# EXAMINING ONLINE PURCHASE DECISIONCALCULUS: THE MENTAL ACCOUNTING THEORY PERSPECTIVE 

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## SUMMARY

The Internet space is becoming increasingly competitive with an increasing number of online stores. The advancement in the technology front (e.g., Shopbot) has worsened this competitive scene. For increasing sales in this increasingly competitive environment, online vendors look for various means of creating competitive differentiation, the most common of which is to offer lower prices. However, lowprice strategy fails on Internet as even price-sensitive customers do not always purchase from online vendors offering the lowest prices. Therefore, to increase competitive differentiation, and hence sales, online vendors should understand the purchase decision-calculus of their customers. As customer decision-calculus has been studied from the value perspective in marketing and economics, the overall objective of this research is to examine online customer purchase decision-calculus from the value perspective. For a comprehensive analysis of the subject of online customer decision-calculus, this research is divided into three studies, each of which telescopically develops from the previous study. The first study aims to examine the purchase decision-calculus of online (potential and repeat) customers; the second study aims to examine the specific differences in purchase decision-calculus of potential customers and repeat customers; and the third study aims to examine the effect of transaction experience on customer repurchase decision-calculus.

In the first study, we examine the online purchase decision-calculus of online (potential and repeat) customers from the value perspective based on mental accounting theory. We identify the factors that influence potential and repeat customers value perceptions of purchasing online and how their purchase decisions are influenced by their perceptions of value as well as the factors that influence their
perceptions of value. From this study we develop an understanding of purchase decision-calculus of online (potential and repeat) customers.

In the second study, we compare the online purchase decision-calculus between potential and repeat customers for examination of the specific differences in the purchase decision-calculus of potential customers and repeat customers. This study is different from first study as in this study we analyze specific changes in customer purchase decision-calculus as the customer moves from being a potential customer to a repeat customer.

In the third study, we examine the effect of transaction experience in online repurchase decision-calculus. Second study gives us some indication that there might be differences in purchase decision-calculus of repeat customers over transaction experience. This study helps us to understand the differences in purchase decisioncalculus of repeat customers over transaction experience.

In general, we found that value plays an important role in purchase decisioncalculus of online (potential and repeat) customers. While, purchase decisions of potential customers are solely driven by their value perceptions, purchase decisions of repeat customers are influenced additionally by the factors that influence their value perceptions. We also found that repeat customers are more price-sensitive than potential customers; however, their price-sensitivity decreases with transaction experience. Counter-intuitively, in our research, risk and uncertainty of purchasing online did not have a significant direct influence on customer purchase decision; rather the influence of risk and uncertainty on purchase decisions was indirect through perceived value. Lastly, we also found that customers become automatic in their purchase decision-calculus over transaction experience. Thus, the three studies provide a comprehensive examination and explanation of purchase decision-calculus
of online customers. The numerous insights into purchase decision-calculus will help online vendors in developing suitable strategies for improving initial sales with potential customers and return sales with repeat customers.

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## LIST OF PUBLICATIONS

## PUBLISHED JOURNAL ARTICLES

- Sumeet Gupta, and Hee-Woong Kim, "Developing the Commitment to Virtual Community: The Balanced Effects of Cognition and Affect," Information Resources Management Journal, 20(1), Jan-Mar 2007, pp. 28-45.
- Hee-Woong Kim, Hock Chuan Chan, and Sumeet Gupta, "Value-based Adoption of Mobile Internet: An empirical investigation," Decision Support Systems (DSS), 2006. (Forthcoming).


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- Sumeet Gupta, and Hee-Woong Kim, "Converting a Virtual Community Member into an Online Customer," Pacific Asia Conference on Information Systems (PACIS), Kuala Lumpur, Malaysia, 2006, 770-784 (Nominated for Best Paper).
- Sumeet Gupta, and Hee-Woong Kim, "Moderating role of transaction experience in repeat customers value-driven Internet shopping," European Conference on Information Systems (ECIS), Goteborg, Sweden, 2006, 202:112.
- Hee-Woong Kim, Hong Li, and Sumeet Gupta, "Different effects of perceived price and risk on purchase intention for potential and repeat customers," Pacific Asia Conference on Information Systems (PACIS), Bangkok, Thailand, 2005, 1639-1645.
- Sumeet Gupta and Hee-Woong Kim, "Enhancing the commitment to virtual community: Belief and feeling based approach," Twenty-Fifth International Conference on Information Systems (ICIS), Washington DC, 2004, 101-114.
- Hee-Woong Kim, Hock Chuan Chan, Yee Pia Chan and Sumeet Gupta, "Understanding the balanced effects of belief and feeling on information systems continuance," Twenty-Fifth International Conference on Information Systems (ICIS), Washington DC, 2004, 297-310.
- Sumeet Gupta and Hee-Woong Kim, "Virtual community: Concepts, implications, and future research directions," American Conference on Information Systems (AMCIS), New York, 2004, 1679-1687.


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- Sumeet Gupta, and Hee-Woong Kim, "Comparison of Value-driven Internet shopping between potential and Repeat customers," IEEE Transactions on Engineering Management.
- Sumeet Gupta, and Hee-Woong Kim, "The Moderating Effect of Transaction Experience on online Repurchase Decision-Calculus," International Journal of Electronic Commerce.
- Sumeet Gupta, and Hee-Woong Kim, "Converting Virtual Community Members into Online Buyers: A Classical Conditioning Approach," European Journal of Information Systems.
- Sumeet Gupta, and Hee-Woong Kim, "Linking Structural Equation Modeling to Bayesian Testing: From Identification of Causal Relationships to Decision Support," European Journal of Operations research, under second review.
- Sumeet Gupta, and Hee-Woong Kim, "Value-Driven Internet Shopping: The Mental Accounting Theory perspective," Information and Management, under second review.


## BOOK CHAPTERS

- Sumeet Gupta, and Hee-Woong Kim, "Application of Bayesian Modeling to Management Information Systems: A Latent Scores Approach," In Mittal, A., Kassim, A., and Tan T. (Eds.), Bayesian Network Technologies: Applications and Graphical Models, Idea-Group Publishing, Hershey, PA. Forthcoming in 2006.


## 1. INTRODUCTION

### 1.1. RESEARCH BACKGROUND

As the Internet adoption is growing leaps and bounds, so is the growth of ecommerce. Internet is growing into a competitive space with an increasing number of both pure-plays and brick and click companies establishing their presence online (Forrester Research 2002, International Council of Shopping Centers 2000). These companies are attracted by the lower cost of online operations and a greater reach to customers. In addition, a large number of households are joining bandwagon as eshoppers, being prompted by the faster growth rate of Internet adoption and penetration (Chaffey 2002), increasing awareness about the benefits of electronic commerce (such as convenience, information symmetry, comparison shopping, and accessibility) (Kaufmann-Scarborough and Lindquist 2002), and increasing alleviation of security and privacy concerns (through online certification agencies such as TRUSTe, Bizrate, and VeriSign). With the increasing number of online sellers, the scene is more competitive than ever.

Some of the reasons for this competition are the reduced information asymmetry and easy access to many online vendors (i.e., low comparison and switching costs). Information asymmetry and location are two of the main competitive advantages of brick and mortar companies. However, when these companies establish their presence online, they lose their competitive advantage due to information asymmetry and location. Lack of information asymmetry shifts the power in the hands of customers. For example, online vendors cannot charge higher prices because customers can easily compare prices across many online vendors and switch to other vendors. Moreover, easy access to online vendors reduces the competitive advantage for online vendors due to location (whereby they could specifically cater to a select
group of customers in their vicinity). Therefore, online vendors look for other means of creating competitive differentiation on Internet for increasing sales, the most common of which is to offer lower prices.

Traditionally, the focus of online vendors has been on attracting customers. If these customers could be locked-in, they would come again and again. With this idea, online vendors look for attracting customers using strategies, such as giveaways and low prices. However, these strategies have failed to attract customers as demonstrated by the dot com bust in year 2000. In fact, recent research (e.g., Smith and Brynjolfsson 2001) report that even price-sensitive customers do not always purchase from online vendors offering the lowest prices. For example, the reputable online vendors, such as Amazon.com and BarnesandNoble.com, enjoy significant price advantage over other generic online bookstores (Smith and Brynjolfsson 2001). Therefore, online vendors should look for other strategies to increase online sales. Although, there could be many approaches for increasing online sales, the most fundamental would be to understand the purchase decision-calculus of online customers.

The subject of customer decision-calculus has been widely studied from the value-maximization perspective, in the fields of economics (e.g., Kahneman and Tversky 1979, Thaler 1985) and marketing (e.g., Chang and Wildt 1994, Chen and Dubinsky 2003, Dodds et al. 1991, Zeithaml 1988). A number of researchers (e.g., Reichheld and Schefter 2000, Weinstein 2002, Woodruff 1997) identify value as an important determinant of customer purchase and a superior predictor of customer attraction and retention. Several researchers (e.g., Bolton and Drew 1991, Cronin et al. 2000, Dodds et al. 1991, Parasuraman et al. 1985, Zeithaml 1988) have echoed the significant role of value in predicting purchase behavior and achieving sustainable
competitive advantage. Many market-oriented firms also widely use customer value management to differentiate themselves from competitors (Day and Fahey 1988, Hoffman 2000, Parasuraman 1997, Slater 1997, Woodruff 1997) and many executives give customer value management a major priority (Gale 1994).

### 1.2. RESEARCH MOTIVATION AND OBJECTIVES

The overall objective of this research is, therefore, to examine online customer purchase decision-calculus from the value perspective.

Although value has been considered an important predictor of customer purchase behavior, it has not been given enough attention in studies on online consumer behavior. Most of these studies (e.g., Gefen et al. 2003) examine consumer behavior from IT adoption perspective. A few IS studies, which consider the role of value in studying online customer purchase behavior, do not consider the contextdependent nature of value. Value is multidimensional and context-dependent (Bolton and Drew 1991, Holbrook 1994, Parasuraman 1997, Zeithaml 1988), which means, it changes with the circumstances of the person and/or consumption situation. Thus, in the new consumption context - purchasing on the Internet - perceived customer value and the factors that influence it might be different from other purchase settings (Chen and Dubinsky 2003). Previous research (e.g., Gale 1994, Monroe 1990) views value as essentially a trade-off between relative quality and relative price. This conceptualization has been criticized as ignoring some characteristics (e.g., risk) of ecommerce and may be misleading in measuring value and explaining e-commerce behavior (Chen and Dubinsky 2003, Sinha and DeSarbo 1998). Therefore, there is a need to develop a proper theoretical understanding of value-driven purchase decisioncalculus in online context (i.e., under risk and uncertainty). The first objective of this
research is, therefore, to examine and explain the value-driven online purchase decision-calculus of potential customers and repeat customers. The specific research question addressed in this study is:

- What are the factors that influence online customers (potential and repeat) value perception of online shopping and how these factors influence online customer purchase decision-calculus?

