing the purchase decision and interesting for E-business in Taiwan today. For the data collection, the subjects include college students attending related information system courses or those who have some Internet experience. Subjects were enrolled in college courses during the administration of the test and ranged in age from 19~26 years old. According to the STV ratio, the subjects-to-variables ratio should be no lower than 5 (Bryant & Yarnold, 1995). A total of 270 participants were surveyed in 2004 from two classes in each of three colleges that were selected randomly from among the colleges in Northern Taiwan. For each, one senior class and one junior class were surveyed. The sample of this research only represents the partial student population of Northern Taiwan. All students were asked to do the experiment and answer the questionnaire. Students in Taiwan are familiar with the Internet, but it is not especially popular with adults. In asking respondents to provide competent answers to the questionnaire, this research defines our sample as college night-school students. Most night-school students have some degree of social and career experience, so the sample population will very closely resemble future E-business users in Taiwan.

Data Processing and Analysis

The purpose of this quantitative correlational study is to test Taiwanese customers’ knowledge of E-business by developing a research model of the online purchase process as documented in the current literature. Rogerson (1997) has shown that trust and the purchase decision are related, and that the user’s background knowledge, the performance of the EBS, and online security are important factors in establishing correlative trust relationships between website vendors and consumers. Especially noteworthy is how the influence of trust affects the final online purchase decision (Rogerson, 1997). As described in earlier literature, online trust is established from personal experience, the assurance of a safe E-business process, convenience, legal protection, and customer service (Martin, 2000). The survey in this study will record B2C customers’ responses from Taiwanese end-users.
Correlation and Factor Analysis for the Model

The next process is to prove the construct validity, which involves the verification of predictions made from the test scores. Factor analysis is one of the effective tools used to verify construct validation for a model (Hair et al., 1998). The construct validity of the model’s scales was evaluated using SPSS 8.0 factor analysis on the pilot data from college students. As shown in Table 1, the KMO (Kaiser-Meyer-Olkin) Measure of Sampling Adequacy is 0.933, and the Chi-square 4,250.49 is significant at **P = 0.000. KMO is a good fit for our research model. The correlation coefficients between these variables and factors for the research model are shown in Table 2. Suppose some expected groups (combined from background, worth evaluation, trust/decision-making) would be used for analyzing customers’ online purchase decisions; in this case, four factors are extracted from a combined dataset in the factors analysis process. As a result, it seems that four different factors may mostly describe the contrast situations across this research model. According to the theory of correlation and factor analysis, the correlations of four categories are able to show above 68 percent of valid variance across this research model. In this pilot analysis, four possible factors might be named:

1. Forty nine percent will trust web-shops and decide to purchase online with good experience, and worth evaluation.

2. Nine percent may trust web-shops but will not purchase online because of inconvenient service or unclear delivery process.

3. Six percent will not trust web-shops and will not purchase because of unclear service and security.

4. Four percent of Internet users will trust web-shops but be uncertain about making a purchase online because of unsatisfactory price, service, and delivery~ those factors are reasonable to fit most situations of the research model (Hair et al., 2001).

Table 1: KMO and Bartlett’s Test

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<th>Kaiser-Meyer-Olkin measure of sampling adequacy</th>
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<td>Bartlett’s Test of Sphericity</td>
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<td>Sig.</td>
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Table 2: Correlation Coefficients (Factor Analysis)