Secondly, online vendors tend to use the same sales strategy with both potential customers and repeat customers, except for offering price discounts to repeat customers. For example, many online stores offer price-discounts to their customers based on accumulated points from previous purchases (somewhat similar to frequent flyer strategy of airlines). However, this focus on attracting customers with the expectation of long-term profits from them through repeat sales has been found to be a defective strategy. Recent research (Reichheld and Schefter 2000) reports that over $50 \%$ of repeat customers stop visiting completely before their third anniversary (Reichheld and Schefter 2000). Previous research (e.g., Bettman 1979, Lynch and Srull 1982) suggests that potential customers and repeat customers differ in the processing of available information regarding choice and decision-making. These customers have different amount of information and different criteria for decisionmaking over transaction experience with the vendor (Bettman 1979, Lynch and Srull 1982, Reibstein 2002). Therefore, online vendors should adopt different sales strategies with potential customers and repeat customers. Little attention has been given to a systematic examination of this difference. A number of previous studies (e.g., Chen and Dubinsky 2003, Gefen et al. 2003) have generalized the antecedents of online purchase across customer types without considering the differences in the
decision-making of their customers. A clear/understanding of these differences would facilitate Internet vendors in developing customized strategies for improving initial sales and repeat sales. The second objective of this research is, therefore, to examine and explain the differences in purchase decision-calculus of potential customers and repeat customers. The online customers are classified into potential customers and repeat customers depending on their transaction experience with a specific online vendor. Potential customers are those who have browsed the website of the vendor but have not yet purchased from the vendor. Repeat customers are those who have purchased from the vendor at least once. The specific research question addressed in this study is:

- What are the specific differences in value perception and purchase decisioncalculus between potential customers and repeat customers?

Thirdly, most online vendors face low sales from their repeat customers. According to a combined study by Boston Consulting Group and shop.org (2001), a very small minority of web site visitors (1.3-3.2 percent) return to make purchases. In other words, online vendors do not receive as much sales as much they would expect from repeat customers. One of the reasons for this may be the employing of the same sales strategy with all repeat customers. For example, BarnesandNoble.com offers $10 \%$ discount to all its member customers regardless of their number of purchases from its stores. According to Bettman and Park (1980), the decision criteria of a customer should change with his/her transaction experience (no. of purchases a customer has made with the online vendor) with the online store. Therefore, lack of differentiation among repeat customers based on their transaction experience may also be the cause of low repeat sales. By differentiating between repeat customers over
transaction experience, online vendors can employ customized strategies thus improving repeat sales. The third objective of this research is, therefore, to examine and explain the effect of transaction experience on online repurchase decisioncalculus. The specific research questions examined in this study are:

- What is the effect of transaction experience in repeat customer purchase decision calculus?


### 1.3. RESEARCH OUTLINE

Corresponding to the three objectives identified above, we will conduct three studies, each of which telescopically develops from the previous study to analyze the subject of online customer purchase decision-calculus in depth.

- First study - Online purchase decision-calculus: A mental accounting theory perspective - identifies the drivers of online (potential and repeat) customers purchase decision-calculus.
- Second study - Comparison of purchase decision calculus between potential and repeat customers - compares potential and repeat customers' value perception and decision-calculus regarding online shopping.
- Third study - Effect of transaction experience on online repurchase decisioncalculus - investigates the changes in purchase decision-calculus with transaction experience.


### 1.4. THEORETICAL OUTLINE

To understand online customers purchase decision-calculus, this research employs prospect theory (Kahneman and Tversky 1979) and mental accounting theory (Thaler 1985), which are behaviorally based theories of consumer choice under risk and
uncertainty, as opposed to utility maximizing nature of economic theory of choice. Prospect theory and Mental accounting theory are the overarching theories in this research. The sole aim of these theories is to describe or predict behavior, not to characterize optimal behavior. For comparison between potential and repeat customers, this research adopts information processing theory of customer choice (Bettman 1979). With the passage of time and experience customer choice and decision-making changes in the manner in which the information is recalled and processed. Information processing theory of customer choice studies the effect of prior evaluations and memory apart from currently available information on customer choice and decision-making. For studying the role of transaction experience, this research adopts the belief updating model (Hogarth and Einhorn 1992) and cognitive dissonance theory (Festinger 1957). These theories are useful in characterizing the changes in customer decision criteria with transaction experience.

### 1.5. EXPECTED CONTRIBUTIONS

This research contributes to theory and practice in a number of ways. First, this study explains online customer purchase decision-calculus from the value perspective based on prospect theory and mental accounting theory. Secondly, this study examines the differences in purchase decision-calculus between potential customers and repeat customers of an online store. Thirdly, this research facilitates Internet vendors in developing customized sales strategies for enhancing initial sales with potential customers and returning sales with repeat customers. Lastly, this research examines the differences among repeat customers over transaction experience and outlines strategies for Internet vendors for ensuring continuous sales.

### 1.6. CONTEXT OF THIS RESEARCH

This research operates in the context of an Internet bookstore. Books are the most popularly purchased items online (Chaffey 2002). There are many bookstores on the Internet operating both locally (e.g., Popular, Kinokunia) and internationally (e.g., Amazon, Borders). Local stores have the advantage of competing over prices and faster delivery. Bookstores also employ positioning strategy as the sellers of stationery, textbooks, university books, or general books and magazines. In this research we study a Korean online bookstore, named Aladdin (www.aladdin.co.kr). Aladdin is a popular Korean online bookstore which sells new books. It is also a local bookstore with many titles in Korean. Korean market is more fertile for electronic commerce than Singapore market as a large Korean population has high speed access to the Web ${ }^{1}$ with rich graphics and cool downloads which is even more exciting for young people to use the web. Therefore, it gives us a better opportunity to understand the drivers of online customers Internet shopping. Singapore market is both small and new for electronic commerce (Only 20\% of Internet users shop online ${ }^{2}$ ). Moreover, in Singapore the offline stores are located nearby. Therefore, it does not attract as much e-commerce activity as Korea.

### 1.7. THESIS ORGANIZATION

The rest of the thesis is organized as follows:
Chapter 2 gives a detailed literature review on the subject of online retailing (with a deeper focus on the role of value in customer choice and decision-making), research on comparison between potential and repeat customers, and research on repeat purchasing.

[^0]Chapter 3 discusses prospect theory and mental accounting theory which are the overarching theories in this research. We also identify the factors that influence online customers purchase decision-calculus based on mental accounting theory.

Chapter 4 presents the research model and hypothesis, detailed account of research methodology used in this research, data-analysis and results followed by a discussion of the findings, limitations and implications for the first study: Online purchase decision calculus: A mental accounting theory perspective.

Chapter 5 presents the research model and hypothesis, data analysis and results, followed by a discussion of findings, limitations and implications for the second study: Comparison of online purchase decision-calculus between potential and repeat customers.

Chapter 6 presents the research model and hypothesis, data analysis and results followed by a discussion of findings, limitations and implications for the third study: Effect of transaction experience on online repurchase decision calculus.

Chapter 7 presents the overall discussion and implications of this research.
Chapter 8 presents the summary of this research and its contributions towards understanding online customer purchase decision-calculus.

## 2. LITERATURE REVIEW

### 2.1. ONLINE RETAILING

### 2.1.1. Barriers and Limitations to Online Retailing

With the ubiquity of the Internet, retailing has established its presence online and is known as online retailing, e-tailing, or e-commerce. The primary benefits of online retailing are convenience, easy availability of product information, ability to compare products and sites over a number of attributes, and the ease of information comparison. Kaufman-Scarborough and Lindquist (2002) enumerate various types of conveniences offered by Internet, namely, access convenience, search convenience, possession convenience, transaction convenience, time convenience and place convenience). Access convenience refers to the easy accessibility of products and services. Search convenience refers to products that are easy to find and compare (Seiders et al. 2000). Products which are easy to obtain and return exhibit transaction convenience. Products that can be accessed closely from home exhibit place convenience. Internet as a retailing channel also exhibit schedule convenience by dint of its round the clock availability, and comparison convenience by allowing the customer to compare products through search engines (Kaufman-Scarborough and Lindquist 2002).

Internet allows customers to make more efficient purchases as the cost of information and time needed to acquire information are low (Bakos 1997). Armed with full information of prices charged by various retailers for the same product, customers are able to make economical decision. Various Shopbot (such as bottomdollar, excite, mysimon, webmarket, and yahoo) compare products from various online stores over various features, thus making it easy for online customers to make purchase decisions.

Internet is a valuable, interactive communication medium that facilitates flexible, non-linear search for up-to-date product information, simulated product/service testing, and assistance with comparison shopping and decisionmaking. In addition, for intangible products (e.g. music), Internet can accelerate distribution and provide instant gratification. The Internet can also lower transaction costs by reducing or lowering the number of intermediaries, offering access to a multitude of product/service providers, and eliminating time and spatial barriers (Vijayasarathy 2002). Internet provides facility to track expenditure and gain better value for money, scope for informed buying and round the clock availability to the entire world with low overheads and no investment in physical infrastructure.

However, the Internet is still limited in terms of the longer delivery time, limits on sensory perceptions of the products (e.g., touch, and smell), lack of enjoyment through window shopping or socialization (Francis and White 2004), and lack of face-to-face interactions with salespeople. Furthermore, the postponement of consumption or enjoyment of tangible products until they could be physically delivered is unacceptable for many customers (Vijayasarathy 2002). While customers may be indifferent toward low-touch products they do want to touch and feel the hightouch products (like apparels). Moreover, customers tend to have a preference of one-stop-shopping for reasons of convenience and savings on delivery costs, especially for routine items like groceries.

### 2.1.2. Barriers to Online Retailing

While there are many benefits of Internet shopping, there are many barriers to its adoption. Customer concerns for security and privacy of Internet transactions is one of the main barriers to Internet adoption. Online retailers employ various strategies to
alleviate the security and privacy concerns of their customers, thus enhancing their trust. For example, many retailers use certification from online certification agencies like VeriSign (security of transaction), TRUSTe (online privacy) and Bizrate (customer satisfaction ratings of online stores). Many online retailers have emerged from their traditional offline presence, which gives them the advantage of already established branding, and thus increased trust among their customers.

Though promising, there are other issues (Table 2-A) which inhibit widespread adoption of online retailing. Online retailing makes it possible for a manufacturer to sell directly to customers thus bypassing the intermediaries. As the online stores are located a click away, it becomes easier for customers to switch. Therefore, it is important for online vendors to devise suitable strategies for increasing sales with new and existing customers. According to Chaffey et al. (2003), customer demand for the Internet is a key factor that may ultimately drive its widespread adoption by retailers.

Table 2-A: Offline Vs Online Retailing

| ISSUE | OFFLINE | ONLINE |
| :---: | :---: | :---: |
| Customer Switching | Difficult as the stores are <br> separated by physical distance. | Easy as the stores are situated a <br> click away. |
| Comparison and Price <br> shopping | Difficult to compare as the <br> stores are separated by physical <br> distance. | Easy by means of shopping bots <br> etc. |
| Buying behavior | Impulsive as making informed <br> decision is difficult | Usually carefully planned as a <br> customer has access to many stores |
| Merchandise | Easy as one can feel the <br> product | Difficult as one can view the image <br> or at most the video of the product |
| Accessibility | Delivery | Usually along with payment |
| Usually after a certain period after |  |  |
| payment |  |  |

### 2.1.3. Value Creation in Online Retailing

A probable reason for customers' reluctance to purchase on Internet lies in the fact that the initial web services have offered little - if any - added value to them as compared the traditional methods of shopping (Anckar et al. 2002). From the perspective of a single retailer, online or offline, customer value can be created in four different ways, namely, competitive prices, a broad and/or specialized assortment, superior shopping convenience, and superior customer service. In all these four broad categories, a comparison to physical retail outlets as well as competing online stores is implied. However, the extent to which these benefits can be offered will depend on the firm's business and marketing strategy (Anckar et al. 2002).

### 2.1.3.1. Competitive Prices

A commonly stated benefit of e-commerce to customers is the possibility of price reduction. The price reduction is a result of increased competition, as a large number of suppliers compete in an electronically open marketplace (Turban et al. 1999). Moreover, the reduction in operational costs (Brynjolfsson and Smith 2000) and selling directly to customers (i.e., by passing intermediaries) also result in reduced price (Benjamin and Wigand, 1995).

### 2.1.3.2. Product Range

Product assortment has been considered an important factor in store choice (Arnold et al., 1983). Wider selection of items and availability of hard-to-find products are seen as important benefits of e-commerce (e.g., Alba et al., 1997). One of the ways to reduce price competition is to sell merchandise that cannot be offered elsewhere. Selling unique merchandise increases differentiation and reduces customer switching. Retailers can adopt private labeling strategy; branded variants sold exclusively
through the retailer; and by offering assortments of complements tailored to customer needs (Alba et al. 1997).

### 2.1.3.3. Shopping convenience

The concept of shopping convenience is multi-dimensional, which means that there are several aspects that must be considered in this regard. First, customers want to buy all products (i.e. the whole shopping cart) from one and the same source for reasons of convenience in purchase and delivery. As most customers usually dislike shopping for low-value (Schwartz 1997), the opportunity for a faster and more convenient shopping experience certainly stands out as a fact that strongly favors online retailing. Another dimension of shopping convenience is related to the assortment issue. Customer value can also be created through individually tailored storefronts, such as specialized assortment. With web technology, any virtual store can easily become a specialty store for these customer segments, with systems, on demand, showing only products that fit the special diet of a particular customer. In fact, the product codes used by most wholesalers today already contain such information, making this an easy to implement feature.

### 2.1.3.4. Customer Service

Customer service is another important issue in an online store. Primarily customer service relates to service quality, website design, product delivery, methods of payments, handling of returns, quality of delivery, and availability of representative. Online retailers can create competitive advantage by providing superior search capabilities, better image and information about the products, faster delivery options at a lower cost, wide range of payment methods, and easy handling of returns.

### 2.2. RESEARCH ON ONLINE RETAILING AND ONLINE CUSTOMER DECISION-MAKING

Various researches have been conducted on online retailing, addressing its various aspects. A cross-section of research on online-retailing is presented in Table 2-B.

Table 2-B is organized by dependent variable, such as purchase intention, usage, satisfaction, service quality, and attitude.

Table 2-B: Research on Online Retailing

$\left.$| SL. <br> NO. | AUTHOR(S) | DEPENDENT | INDEPENDENT |
| :---: | :---: | :---: | :---: |
| VARIABLE(S) |  |  |  |$\quad$| VARIABLE(S) |
| :---: | \right\rvert\, | Perceived value; Product price; |
| :---: |
| 1 | | Chen and Dubinsky |
| :---: |
| $(2003)$ | Purchase Intention | Perceived risk; Perceived product |
| :---: |
| quality; Valence of experience |$|$


|  |  |  | (tangibility and cost) |
| :---: | :---: | :---: | :---: |
| 10 | Vijayasarathy and Jones (2000) | Attitude and Intention toward purchase | Product value; Shopping experience; Customer service (preorder information, post-selection information, Reliability, <br> Tangibility, Empathy); Consumer risk |
| 11 | Bhattacherjee | Continuance Intention | Usefulness; Confirmation; Satisfaction; Loyalty incentives |
| 12 | Bhattacherjee (2001b) | Continuance Intention | Satisfaction; Confirmation; Perceived performance; Expectation |
| 13 | Bhattacherjee and Premkumar (2004) | Post-usage Intention | Satisfaction; Disconfirmation; Preusage and Post-usage beliefs and Attitudes |
| 14 | Chen et al. (2004) | Actual Use | Cognitive absorption; Fashion Involvement; Perceived ease of use; Perceived usefulness |
| 15 | Dabholkar (1996) | Intention to use | Speed of delivery; Ease of use; Reliability; Enjoyment; Control |
| 16 | Eroglu et al. (2001) | Approach/avoidance | High task relevant info; Low task relevant info |
| 17 | Francis and White (2002) | Intentions | Web store functionality; Product attribute description; Ownership conditions; Delivered products; Customer service; Security |
| 18 | $\begin{aligned} & \text { Dinev and Hart } \\ & (2006 a) \\ & \hline \end{aligned}$ | Intention to Transact | Internet privacy, Social awareness, Internet literacy |
| 19 | Dinev and Hart (2006b) | Intention to provide personal information | Trust, Privacy risk beliefs, Confidence and enticement beliefs |
| 20 | Tsai et al. (2006) | Repurchase Intentions | Expected value sharing, Perceived switching costs, Community building, Perceived service quality, Perceived trust |
| 21 | Lopes and Galletta (2006) | Willingness to Pay | Expected benefits, technical quality, service provider reputation |
| 22 | Lim et al. (2006) | Willingness to buy and buying behavior | Attitude, Trusting beliefs, Customer endorsement, Portal |
| 23 | MacKay et al. (2004) | E-commerce Adoption | Perceived benefits and Organizational readiness |
| 24 | Senecal and Nantel (2004) | Online product choices | Online recommendation sources |
| 25 | Hong and Zhu (2006) | E-commerce adoption and migration | Technology integration, Web functionalities, Web spending, Partner usage |
| 26 | Shang et al. (2005) | Online consumer behavior | Entertainment, Fashion, Cognitive absorption experiences |
| 27 | Shih (2004) | E-shopping acceptance | Perceived ease of use of trading online, Perceived usefulness, |


|  |  |  | Attitudes toward e-shopping |
| :---: | :---: | :---: | :---: |
| 28 | Montoya-Weiss et <br> al. (2000) | Online channel use | Navigation structure; Info content; <br> Graphic style |
| 29 | Parthasarathy and <br> Bhattacherjee <br> $(1998)$ | Online post-adoption <br> behavior | Sources of influence; Ease of use; <br> Compatibility; Usefulness; <br> Network externality; Utilization; <br> Replacement Vs Disenchantment <br> discontinuance |
| 30 | Rice (1997) | Intent to return | Design/technical evaluation; <br> Emotional experience |
| 31 | Alpar (2001) | Satisfaction with <br> website | Ease of use; Info content; <br> Entertainment; Interactivity |
| 32 | Jun et al. (2004) | Satisfaction | Online service quality <br> (Reliable/prompt responses, |
| 33 | Attentiveness, Ease of use, Access, <br> Security, Credibility) |  |  |
| (1999) | Satisfaction | Info relevancy; Info accuracy; Info <br> comprehensibility; Info |  |
| comprehensiveness; Ease of use; |  |  |  |
| Layout; Entry guidance; Website |  |  |  |
| structure; Hyperlink connotation; |  |  |  |
| Website speed; Language |  |  |  |
| customization; Marketplace |  |  |  |
| anchorage |  |  |  |$|$


|  |  |  | quality |
| :---: | :---: | :---: | :---: |
| 43 | Long and McMellon (2004) | Quality, Loyalty | Tangibility; Reliability; Responsiveness; Assurance; Purchase process |
| 44 | Carlos et al. (2006) | Website Loyalty | Perceived usability, Satisfaction, Consumer trust |
| 45 | Yang et al. (2006) | Trust toward e-Tailer | Assurance perception, Result demonstrability, Product information quality, Display of third party seals |
| 46 | Koo (2006) | E-Commerce Loyalty | Benefits and attributes of product, Sense of belongingness |
| 47 | $\underset{(2006)}{\text { Jones and Reynolds }}$ | Revisit intention, Loyalty, Repatronage intention | Retailer's interest, Satisfaction |
| 48 | Reibstein (2002) | Customer attraction and Retention | Price; Customer satisfaction; Repeat buying; Share of requirements; and Likelihood to purchase again. |
| 49 | Srinivasan et al. (2002) | Customer loyalty | Customization; Contact interactivity; Care; Community; Cultivation; Choice; Character |
| 50 | Yoo and Donthu (2001) | Overall site quality; attitude toward site; online purchase intention; site loyalty; site equity | Ease of use; Design; Speed; Security |
| 51 | Zeithaml et al. (2002) | Quality | Efficiency; Reliability; Fulfillment; <br> Privacy; Customer service (responsiveness; compensation; contact) |
| 52 | Chen and Wells (1999) | Attitude toward the site | Entertainment; Informativeness; organization |
| 53 | Childers et al. (2001) | Online shopping attitudes | Navigation; Convenience; Substitutability of personal examination |
| 54 | Fenech and O'Cass (2001) | Actual adoption, attitude toward Web retailing | Shopping orientation; Websecurity; Shopping innovativeness; Satisfaction with Web sites; Importance of inspecting products and Price-sensitivity |
| 55 | Francis and White (2004) | Perceived Internet shopping value | Sources and inhibitors of utilitarian and hedonic value relative to each fulfillment-product category |
| 56 | Michell and Prince (1993) | Information use (Value of information) | Purchase experience |
| 57 | Haubl and Trifts, (2000) | Amount of information search, consideration sets, decision quality | Recommendation agent; Consideration Matrix |


| 58 | Palmer (2000) | Comparison across <br> retail formats | Shopping availability, Time taken <br> to shop, and Speed of delivery |
| :---: | :---: | :---: | :---: |
| 59 | Dholakia and <br> Uusitalo (2002) | Shopping benefits <br> (Hedonic, utilitarian, <br> perceived stress) | Demographics; Past behavior |