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<th>Factor 2</th>
<th>Factor 3</th>
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<tr>
<td>Find ideal product</td>
<td>0.619</td>
<td>0.195</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perception</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Search result is Clear</td>
<td>0.526</td>
<td>0.638</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product knowledge acquire</td>
<td>0.677</td>
<td>0.586</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brand Aware</td>
<td>0.563</td>
<td>0.573</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product explanation</td>
<td>0.571</td>
<td>0.614</td>
<td>-0.112</td>
<td></td>
</tr>
<tr>
<td>Good Price of product</td>
<td>0.664</td>
<td>0.217</td>
<td>0.118</td>
<td></td>
</tr>
<tr>
<td>End Intention after search</td>
<td>0.669</td>
<td>0.372</td>
<td>0.223</td>
<td></td>
</tr>
<tr>
<td>Will buy if difficult to find</td>
<td>0.521</td>
<td>0.147</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The price is cheaper</td>
<td>0.736</td>
<td>-0.121</td>
<td>-0.460</td>
<td></td>
</tr>
<tr>
<td>Transaction evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service is good</td>
<td>0.775</td>
<td>-0.201</td>
<td>-0.202</td>
<td>-0.359</td>
</tr>
<tr>
<td>Payment system</td>
<td>0.806</td>
<td>-0.218</td>
<td>-0.284</td>
<td>0.234</td>
</tr>
<tr>
<td>Delivery</td>
<td>0.791</td>
<td>-0.179</td>
<td></td>
<td>-0.125</td>
</tr>
<tr>
<td>Privacy</td>
<td>0.703</td>
<td>-0.316</td>
<td>0.411</td>
<td></td>
</tr>
<tr>
<td>Relationship with website</td>
<td>0.824</td>
<td>-0.145</td>
<td>-0.170</td>
<td></td>
</tr>
<tr>
<td>Trust, decision</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>0.781</td>
<td>0.225</td>
<td>0.300</td>
<td></td>
</tr>
<tr>
<td>Decision</td>
<td>0.870</td>
<td>-0.147</td>
<td>-0.154</td>
<td></td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>18.25</td>
<td>3.3</td>
<td>2.4</td>
<td>1.7</td>
</tr>
<tr>
<td>Variance explained</td>
<td>49%</td>
<td>9%</td>
<td>6%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Note: Extraction method: Principal Component Analysis, 4 components extracted.
Web Purchase Model Construction and Test

There are a total of 28 variables used after the pilot research. Trust, purchase intention, and final decision are dependent variables. The antecedent variables are considered independent variables (personal background, site presentation, and system security). Three statistical methods are used to analyze these variables:

1. Factor Analysis examines the interrelationships among these 28 variables and then attempts to explain them in terms of their common underlying dimensions (personal experience or awareness of site presentation). Another purpose of this process is to summarize and reduce variables in order to describe the data with fewer and representative variables. Factor analysis allows us to test the validity of the research model (Hair et al., 1998).

2. Multiple Regressions develop a weighting estimation equation to predict the degree of trust or purchase intention from the values for several predictor variables such as Internet skills, web presentation, and awareness. Descriptive application may be used to find a new relationship between these variables and test hypotheses or estimate population values (Hair et al., 1998; Stevens, 2002).

3. Chi-square analysis was used to examine the relation or difference between the two observed variables (Stevens, 2002). This method is appropriate to count or enumerate data for a classified cross tabulation (a collection of the count data is used to analyze the distribution of the counts or the proportion in the various classified cells of trust-decision data). In the study of the relationship between trust and decision factors, we may be interested in investigating whether different levels of trust are related to the decision of a buyer (McClave et al., 1998).

The literature review and Figure 2 describe the research assumptions for the paper. The model hypothesizes that personal background experience, skills, perception of the web, and worth evaluation will affect trust and the online purchase decision. In Heider’s (1958) writing on his balance theory, he argued that customers avoid the risks associated with those with whom they have not had good experiences. According to the exchange theory, customers build relationships with sellers because of trust, and will trade for the events that are likely to bring more pleasure than pain (Thibaut & Kelley, 1959). We have created a purchase model and will describe the relationship for an enterprise to evaluate different factors of a successful online purchase from an electronic website.

According to the analysis, we found that all factor loadings of the manifest variables were highly significant at **p < 0.01. The explained variance (R square) for each dependent variable in the model in Figure 3 is given in italics inside its dependent variable’s rectangle. The model explains a large proportion of the variance in initial online purchase intention (0.78) and online purchase intention after a search (0.62). The
explained variance in trust (0.52) and final online purchase decision (0.55) are somewhat good. There is one standardized coefficient for each path connection between two variables of this research model. All path coefficients are significant at the 0.01 levels. As Figure 3 illustrates, there is a strong association among trust, final online purchase decision, and the difficulty of obtaining a product from a traditional store, which is stated by the following:

1. The online purchase decision is strongly affected by trust in the web-store (0.67), purchase intention after a search (0.54), and whether the product is difficult to buy in a traditional store (0.50).

2. Trust in the web-store is affected by the personal relationship with that web-store (0.61), the personal impression of E-business (0.44), and trust seals (0.57).

3. The personal relationship with the web-store is associated with fair contract (0.46), communication skills (0.33), payment security (0.73), service (0.62), privacy (0.61) and knowledge of dispute solutions (0.41).

4. The purchase intention after a search is affected by search results (0.68), initial purchase intention (0.46), service (0.37), and price perception (0.68).