Since Table 2-B is organized by dependent variables, we can extract three broad categories of study from it. Most of the studies in Table 2-B are about online adoption/post adoption, acceptance or continuance of electronic commerce (1-20). These studies can be divided into those studying acceptance or continuance and those identifying barriers to acceptance and continuance of electronic commerce. There also a number of studies (among 21-34) that discuss about parts of overall customer fulfillment (such as, satisfaction, service quality and loyalty).

- Parts of overall customer fulfillment (such as satisfaction and service quality),
- Barriers to e-commerce adoption and / or post-adoption (such as security and privacy), and
- Online customers' acceptance and continuance of e-commerce.


### 2.2.1. Parts of Overall Customer Fulfillment

The studies which address this issue attempt to study a particular aspect of online purchasing (such as satisfaction or service quality) either by developing scales or by identifying their antecedents. The assumption is that if a customer is satisfied, he will purchase from the online store. Or if the online store provides better service quality, it would be successful in attracting and retaining customers. Mostly, such studies aim at the determinants of e-satisfaction (e.g., Anderson and Srinivasan 2003, Swaminathan
et al. 1999, Wolfinbarger and Gilly 2002) and the key dimensions of website's success (e.g., Ranganathan and Ganapathy 2002).

### 2.2.2. Barriers to E-commerce Adoption and / or Post-adoption

The studies which address this issue are based on the assumption that if these barriers are removed or their effect on customer decision-making is alleviated, the adoption of e-commerce would be easy. Several studies identify lack of trust as the major inhibitor to e-commerce, primarily due to uncertain environment of Internet. The uncertainty arises due to lack of security and privacy in online transactions. The major concern for these studies is to increase customer trust in e-commerce. There are various ways in which online vendors attempt to enhance trust of their customer, such as third party certification (e.g., TRUSTe, VeriSign, and Bizrate). A general awareness among the customers and an increasing number of online shopping malls as well as an increasing number of e-shoppers indicate an increasing adoption of ecommerce. A concomitant factor with trust, which affects e-commerce adoption, is perceived risk. Many researchers (e.g., Hoffman et al. 1999, Jarvenpaa and Todd 1997, Pavlou 2003) identify risk as a major inhibitor of e-commerce adoption.

### 2.2.3. Online Customers' Acceptance and Continuance of E-commerce

The studies which address this issue focus on e-commerce adoption from a variety of theoretical perspectives, including diffusion of innovations (DOI), technology acceptance model (TAM), theory of planned behavior (TPB), service quality (SERVQUAL) and transaction cost analysis (TCA) (cf. Devaraj et al. 2002). However, these studies do not explicitly focus on the subject of channel choice. Some of the studies use satisfaction as a predictor of customer attitude toward purchase.

Although, satisfaction has been widely used by researchers as an indicator of customer purchase intention, recent research (e.g., Reichheld and Schefter 2000, Woodruff 1997) argue against satisfaction as a good indicator of customer purchase intention. For example, Reichheld and Schefter (2000) assert that even satisfied customers need not purchase again from the online store. Woodruff (1997) argues for backing customer satisfaction measurement with customer value and related problems.

As the number of offline stores establishing their presence online is increasing, the issue of engaging customers in e-commerce is more of providing customer value rather than just attracting customers based on trust, or increasing their satisfaction. Increased competition on web requires the websites to differentiate on total customer value, not just on quality. Only recently, both managers and marketing scientists have begun to focus on the hitherto ignored role of consumer value as a key strategic variable to help explain repeat purchase behavior, brand loyalty and customer commitment (Chen and Dubinsky 2003, Patterson and Spreng 1997). The importance of value beyond quality and satisfaction has also been highlighted by previous studies in consumer behavior. Woodruff (1997), for example, asserts that the next source of competitive advantage will likely come from a more outward orientation toward customers, as indicated by the many calls for organizations to compete on superior customer value delivery. This research, therefore, adopts a value-oriented view to examine the perception of value toward online purchase for potential customers and repeat customers.

### 2.3. CUSTOMER EVALUATION OF RETAIL CHANNEL VALUE

Several researchers (e.g., Bolton and Drew 1991, Dodds et al. 1991, Holbrook, 1994, 1999, Woodruff 1997, Zeithaml 1988) have echoed that perceived value plays an important role in predicting customer purchase behavior and achieving sustainable competitive advantage. Although it is important to understand how retailers create value, it is also important to understand what do the customers value and how they perceive value. The concept of value has been studied for more than two decades in the fields of economics and marketing. It is an abstract concept with meanings that vary according to context. In economics, value is equated with utility or desirability (Von Neuman and Morgenstern 1953); in social sciences it is understood in the context of human values (e.g., Rokeach 1973) (such as instrumental and terminal values); and in industrial settings, value engineering refers to processes designed to reduce costs while maintaining standards (Patterson and Spreng 1997).

In marketing, however, value is typically defined from the perspective of consumers. Zeithaml (1988) identified four different concepts of value as understood by the common people. These concepts of value are summarized in Table 2-C.

Table 2-C: Concepts of Perceived Value

| CONCEPT | DETERMINANTS | PREVIOUS RESEARCH |
| :---: | :---: | :---: |
| Value is low price | Price | Hoffman (1984), Bishop (1984) |
| Value is whatever <br> I want in a product | Benefits received <br> from a product | Schechter (1984) |
| Value is the <br> quality I get for the <br> price I pay | Price and Quality | Agrawal and Teas (2001), Chang and <br> Wildt (1994), Bolton and Drew (1991), <br> Monroe and Chapman (1987) |
| Value is what I get <br> for what I give | Benefits and <br> Sacrifices | Chen and Dubinsky (2003), Cronin et al <br> (2000), Eggert and Ulaga (2002), Sawyer <br> and Dickson (1984), Thaler (1985) |

Initial conceptualizations of value in the marketing literature were mainly price-based (e.g., Bishop 1984, Hoffman 1984, Thaler 1985). Thaler (1985), for example, argued that customer value perceptions are a result of the comparison between various price structures including advertised selling price, advertised reference price and internal reference price. Some researchers (e.g., Schechter 1984) conceptualized value as the benefits one obtains from a product. Later studies (e.g., Agrawal and Teas 2001, Chang and Wildt 1994, Bolton and Drew 1991, Keeney 1999, Monroe and Chapman 1987) integrated the two conceptualizations of value, namely, value as 'low price' and value as 'benefits received from the product', and defined it as the quality one receives for the price one pays. Although this conceptualization was widely adopted in marketing, it was also criticized (e.g., Sinha and DeSarbo 1998) for ignoring some important constructs (such as shopping experience and risk), and therefore, misleading in measuring customer perceived value. This price-quality conceptualization of value was subsequently broadened (e.g., Chen and Dubinsky 2003, Cronin et al 2000, Eggert and Ulaga 2002, Keeney 1999, Sawyer and Dickson 1984, Thaler 1985) to include various other kinds of benefits and sacrifices, thus defining it as benefits received against sacrifices in purchasing a product/service.

However, all the above conceptualizations of value are derived empirically and lack theoretical foundation. Since in Internet shopping, the presence of risk and uncertainty can influence customer purchase decisions, any replication of the value concept without theoretical foundation may be erroneous. Hence, there is a need of the theoretical basis for conceptualizing perceived value in Internet shopping. Therefore, we turn to theories that explain customer value-driven shopping behavior under conditions of risk and uncertainty, as these theories can shed light on customer
perceived value in the context of Internet shopping. Two such theories are prospect theory (Kahneman and Tversky 1979) and mental accounting theory (Thaler 1985).

Moreover, a broader definition is required which would account for all the factors in the consumption experience. The broad definition is particularly useful when the channel, rather than the product, is of interest (e.g., Parasuraman et al. 1985, 1988). Zeithaml (1988) found that, though customers have different perceptions about perceived customer value, it can be captured in an overall definition as: "Perceived value is the customer's overall assessment of the utility of a product based on perceptions of what is received and what is given." Taking this definition as the basis, perceived value has been considered in this research as a customer's overall assessment of benefits against sacrifice when shopping with an Internet vendor (Sweeney and Soutar 2001, Thaler 1985, Zeithaml 1988).

### 2.4. RESEARCH ON COMPARISON BETWEEN POTENTIAL AND REPEAT CUSTOMERS

Consistent with previous research (e.g., Gefen et al. 2003), we specify potential customers as those who have not yet purchased from the online store and repeat customers as those who have purchased from the online store at least once. The difference in transaction experience (i.e., number of purchases) between potential customers and repeat customers gives rise to differences in their purchase decisionmaking. Very few studies have been conducted, which address the issue of comparison between potential and repeat customers. Table 2-D shows some of the very prominent studies conducted in IS domain, which articulate the differences between potential customers and repeat customers.

Table 2-D: Research on Comparison between Potential and Repeat Customers

| SL. <br> NO. | AUTHOR(S) | SIGNIFICANT FINDINGS |
| :---: | :---: | :--- |
| 1 | Taylor and <br> Todd (1995) | Inexperienced users' intentions were better predicted by the <br> antecedent variables in the model than were the intentions of <br> experienced users. Inexperienced users tend to discount control <br> information in the formation of intentions, relying instead primarily <br> on perceived usefulness. |
| 2 | Davis et al. <br> $(1989)$ | While ease of use is a significant determinant of IT usage after one <br> hour or use, it has a non-significant effect on IT usage after 14 weeks <br> of usage. |
| 3 | Thompson et <br> al. (1994) | Influence of social norms and affect on usage were greater for <br> inexperienced than for experienced users. Ease of use had a greater <br> influence on utilization for inexperienced users. |
| 4 | Karahanna et <br> al. (1999) | The attitude is a stronger predictor of behavioral intention for users <br> than for adopters. Normative beliefs (subjective norms) are stronger <br> predictor of behavioral intention for adopters than for users. |
| 5 | Gefen et al. <br> (2003) | Perceived usefulness is not a crucial determinant of purchase <br> intention for potential customers, whereas it is a crucial determinant <br> of purchase intention for repeat customers. The effect of trust on <br> customers purchase intention decreases from potential customers to <br> repeat customers. |
| 6 | Kim and Xu <br> (2004) | Perceived price has a stronger effect on purchase intention for repeat <br> customers as compared to potential customers; however its effect <br> reduces over transaction experience for repeat customers. |

From Table 2-D we can infer that most of the studies conducted in the area of comparison between potential and repeat customers are based on the theory of planned behavior, technology adoption model and theory of reasoned action. While, earlier studies compared experienced and inexperienced users' IT adoption and continued usage, later studies (e.g., Gefen et al. 2003) compared potential and repeat customers in the context of e-commerce. Addressing the issue of customer decisionmaking from the perspective of IT adoption has limitations. Adoption of shopping on Internet is not the same as Internet shopping behavior for the following reasons.

First, IT adoption takes an IT systems approach for explaining customer behavior. The issue of IT artifacts although important, may not be the solely important factor in explaining customer choice and decision-making. For example, the characteristics of a website may be different from that of an online store. A website may have many attractive features and options, but it doesn't imply that the online store would be economically beneficial to the customers.

Secondly, the variables like price and risk, which are important decision variables for Internet shopping (Hoffman et al. 1999, Jarvenpaa and Todd 1997), are neglected in these studies. Some of the studies (e.g., Bhattacherjee 2001b) adopt expectation-disconfirmation approach using satisfaction as an indicator of customers repurchase intention. Although, satisfaction is perhaps a good indicator of future IT usage and has also been used by researchers as an indicator of customer purchase intention, recent studies (e.g., Woodruff 1997) argue against satisfaction alone as a good indicator of customers' purchase intention. According to Woodruff (1997), if customer satisfaction measurement is not backed up with an in-depth learning about customer value and related problems that underlie its evaluation, it may not provide enough of the customer's voice to guide managers in how to respond.

Thirdly, the studies which replicate IT adoption concept to customer choice and decision-making superficially address the differences in potential customers and repeat customer choice and decision-making. Most of these studies focus on cognitive processing that occurs immediately prior to the act of purchase (or selection). However, most of the decisions are made repeatedly or frequently over time which involve continuous processing (Hogarth 1981). In such instances, customer information sources are not only the available information from the Internet vendor but also the prior information and evaluations stored in memory.

### 2.5. REPURCHASE DECISION-MAKING

Howard and Sheth (1969) studied buyer behavior, which was a seminal work on understanding the consumer purchase decision-making holistically. This work was furthered by Bettman (1979), who developed the information processing theory of customer choice, which complements Howard and Sheth's (1969) work in terms of the information processed by the customers. Bettman's (1979) work was supplemented with numerous empirical researches (e.g., Bettman and Park 1980, Lynch and Srull, 1982, Johnson and Russo (1981) validating or modifying the propositions of the information processing theory of customer choice. These studies have profound implications for customer choice and decision-making in online context over transaction experience. We briefly review Howard and Sheth's (1969) work on the buying process, how the customers learn, and the stages in buying decision-making. These provide the basic process by which a buyer goes through in his repeat purchase of a product.

### 2.5.1. Buying Process

The buying process begins with the brand choice decision, given that the buyer is motivated to buy a product. The elements of his decision-making are (a) a set of motives, (b) alternative brands, and (c) choice criteria by which the motives are matched with the alternatives. The choice criteria are developed by learning about the buying situation. In the beginning stages of purchase, a buyer lacks experience, his choice criteria is not well-developed and he doesn't have any knowledge of various brands and their potential. Therefore, he actively seeks information from his commercial and social environments. The information that he actively seeks or
accidentally receives is subjected to the perceptual process that not only limits the intake (magnitude) of information but modifies it (change its meaning) to suit his own frame of reference. Along with active search for information, the buyer may, to a considerable extent, generalize from similar experiences in the past based on physical similarity of the new product class to the old product class.

Whatever the source of information, the buyer develops sufficient choice criteria to enable him to choose a brand that seems to have the best potential to satisfy his motives. If the brand proves satisfactory, the potential of that brand is increased. With repeated purchase of one or more brands, the buyer learns about buying in that situation. It is even probable that he may manifest a routinized decision process, whereby the sequential steps in buying are well structured so that some event that triggers the process may actually complete the choice decision. This phase of repetitive decision-making, in which the buyer reduces the complexity of a buying situation with the help of information and experience, is called the psychology of simplification.

The farther a buyer is along in simplifying his environment, the less is his tendency toward active search behavior. Finally, the buyer establishes more cognitive consistency among the brands as he moves towards routinization, and the incoming information is then screened with regard to both its magnitude and quality. He thus becomes less attentive to stimuli that do not fit his cognitive structure and he distorts those stimuli that are forced on him.

### 2.5.2. How do Customers Learn?

Customers learn from their purchase experience across various dimensions, namely, motivation to purchase, knowledge about existing brands, choice criteria, attitude
toward the brand, intention to buy the brand, confidence in judging brands and satisfaction with the purchase of the brand (Howard and Sheth 1969). There are three broad sources of learning: (a) generalization from similar buying situations (b) actual experience and (c) the available information.

### 2.5.2.1. Generalizations from similar buying situations

The transfer of past learning to new product situation is called generalization. Buyer may generalize based on stimuli, response, or both. Stimulus generalization occurs when the buyer manifest the same response or considers manifesting the same response in the presence of a new stimulus that is physically or semantically similar to the old stimulus. Response generalization occurs when the buyer has some association between a stimulus and his buying behavior. Then, he manifests a new but similar buying behavior in the presence of the same stimulus. Stimulus and response generalization occurs when both the stimuli and the responses are similar to past learning. In such a situation, the amount of transfer is a function of the similarity among the old and the new responses, whereas the rate of transfer is a function of the similarity between the old and the new stimuli.

### 2.5.2.2. Purchase experience

Another source of change in the choice criteria is the repeated purchase of the same product class over a period of time. Purchase of a brand entails two types of feedbacks. First, the experience of buying with all its cognitive aspects of memory, and reasoning has a learning effect on the choice criteria. Every purchase has an incremental effect in firmly establishing the choice criteria. Secondly, with every purchase, the buyer compares his expectations with actual consequences of buying,
which causes satisfaction or dissatisfaction with the brand. This feedback from purchase behavior to satisfaction changes the attractiveness of the brand purchased. If the buyer is satisfied with his consumption, he enhances the potential of the brand, which is likely to result in greater probability of its repeat purchase. If no inhibitory forces influence him, the buyer will continue to buy a brand that proves satisfactory. In the initial stages of decision-making, he may have some tendency to oscillate between brands, in order to formulate his choice criteria.

### 2.5.2.3. Information as a source of learning

Information can be obtained from the buyer's commercial environment (through advertising, promotion, personal selling and retail shelf display of competing companies), and his social environment (consisting of his family, friends, reference groups, and social class). The main effect of information from commercial environment is to intensify whatever motives the buyer has rather than to create new ones. It also changes the buyer's evoked set (set of alternatives or choices regarding purchase that a buyer has). Commercial information tells him of the existence of the brands (awareness), their identifying characteristics (brand comprehension), and their relevance to the satisfaction of the buyer's needs (attitude). The information also influences buyer's choice criteria, especially when the buyer has no prior experience to rely on. Similarly, when the buyer actively seeks information because all the existing alternatives are unacceptable to him, information from commercial sources may become important in changing his criteria. Information from social environment also affects learning. However, the information may be considerably modified by the time it reaches the buyer. Buyer's social environment will probably have a very strong influence on the content of his motives and their ordering to establish a goal structure.

Social environment may affect buyer's evoked set, particularly when the buyer lacks experience.

### 2.5.3. Stages of Buying Decision-Making

The decision-making process can be classified as extensive problem solving, limited problem solving, or routinized response behavior. In the beginning stages of purchase (e.g., new customers), the buyer goes through extensive problem solving. In extensive problem solving, customer attitude toward any brand is low. He does not have any strong preference for one brand over other. Therefore, the buyer actively seeks information. Also, deliberation or reasoning is high, since the buyer lacks a well defined product class concept. A buyer is apt to consider many brands as part of his evoked set (set of brands under consideration of purchase), his brand comprehension is extensive, but shallow on any one particular brand, and stimuli coming from the commercial environment are less likely to trigger any immediate purchase reaction.

When a customer gains some purchase experience, his attitude toward the brand is moderate and his decision process is called limited problem solving (LPS). As the buyer does not have sufficient capability to discriminate and compare brands, there is considerable brand ambiguity. Therefore, he is likely to seek information, but not to the extent that he seeks in beginning stages (EPS). More importantly, he seeks information on a relative basis - to compare and discriminate various brands rather than to absolutely evaluate and comprehend each of the brands. His deliberation or thinking is much less, since choice criteria are tentatively well defined. Brand comprehension will consist of a small number of brands, each having about the same degree of preference.

When a customer gains sufficient purchase experience, his attitude toward brands in his evoked set is high and hence, he manifests a routinized response behavior (RPS). Because of his accumulated experience and information there is no brand ambiguity. He will, in fact, be able to discriminate among brands enough to show a strong preference toward one or two brands in his evoked set. He is unlikely to seek any information from the environment, since such information is not needed. Also, whatever information he passively or accidentally receives, he will subject it to selective perceptual processes so that only congruent information is allowed. Brand comprehension would consist of a few brands, towards which he is highly predisposed. However, he will have greater preference toward one brand in his evoked set and lesser toward other brands. The decision-making process is summarized in Table 2-E.