5. The search result is affected by communication skills (0.30) and search skills (0.56).

6. The initial online purchase intention is affected by need (0.66), EB learning (0.62) and the impression of E-business (0.83).
Figure 3: Research Results for Online Purchase Trust-Decision Model

This study resulted in a number of important findings, which support the model presented in Figure 1 and also confirm the hypotheses regarding the directional linkages among the model variables, which were described as the following:

1. The initial online purchase intention is strongly determined by the need for the product, EB learning, and personal impression of the web-store, but it is less directly determined by personal search skill or the proficient of Internet communication.
2. Personal Internet communication skills and search skills affect the search result. Search result (0.68), initial online purchase intention (0.46), and product price (0.68) explain more purchase intention after search than service (0.37).

3. Customer service, communication skills, fair contract, and knowledge of solutions strongly influence personal relationship with a web-store.


5. Trust in a web-store has a greater role in the online purchase decision than does the purchase intention after a search and the difficulty of getting a product from a traditional store.

Trust is a critical component of any E-business scenario (Martin, 2000). In the Strategies of Improving the Performance of E-business, one of the Stanford’s protocols is trust management (Roscheisen, 1997). Our research confirms that the online purchase decision is primarily determined by trust in a web-store. It is also determined by the purchase intention after a search or the difficulty of getting a product from a traditional store. For example, when we purchase a book from a web-store, even though the price is lower and the book is difficult to obtain from a traditional bookstore, we still hesitate to make a decision to buy it online if we are not certain that we trust the web-store or seller. A trust seal can be displayed in a website link to the manufacturer; many Internet shops already use the traditional quality seal in their web-stores (Weperen & Kinstituut, 2000). “73% of purchasers and 82% of non-purchasers cite reliability seal of business as a major concern when shopping online” (BBBOnline, 2002). Our research also confirms that trust in a web-store is strongly determined by trust seals, the personal impression of E-business, and the relationship with a web-store. Unfair contracts cause unhappy relationships with web-stores or sellers (Schu, 1997). The data show that customer service, communication skills, fair contracts, and knowledge of solutions strongly influence good personal relationships with web-stores or sellers. As in a traditional store, communication skills are still a good way to improve the relationship with a seller for resolving unclear contracts and offering solutions, or for questions of product quality or service.

From the customers’ end, E-business is a convenient process which involves fewer costs. It is easy for E-society members to compare prices (Arnbjerg, 2001). We find that low price and a positive perception of product presentation (i.e., the search is clear) always positively affect a customer’s purchase intention after a search but do not directly affect the final online purchase decision. Search engines guide customers through a competitive marketplace (Dyche, 2000). One study found that in user tests, nearly 56% of all search attempts and nearly 40% of buying attempts failed because the site design was too complex (Wilson, 1999). Our study also confirms that personal proficiency in Internet usage and search skills affects search results (i.e., whether the search is clear).
Because of the complexities of implementation and just plain sloppy data security, much customer goodwill is put at risk (Martin, 2000). Despite great advances in how payment methods are handled, there is still a substantial risk of fraud, which causes a loss of consumer confidence (Rogerson, 1997). There are still many online shoppers who find customer service online unsatisfactory (E-BuyersGuide.com, 1999). This study confirms that the initial online purchase intention is strongly determined by the need for a product and the personal impression of a web-store. In looking at the scores from testing the effects of antecedent variables of trust in a website and the purchase decision, which were produced from factor analysis and the result of regression analyses (Table 3), we confirm that these antecedent variables significantly (**p < 0.01) affect purchase decision and trust in a store.

**Table 3: Comparison of the Coefficients for Trust and Decision**

<table>
<thead>
<tr>
<th></th>
<th>Decision</th>
<th>Trust</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t</td>
<td>Sig</td>
</tr>
<tr>
<td>Good Price</td>
<td>3.918</td>
<td>0.000</td>
</tr>
<tr>
<td>Difficulty of Finding the</td>
<td>3.838</td>
<td>0.000</td>
</tr>
<tr>
<td>Product in a Traditional Store</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>5.874</td>
<td>0.000</td>
</tr>
<tr>
<td>Security of Payment</td>
<td>7.538</td>
<td>0.000</td>
</tr>
<tr>
<td>Convenient Delivery</td>
<td>5.624</td>
<td>0.000</td>
</tr>
<tr>
<td>Trust Seal</td>
<td>0.215</td>
<td>0.830</td>
</tr>
</tbody>
</table>