Table 2-E: Stages of Buyer Decision-Making Process

| DECISION- <br> MAKING <br> STAGE | EXTENSIVE <br> PROBLEM <br> SOLVING | LIMITED <br> PROBLEM <br> SOLVING | ROUTINIZED <br> RESPONSE <br> BEHAVIOR |
| :---: | :---: | :---: | :---: |
| Attitude toward <br> the brand | Low | Moderate | High |
| Brand ambiguity | High | Still existent but less | Doesn't exist |
| Information <br> seeking | Active | Less active, restricted <br> to comparing and <br> discriminating various <br> brands | Unlikely |
| Deliberation/ <br> reasoning | High as the buyer lacks <br> a well defined product <br> class | Much less, since choice <br> criteria are well defined | Little |
| Brand <br> comprehension | Extensive but shallow <br> on a particular brand | A small no. of brands, <br> each having about the <br> same degree of <br> preference | Few brands toward <br> which the buyer is <br> highly predisposed, <br> with greater preference <br> toward one brand |

### 2.5.4. Research on Repeat Buying

There is hardly any research on repeat buying in the online context. Most of the studies on repeat buying address the issue of long-term profitability. Firm's long-term profitability has been a long held concern for Internet vendors. Researchers (e.g., Reichheld and Schefter 2000) argue that for an Internet store to be profitable, it is important that customers stick around and make lots of purchases. This is because losses in the early stages of relationships with the customers are larger and are especially inflated on the Internet by $20 \%$ to $40 \%$ (Reichheld and Schefter 2000). Relationship marketing literature also emphasizes the need for maintaining long-term customer relationships for long-term profitability. The advocates of long-term customer relationships argue that the costs of serving loyal customers are less; loyal customers are less price-sensitive; loyal customers spend more with the company; and loyal customers pass on positive recommendations about their favorite brands of suppliers (Dowling and Uncles 1997). Moreover, loyal customers purchase higher volumes at higher margins (Grant and Schlesinger 1995, Heskett et al. 1997, Reichheld and Sasser 1990) and increase their usage of a service even when prices increase (Bolton and Lemon 1999).

Although much anecdotal evidence exists for long-term customer relationships being profitable, it has garnered relatively less empirical support. The empirical support exists only for contractual settings (where customers are bound by a contract with the company such as telephone and electricity). Reichheld and Teal's (1996) study, for example, provides a well-documented empirical evidence to substantiate the hypothesized positive lifetime-profitability relationship. Dowling and Uncles (1997), however, question the effectiveness of loyalty programs based on the assumption of maintaining long-term customer relationships. In non-contractual settings (e.g.,
airlines, Internet shopping), Dowling and Uncles (1997) argued that the cost of serving loyal customers need not be lower, loyal customers need not pay higher prices (on the contrary they may choose to be rewarded for their loyalty), and they may not spend more with the firm than non-loyal customers. Reinartz and Kumar (2001) empirically tested Dowling and Uncles' (1997) arguments in a catalog shopping environment (a non-contractual setting) and found them to be valid. Based on customer duration-profitability approach, Reinartz and Kumar (2001) recommended that not all long-term customers need be profitable. They suggested that the firms need to identify the right type of customers who are worth investing upon for profitable long-term customer relationships. In fact, even short term customers may be profitable in a non-contractual setting. Researchers (e.g., Zeithaml 2000, Keaveney and Parthasarathy 2001) therefore assert the need to identify right customers who are worth investing for profitable long-term relationships.

### 2.6. THE ORIENTATION OF THIS RESEARCH

Thus, we identified major gaps in the following areas based on sections 2.2-2.5.
Most of the previous studies address the subject of channel choice from the technology adoption perspective, which may not be appropriate when it comes to examining purchase behavior. Moreover, satisfaction has been the widely used indicator of customer choice which is refuted by many researchers to be a good indicator of channel choice.

There is a dearth of studies on comparison between potential and repeat customers. The existing studies are mainly based on technology adoption perspective, thus neglecting the role of risk, which is a crucial factor in online shopping. As far as
our knowledge is concerned, there are hardly any studies that compare potential customers and repeat customers specifically.

Studies on repeat buying are largely conceptual. There is a dearth of empirical studies which study repeat purchase behavior. From the theoretical perspective we establish the important role of understanding repeat purchase behavior as most of the implications of conceptual studies need to be validated. For example, online vendors do not differentiate between the repeat customers over transaction experience and thus employ the same strategy will all repeat customers.

This research comprehensively examines the subject of online customer purchase decision-calculus by addressing these 3 gaps in online purchasing. Thus we conduct three sequential studies. The first study examines the customer evaluation of the total value of Internet shopping. Although a firm may attempt to create customer value in v ways (like competitive prices, a broad and/or specialized assortment, superior shopping convenience, superior customer service etc.), customers may evaluate value on either one or more dimensions. So, it is important to know how customers evaluate value at the various stages of their online purchase experience (potential versus repeat customers). The value-based approach therefore provides a richer insight into providing overall customer's value of Internet shopping.

Second study draws from theorization on information processing theory of customer choice to differentiate between the purchase decision-calculus of potential and repeat customers. It is important to differentiate between potential and repeat customers so that online vendors can devise different strategies to increase initial sales with potential customers and repeat sales with repeat customers.

Third study examines the effect of transaction experience on repurchase decision-calculus. Less experienced repeat customers may differ in their decision-
making from more experienced repeat customers. This is important for online vendors so that they can adopt different strategies for less experienced and more experienced repeat customers to respond to their specific needs and improve sales.

## 3. THEORETICAL BACKGROUND

In this chapter, we discuss the theories for examining online customer purchase decision calculus. As Internet shopping is characterized by risk and uncertainty, theories that explain customer decision-making under risk and uncertainty should shed light on online purchase decision-calculus. Two such theories are prospect theory (Kahneman and Tversky 1979) and mental accounting theory (Thaler 1985). We study these two theories for identifying the factors that influence potential and repeat customer online purchase decision-calculus. Also, these two theories would provide the theoretical basis for understanding the influence of these factors and value perceptions on customer decision to purchase from an online store. These theories are the main overarching theories for this research. Additional supporting theories for specific study will be discussed separately with the individual study.

### 3.1. PROSPECT THEORY AND MENTAL ACCOUNTING THEORY

Prospect theory was proposed as a critique to expected utility theory which was then widely used for explaining rational customer decision-making. It would be worthwhile to review it briefly to understand the relevance of prospect theory in this research.

### 3.1.1. Failure of Expected Utility Theory

Von-Neuman and Morgenstern (1953) developed the expected utility theory (EUT), which postulates that a decision maker chooses between risky or uncertain prospects by comparing their expected utility values, i.e., the weighted sums obtained by adding the utility values of outcomes multiplied by their respective probabilities. EUT was
based on the assumption of rational choice and probabilistic consideration between options. EUT depends on maximizing utility and can be defined as:

$$
\operatorname{Max} U(z) \text { subject to } \sum p_{i} z_{i} \leq I .
$$

Where, $U(z)$ is the customer's utility function, $z_{i}$ is a vector of goods available in market at prices $p_{i}$ and his/her income or wealth is represents by I. The term 'utility' refers to the overall wealth or consumption, or the net satisfaction, derived from a particular commodity or choice alternative.

Using Lagrange Multipliers, the utility function becomes

$$
\operatorname{Max}_{z} U(z)-\lambda\left(\sum p_{i} z_{i}-I\right)
$$

In marketing this theory fails, primarily because it omits all marketing variables, except price and product characteristics. Expected utility theory works on the principle of optimal behavior. However, in practice, it is found that consumers do not go for optimal behavior. For example (from Thaler 1985):

Mr. and Mrs. L. and Mr. and Mrs. H went on a fishing trip in the northwest and caught some salmon. They packed the fish and sent it home on an airline, but the fish were lost in transit. They received $\$ 300$ from the airline. The couples take the money, go out to dinner and spend $\$ 225$. They had never spent that much at a restaurant before.

The above example violates the principle of fungibility ${ }^{3}$. Money is not supposed to have labels attached to it. Yet the couples behaved the way they did because the $\$ 300$ was put into both "windfall gain" and "food" accounts. The extravagant dinner would not have occurred had each couple received a yearly salary increase of $\$ 150$, even though that would have been worth more in present value terms.

[^1]
### 3.1.2. Development of the Prospect Theory

Kahneman and Tversky (1979) developed 'prospect theory' as an alternative to EUT. The sole aim of 'prospect theory' is to describe or predict behavior (why people behave the way they do), and not to characterize optimal behavior. Prospect theory explains human decisions under conditions of uncertainty from a value maximization perspective (Kahneman and Tversky 1979).

Kahneman and Tversky (1979) replaced the EUT's utility function with the value function. The carriers of EUT's utility function are total assets or total wealth, i.e., customer utility for a purchase is measured with reference to changes in total wealth. The carriers of prospect theory's value function are, however, changes in wealth or welfare (characterized as gains or losses from a reference point) rather than final states. Kahneman and Tversky (1979) argued that prospect theory's value function is richer than EUT's utility function and it provides a better approximation of customer decision-making. This is because a decision maker's perception is more attuned to the evaluation of changes or differences rather than the evaluation of absolute magnitudes (Helson 1964). For example, when a decision maker responds to attributes such as brightness, loudness or temperature, the past and present contexts of experience define an adaptation level or reference, and stimuli are perceived in relation to this reference. However, the emphasis on 'change' as a carrier of value does not imply that the value of a particular change is independent of the initial position. Rather, value should be treated as a function in two arguments: the asset position that serves as a reference point and the magnitude of the change (positive or negative) from that reference point (Kahneman and Tversky 1979).

Prospect theory suggests that people put more weight on positive outcomes that are considered certain than positive outcomes that are deemed merely probable.

This effect, known as certainty effect, causes people to be risk averse (i.e., people tend to opt for smaller but certain gains than larger but probable gains) when making decisions involving gains. Kahneman and Tversky (1979) described risk aversion as the best known generalization about risky choices involving gains. In addition, people generally discard components that are shared by all prospects under consideration. This tendency, called the isolation effect, leads to inconsistent preferences when the same choice is presented in different forms.

### 3.1.3. Mental Accounting Theory

Using prospect theory as basis, Thaler (1985) proposed mental accounting theory. Mental accounting refers to a process of coding, categorizing, and evaluating (primarily financial) outcomes (Thaler 1980, 1985, Tversky and Kahneman 1981). As an enhancement of prospect theory, mental accounting theory incorporates compound outcomes, whereas prospect theory's value function is defined only over a single unidimensional outcome. Mental accounting theory is therefore more appropriate for the analysis of Internet shopping as customers tend to make decisions based on multiple attributes. According to mental accounting theory, customers analyze transaction in two stages, namely, evaluating potential transactions (judgment process) and approving or disproving each potential transaction (decision process).

For evaluating potential transactions, Thaler (1985) proposed two types of utility ${ }^{4}$, namely, acquisition utility and transaction utility. Acquisition utility is the value of the good received compared to the outlay (Thaler 1985). It is a function of the equivalent value of the product and its objective price (Thaler 1985). Equivalent value refers to the amount of money that would leave the individual indifferent

[^2]between receiving the cash or the product as a gift. Objective price is the total amount that a customer has to pay to receive/use the product. Transaction utility refers to the perceived merits of a transaction or a deal. It is based on the difference between the objective price and the reference price of the product. Reference price refers to the price that a customer expects to pay for the product (Thaler 1985). Customers derive reference price from their previous experiences or the sales messages they receive (Puto 1987). Internet Shopbot which facilitate price comparison among Internet vendors also help customers derive reference prices. Total utility from a purchase is just the sum of acquisition utility and transaction utility (Thaler 1985).

For making purchase decisions, customers maximize their total utility with reference to the mental account corresponding to the product being purchased (Thaler 1985). This specific mental account is restricted by the budget allocated to that mental account.

### 3.1.4. Mental Assessment (coding) of Attributes of Internet shopping

The evaluation and decision making processes are affected by the manner in which customers assess the attributes of a transaction (such as price, risk, convenience and pleasure) (Thaler 1985). This assessment of attributes is referred to as hedonic editing which means that customers assesses combinations of events that would allow them to be as happy as possible; in other words, the assessment is done such that the customer derives maximum utility (Thaler 1985). According to mental accounting theory, these attributes can be assessed either jointly (integration) or separately (segregation). Integration means that the attributes of a transaction are assessed jointly and segregation means that the attributes of a transaction are assessed separately.

Thaler (1985) classified customer choice into four types, and proposed the preferred evaluation approach. The four types of customer choice (and preferred evaluation approach) are: (I) multiple gains (segregation), (II) multiple losses (integration), (III) larger gains and smaller losses (integration), and (IV) smaller gains and larger losses (segregation). As purchasing in the frame of loss is not expected (Von Neuman and Morgenstern 1953), customers would make their purchases only when they have all gains or larger gains on some attributes and smaller losses on other attributes. They will prefer segregation when all the attributes are favorable (gain frame) for decision making. They will prefer integration when the overall magnitude of mixed unfavorable (loss frame) and favorable attributes (gain frame) is favorable for decision making.

We will clarify it with an example. Thaler (1985) explains that when there are multiples gains in any transactions, customers utility is greater when these gains are segregated. According to mental accounting theory, customers code outcomes so as to obtain maximum utility. In case of 2 outcomes, say perceived price and perceived risk, there are two possibilities in which the joint outcome can be coded:
a. Integrated evaluation: $v$ (perceived price + perceived risk)
b. Segregated evaluation: $v$ (perceived price) $+v$ (perceived risk)

Customers can use either of the two approaches depending upon which of the two produces maximum utility. Thaler (1985) showed that when both the outcomes are in the gain frame customers would adopt approach ' $b$ '. In other words, when both perceived price and perceived risk are low, customers would prefer segregated evaluation and they may decide their purchase based on perceived price directly. When either one of the outcomes is in the loss frame, customer would adopt approach
' $a$ ', provided the overall utility is greater than zero. In other words, if perceived price is low, but perceived risk is high or vice versa, customer would prefer integrated evaluation (i.e., through perceived value) to evaluate whether the overall purchase is in the gain frame or not.

### 3.1.5. Acquisition Utility versus Transaction Utility

Acquisition utility is the net utility that accrues from the trade of $p$ (actual price of the product $z$ ) to obtain a product $z$ which is valued at $P$. So, the net utility would be $\mathrm{v}(P-$ p). According to Thaler (1985), this net utility is coded as an integrated outcome rather than separately stating $P$ and $p$. In other words, the cost of the good is not treated as a loss (Thaler 1985). The difference in price is captured by transaction utility and not by acquisition utility. It is hedonically inefficient to code costs as losses, especially for routine transactions, as the loss function is steep near the reference point. In other words, even if the prices vary from store to store, the acquisition utility would be the same for the same product from any online store (cf. Bhatnagar et al. 2000). Thaler (1985) further argues supporting his assertion of acquisition utility being same for the same product being purchased from any online store.

- In both online stores the ultimate consumption act is the same - usage of the product. The product is the same in each case.
- There is no possibility of strategic behavior in stating the reference price.
- No "atmosphere" (online store's environment) is consumed by the respondent.

The price difference between the online stores is captured by transaction utility, if the same product is purchased from different online stores. Moreover, it is
theoretically possible to distinguish between acquisition utility and total utility, but difficulty arises in distinguishing between them conceptually and empirically. Many previous studies (Dodds et al. 1991, Thaler 1985) conceptualize acquisition utility and total utility as similar to perceived value. Therefore, for the reasons of empirical and conceptual feasibility, we measure only transaction utility and total utility.

### 3.1.6. Determinants of Customer Value Perceptions of Internet Shopping

Since we are studying Internet shopping, we will measure transaction utility with reference to a specific online store rather than for any individual product, although it is possible to calculate transaction utility for each specific product. Online stores may be perceived by customers as economy stores or premium stores and hence the concept of value and utility can be equally well applied in their case as it is applied to products. Previous research (e.g., Dodds et al. 1991, Grewal et al. 1998, Urbany et al. 1997) has focused mainly on the monetary aspect of transaction utility, whereby it is measured as a difference between the objective price and the customer's reference price. However, as we have argued, customers do not always buy from online stores offering the lowest prices. According to Ehrlich and Fisher (1982), apart from price, customer consumption costs include the cost of search (i.e., time and effort) and costs of disappointing purchases (uncertainty and risk). In other words, non-monetary aspects, such as time and effort (Downs 1961) and uncertainty and risk (Grewal et al. 2003) may also influence customer transaction utility of shopping from an online store (Zeithaml 1988). While time and effort savings are the main benefits of shopping online (Torkzadeh and Dhillon 2002), risk and uncertainty reduce the attractiveness of purchasing online as customer deception by Internet vendors is becoming increasingly common (Grewal et al. 2003).

Apart from the purely cognitive reasons discussed above, customers' intrinsic (hedonic) motivation of shopping may also influence the non-monetary aspect of transaction utility in the online shopping context (Deci 1975). Intrinsic motivation refers to the performance of an activity for no apparent reinforcement other than the process of performing the activity per se (Deci 1975). According to Grewal et al. (1998), customers derive psychological satisfaction or pleasure from taking advantage of the financial terms of the deal, which increases their transaction utility. Thus, we measure transaction utility from both monetary and non-monetary perspectives.

From the monetary perspective, we consider perceived price, which is empirically measured as the difference between objective price and reference price (Gurumurthy and Russell 1995). From the non-monetary perspective, we consider perceived risk (to represent risk and uncertainty in Internet shopping), convenience (to represent time and effort), and pleasure from previous transactions (to represent intrinsic motivation for purchasing online). These are discussed in detail below.

Transaction utility is measured as the difference between the objective price of a product and its reference price, which represents its monetary aspect. In the context of Internet shopping, this monetary aspect of transaction utility is the difference between the objective price at an online store and customer's reference price. We refer to this monetary aspect of transaction utility as perceived price. In marketing, perceived price is considered the same as reference price (Dodds et al. 1991, Gurumurthy and Russell 1995); however, it is empirically measured as a reference price discrepancy variable (such as objective price - reference price) (Gurumurthy and Russell 1995). Therefore, we define perceived price as the perceived level of (monetary) price at a vendor (i.e., objective price) in comparison with the customer's reference price. In practice, customers do not usually remember the actual price of a
shopping object (Zeithaml 1988). Instead, they mentally encode prices in ways that are meaningful to them such as being higher or lower than their reference price (Dodds et al. 1991). Thus, perceived price represents the monetary aspect of transaction utility of purchasing from the online store.

We consider risk a non-monetary aspect (risk and uncertainty) of transaction utility of purchasing online as it is considered an important component in customer purchase decision-making (Grewal et al. 2003). In Cox's (1967) seminal model, perceived risk is conceptualized as involving two components, namely, uncertainty and consequences. However, in recent conceptualizations, perceived risk is defined in terms of expectation and importance of loss (Mowen 1992). Thus, perceived risk represents the subjective expectation of a loss or sacrifice in conducting transactions with an Internet vendor (Sweeney et al. 1999). Following previous research, we define perceived risk as a customer's perception of the uncertainty and adverse consequences of conducting transactions with a vendor. The risks associated with Internet shopping inhibit customers from making purchases online (Hoffman et al. 1999). Even if customers are expected to gain more benefits than sacrifices, they may still show risk aversion behavior as predicted by prospect theory (Kahneman and Tversky 1979).

We consider convenience as a non-monetary aspect (time and effort) of transaction utility of purchasing online as it is considered one of the most important factors for e-commerce growth (Torkzadeh and Dhillon 2002). Using the conceptualization of convenience as proposed by Berry et al. (2002), we define convenience as customers' time and effort perceptions of shopping on the Internet. Although, shopping online may in general be convenient, especially for standardized goods that vary little in quality, online stores may differ in various aspects of
convenience in shopping-related activities such as search, product information, ordering, payments, and delivery (Kaufman-Scarborough and Lindquist 2002). For the same product, customers would prefer those online stores which provide greater convenience. This difference in convenience would be reflected in customers' transaction utility of shopping from an online store.

Consumption emotion refers to a set of emotional responses elicited specifically during product usage or consumption experiences. To study consumption emotion, we consider the Pleasure-Arousal-Dominance (PAD) configuration (Mehrabian and Russell 1974) as it allows for a greater range of positive emotions as compared to only joy, happiness and interest in other emotion models (Oliver 1997). According to the PAD configuration, all emotional states can be represented by some combination of two major dimensions, namely, pleasure and arousal (Mehrabian and Russell 1974). Since empirical evidence for arousal regarding purchase has been inconsistent (Donovan et al. 1994), we use only pleasure to represent customers' intrinsic motivation to shop on the Internet. Pleasure refers to the degree to which a person feels good, joyful, happy or satisfied in the situation (Mehrabian and Russell 1974). Following Mehrabian and Russell (1974), we define pleasure as the degree to which a customer feels good or happy with the transactions made with the online vendor. For example, the website of Land's End (www.landsend.com) has a special feature whereby customers can design their own model and purchase custom-fit garments. This increases the hedonic worth of purchasing from the website.