Note: Dependent Variable: Decision, Trust
Independent Variables: Price, Difficulty of Finding the Product, Service, Security, Convenience

The product presentation and transaction security variables were found to significantly (**p < 0.01) affect both purchase decision and trust (see Figure 4). Transfer security and trust seals are significant (**p < 0.01) antecedent variables of trust in a web-store; however, the product price, service, delivery, and security are significant (**p < 0.01) antecedent variables of the purchase decision. We can conclude that information about both product presentation and transaction security is important for enhancing trust in a web-store and the purchase decision. According to the coefficient in Figure 3, the online purchase decision was strongly affected by trust in a web-store (0.67). This finding may be interpreted to mean that when these factors are present (i.e., good price, convenient delivery, customer service, difficulty of obtaining the product from a traditional store), then transaction security increases customers’ confidence in their decision to purchase online. The finding that a trust seal was not significant to the purchase decision may be interpreted to mean that few web users know the site’s trust seal or that trust seals are not popular in Taiwan. However, thirty-one percent of customers were concerned with trust
seals and decided to purchase online, which shows an increase in the knowledge of and use of trust seals.

![Figure 4: The Relationship between Trust/Decision and its Antecedent Variables](image)

For the study testing the effects of antecedent variables of trust in a website and the purchase relationship with a web-store or seller, the result of regression analysis is shown in Table 4. We can confirm that most antecedent variables significantly (**p <0.01) affect the personal relationship with and trust in a web-store.

**Table 4: Compare the Coefficients for Relationship and Trust**

<table>
<thead>
<tr>
<th></th>
<th>Relationship</th>
<th>Trust in web</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t</td>
<td>Sig</td>
</tr>
<tr>
<td>Service</td>
<td>5.708</td>
<td>0.000</td>
</tr>
<tr>
<td>Trust Seal</td>
<td>1.683</td>
<td>0.094</td>
</tr>
<tr>
<td>Fair Contract</td>
<td>3.043</td>
<td>0.003</td>
</tr>
<tr>
<td>Communication Skills</td>
<td>3.927</td>
<td>0.000</td>
</tr>
<tr>
<td>Security Privacy</td>
<td>6.652</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Note: Dependent variable: Relationship, Trust in web-store; Independent variables: Service, Trust Seal, Contract, Communication Skills, Security

A fair contract, service, and privacy are found to significantly (**p <0.01) affect both the personal relationship with and trust in a web-store, but personal communication skills significantly (**p <0.01) affect the personal relationship with a seller of a web-store. However, a trust seal is not a significant antecedent variable of the personal relationship with a web-store. We can conclude that a fair contract, service, and privacy are important for enhancing trust in a web-store and the personal relationship with a web-store, but a trust seal does not significantly affect the personal relationship with a web-store; and communication skills do not significantly affect trust in a web-store. According to the coefficient in Figure 3, the personal relationship with a web-store (0.62) and a trust seal (0.57) strongly affect trust in the web-store. This finding may be interpreted to mean that
communication skills, a fair contract, service, and privacy develop the relationship with a web-store or sellers. A trust seal improves confidence in a web-store.

Conclusions

The findings above confirm that (a) the initial online purchase intention is strongly determined by the need for the product and the personal impression of the web-store, but is not directly determined by personal search skills or proficiency in using the Internet; (b) search skills and proficiency in using the Internet affect search results — search results, the initial online purchase intention, and product price better explain (closely correlate with) purchase intention after a search than does service; (c) customer service, communication skills, fair contracts, privacy, and payment security strongly influence the personal relationship with a web-store; (d) trust seals, personal impression, and relationship with a web-store strongly influence trust in a web-store; and (e) trust in a web-store better accounts for (is closely correlated with) the online purchase decision than does the purchase intention after a search or the difficulty in obtaining a product from a traditional store. This study also confirms that a customer will decide to take the risk of making a purchase online if the: (a) product price is not too high; (b) product cannot be found in a traditional store; and (c) the customer’s purchase intention is high.

According to the findings, most variables analyzed in this chapter comply with the theory of trust and purchase behavior in the literature. Customer service, communication skills, fair contracts, and the knowledge of solution strongly influence personal relationships with a web-store or sellers. A low price and good presentation of a product always positively influence a customer’s purchase intention after a search, but do not directly affect the final online purchase decision. All factors that improve the factor of trust are important when developing a successful EBS. E-society members may recommend good service or product distribution with convenience, fairness, and secure solutions through the web community that improve the success of a credible website (Arnbjerg, 2001). Though the Internet is popular and E-business users are increasing in Taiwan, many online customers are still dissatisfied with the inconvenience of making a purchase online, Internet fraud, product quality, customer service, security, and unfair contracts (Buenzli et al., 2000). Gaining a working knowledge of E-business is one of the important strategies for preventing unsatisfying online purchase experiences. The knowledge includes awareness of legal information, E-business process evaluation and solution of arbitration which are important knowledge for web trust and online purchase decision. As found in the literature, the US government and other organizations can help further popularize the Internet by improving the legislation regarding customer service or protection, setting up more legal and security requirements, and providing people with a satisfactory EBS. Also, according to the literature reviewed and the findings, the following are deemed to be the most useful strategies:
1. Infrastructure is one important way to improve the percentage of users who feel that the Internet and E-business operations are convenient.

2. The legislation and management of fair trade, customer service, security fraud solution, dispute arbitration, and the obligations of Internet service providers are the basic factors that can improve customers’ confidence when making a purchase online.

3. Global E-business policies should be defined and implemented by the different levels of government to improve confidence and profit levels for people around the globe (i.e., not just in Taiwan or the U.S.).

By examining the theory of successful EBSs, trust, the intention to make an online purchase, and the final decision are not only determined by the security of the EBS, but are correlated with customers’ needs, their impression of a web-store, the convenience of product distribution, their Internet skills, and their relationship with a web-store. The problem of lack of trust or inconvenience cannot be overcome just by access to the Internet. With the EBS, there are significant relationships between personal knowledge of E-business, the perception of security, customer service, knowledge of fair trade, and problem arbitration. These factors suggest that a safe online trade environment is not a deterministic factor. It is conditional upon a user’s ability to make a right decision in the context of their personal trust in a web-store and their relationship with a web-store, which influences the performance of E-business. The findings also imply that education is an important strategy for increasing trust and promoting a right decision in the use of new E-business.

Significance and Implications of the Study

Our research has made some contribution to the body of knowledge on E-business. First, the study has discussed previous research in a new context and with more effective factors to demonstrate the relationship among these factors and confirm the factors that significantly influence trust in a website and the final decision to make a purchase online. Second, the study has found that though low price and good presentation of a product always increase a customer’s purchase intention after a search, they do not directly affect the final online purchase decision. The final online purchase decision is still strongly affected by the three factors of purchase intention, difficulty in obtaining a product from a traditional store, and trust in a web-store. A third contribution of the study is that it confirms and applies the online purchase trust-decision model with the strategies found from the current literature, and has made a recommendation for the management of E-business. The analysis resulting from this research shows that customers’ web skills and knowledge background, product presentation and delivery, personal relationships with a web-store and security, and customer protection, affect customers’ trust in a web-store and decision-making. What these results may mean to a
government that wants to improve the performance of E-business, is that it is important for the government or organizations to include the larger view of infrastructure, education and training, fairness and legislation, globalization, and problem arbitration. Corporations wanting to increase their market share and profitability can also view the results of this study as valuable policy which can be included in or used to modify their organization and strategies.

**Recommendations**

This study highlights circumstances in E-commerce where consumers are most vulnerable, and can be used to advise consumers of their rights and obligations, how to minimize their risk and how to take reasonable steps to teach themselves online buying and selling strategies. This study provides an analysis of the relationship between customers and sellers. According to the data and research model examination, in order to gain more benefits and trust from buyers, practitioners should know the important factors which can be used to improve business strategies and/or policymaking. This study shows that Taiwan’s government and other business organizations can accomplish their goals of developing, increasing the efficiency of, and increasing the profits of E-business by including excellent strategies in the areas of infrastructure, education and training, fair legislation, globalization, and problem arbitration. The U.S. government has made several efforts in these directions, such as a common and excellent Internet infrastructure, the popularization of E-business usage in different levels of agencies and school businesses, the stimulation of online purchases (i.e., through tax relief), the legislation of customer protection and transaction security, striking back at web fraud, and leading and developing policy in global organizations. All are efforts to enhance customer trust in EBSs and are decreasing the cost of transactions and increasing the profits of the nation and its people. Though this research focuses on the development of a Taiwanese model, the research method and analysis provide a valuable model for research into customers in different contexts, areas or countries.
References