### 3.1.7. Applicability of concept of value to online stores

The concept of value is discussed in relation to products. However, it would be equally applicable to Internet shopping at a particular online store (Parasuraman et al.
1995). Online stores differ from each other across various dimensions, such as price, risk, convenience and pleasure as mentioned in our research. We specify below how for customers may code each factor in making purchase decision at the focal online store.

- Acquisition utility: It would be same for the same product purchased from different online stores. If two stores sell same type of new books, the acquisition utility would be the same for purchasing the book from any online store.
- Transaction utility:
o Perceived Price: Customers may classify stores as economy stores, and premium stores.
o Perceived Risk: Less risky - Branded stores, reputed stores, certified stores, Brick and click stores; highly risky - Non-branded stores, Local stores, non-reputed stores, new pure-plays.
o Convenience: Quick delivery, slow online store, one-click purchase store.
o Pleasure: Cool stores, dull stores, poorly designed stores, stores with cool graphics, new concept stores (online models for garments).


## 4. ONLINE PURCHASE DECISION-CALCULUS: A MENTAL ACCOUNTING THEORY PERSPECTIVE

### 4.1. OVERVIEW OF THIS STUDY

There are many studies, which use value as a predictor of customer choice and decision making. However, most of them do not pay attention to the contextdependent nature of value. The context-dependent nature of value becomes all the more magnified in the online context because of the presence of significant risks and uncertainty in online transactions. Therefore, in this study, we aim to examine the online customer purchase decision-calculus based on prospect theory and mental accounting theory, which are theories of customer choice and decision-making under risk and uncertainty. We have already identified the factors that affect online purchase decision-making of potential and repeat customers. Now, we will also examine how these factors as well as the overall assessment of these factors (i.e., perceived value) influence customer intention to purchase from the online store.

### 4.2. RESEARCH MODEL AND HYPOTHESIS

Thaler (1985) proposed that customers' decision-making involves two steps namely, judging the value of the offer and deciding whether to make the purchase. Therefore, we propose the research model as shown in Figure 4-A. The research model shows two stages of analyzing transactions as proposed by Thaler (1985).

The judgment stage consists of the four components of transaction utility, namely, perceived price, perceived risk, convenience and pleasure. The overall evaluation of these four components represents perceived value, which is the total utility of a transaction. This is in line with Thaler's (1985) proposal of total utility as
value. Based on previous research (Zeithaml 1988), we define perceived value as the net benefits (perceived benefits vis-à-vis perceived sacrifices) of a transaction with an Internet vendor. According to prospect theory, customers assess the value of alternatives as gains or losses relative to a reference rather than as final wealth states. Customers derive their reference points from their expectations, their buying objectives, the sales messages they receive, and their need for justification of the choice (Puto 1987). Thus, customers compare the net benefits resulting from the comparison between benefits and sacrifices with their reference points to derive total utility or perceived value.

The decision making stage consists of making a purchase decision based on the total utility. Customers may make decision based on either segregated evaluation or integrated evaluation. Therefore, we also include the influence of individual components of transaction utility on purchase intention as customers might make decisions based on segregated evaluation when all the attributes are in the frame of gain.

As potential customers do not have any purchase experience with the online store, they do not form any perception about convenience and pleasure of purchasing from a particular online store. They may develop some idea of convenience for browsing the products, but since our focus is on purchase-decision, potential customers would not develop any idea of convenience and pleasure of purchasing from the online vendor. Repeat customers, on the other hand, would have experience of the service provided by the online store, based on which, they would form perceptions of convenience and pleasure of shopping from that online store. Therefore, in this research we consider the effect of convenience and pleasure only in the case of repeat customers, as shown in Figure 4-A.


Figure 4-A: Research Model for Study 1

Previous studies on consumer decision making (e.g., Kahneman and Tversky 1979, Thaler 1985, Zeithaml 1988) share the assumption that customers seek value maximization. Customers prefer to conduct transactions with vendors whose products (including services) offer maximal value. According to prospect theory, customers evaluate different prospects based on the value of each prospect relative to some reference and the degree of risk involved in choosing that prospect. According to mental accounting theory, customers make their purchase decisions based on maximum value at the decision making stage. Empirical results (e.g., Dodds et al. 1991, Zeithaml 1988) also support that perceived value leads to purchase intention. This relationship is likely to apply to both potential customers and repeat customers of an Internet vendor. Hence, we hypothesize:

H1: Perceived value has a positive effect on purchase intention for potential customers and repeat customers of an Internet vendor.

Price can be seen as a monetary sacrifice for obtaining a product or as a signal of product quality (Zeithaml 1988). In the context of Internet shopping, product quality is comparable across vendors as the products (e.g., books and CDs) are mostly low-touch in nature (Lynch et al. 2001), and customers are generally familiar with the
product attributes. Hence, price is more often considered a monetary sacrifice than a signal of product quality by customers of Internet vendors (Reibstein 2002). According to mental accounting theory, perceived price impacts the monetary dimension of transaction utility. An increase in perceived price implies lower transaction utility. As transaction utility is a component of overall value according to mental accounting theory, perceived price should negatively affect total value. Prior research (e.g., Dodds et al. 1991) has found that perceived price is negatively related to the perceived value of a transaction. This relationship is likely to apply to both potential customers and repeat customers of an Internet vendor. Hence, we hypothesize:

H2: Perceived price has a negative effect on perceived value for potential customers and repeat customers of an Internet vendor.

In addition to the indirect effect of perceived price on purchase intention through perceived value, perceived price may also exert a direct effect on purchase intention through segregated evaluation. According to mental accounting theory, customers make choices based on segregated evaluation of attributes in the frame of multiple gains. Perceived price in the frame of gain means that the prices in the online store are lower than the customer's reference price (Dodds et al. 1991). In such a case, perceived price may have a direct effect on purchase intention. Also, according to Kahneman and Tversky (1979), customers being risk averse tend to minimize expenses or 'losses' that are certain. In such a situation, customers discount the available information and opt for low price to minimize immediate expenses or financial loss (Kahneman and Tversky 1979, Tellis and Gaeth 1990). Previous research (e.g., Dodds et al. 1991, Monroe and Chapman 1987) also supports that
customer purchase intentions are related to customer price perceptions. This relationship is likely to apply to both potential customers and repeat customers of an Internet vendor. Hence, we hypothesize:

H3: Perceived price has a negative effect on purchase intention for potential customers and repeat customers of an Internet vendor.

Perceived risk is considered a non-monetary aspect of transaction utility. An increase in perceived risk implies lower transaction utility. As transaction utility is a component of overall value according to mental accounting theory, the perceived risk of Internet shopping should negatively influence its perceived value. It is the presence of risks and uncertainty in Internet shopping that makes seemingly attractive deals (such as low priced offerings) unattractive. Thus, perceived risk should negatively influence perceived value. This relationship is likely to apply to both potential customers and repeat customers of an Internet vendor. Hence, we hypothesize:

H4: Perceived risk has a negative effect on perceived value for potential customers and repeat customers of an Internet vendor.

In the frame of gain, perceived risk may also have a direct influence on purchase intention through segregated evaluation. Perceived risk in the frame of gain means customers perceive low risk in conducting transactions with the online store. Customers feel more comfortable in making purchase transactions with an online store that is perceived to be less risky. Therefore, lower perceived risk should encourage customers to decide on making a transaction based on segregated evaluation when other attributes of the transaction are also in the frame of gain. This relationship is supported by previous research (Jarvenpaa et al. 2000, Pavlou 2003).

Also, as discussed earlier, customers put emphasis on outcomes that are considered certain relative to outcomes which are considered merely probable (certainty effect). In other words, customers exhibit risk aversion behavior in situations of high uncertainty and risk, and are motivated to minimize the expected negative consequences of purchases (Kahneman and Tversky 1979), depending on the importance they place on those negative consequences. Therefore, under the conditions of high risk and uncertainty, customers are less willing to make actual purchases (Hoffman et al. 1999, Jarvenpaa and Todd 1997). Customers being risk averse would rationally seek prospects that have a lower perceived risk, and hence a lower perceived risk would lead to higher purchase intentions. This relationship is likely to apply to both potential customers and repeat customers of an Internet vendor. Hence, we hypothesize:

H5: Perceived risk has a negative effect on purchase intention for potential customers and repeat customers of an Internet vendor.

Convenience is one of the most important benefits of Internet shopping (Jarvenpaa and Todd 1997). Shopping on the Internet provides convenience in various ways (Berry et al. 2002) related to aspects of a website, such as convenience in information search, payments, and delivery (Kaufman-Scarborough and Lindquist 2002). According to mental accounting theory, greater convenience means less mental and physical energy expended in obtaining a product, which reduces the time and effort (a non-monetary aspect of transaction utility), thereby increasing transaction utility (Downs 1961). As transaction utility is a component of overall perceived value, convenience in Internet shopping would influence customers' perceived value of shopping on the Internet. As only repeat customers have an idea of convenience of
purchasing from the online store, this relationship is likely to hold true only for repeat customers. Hence, we hypothesize:

H6: Convenience positively influences perceived value for repeat customers.

Convenience may also have a direct influence on purchase intention through segregated evaluation. When all attributes are in the frame of gain, customers would opt for segregated evaluation of attributes when making purchase decisions. Convenience would be in the frame of gain when the current online store is perceived to be more convenient than other online stores. In such cases, customers would be inclined to make purchases from the current online store. Also, according to the theory of consumer efficiency (Downs 1961), customer shopping behavior is enhanced by efficiency in consumption. Particularly for low-cost standardized items, customers would regard time as more important than money (Downs 1961). As convenience represents customer time and effort perceptions about shopping on the Internet, customers would be motivated to decide their purchases based on time savings and reduced hassles, especially for routine purchase items. Previous research (e.g., Fenech and O'Cass 2001) also supports that convenience is associated with online purchases. In addition, Keeney (1999) found empirical evidence for the relationship between lowering time and effort costs and store patronage intentions. As only repeat customers have an idea of convenience of purchasing from the online store, this relationship is likely to hold true only for repeat customers. Hence, we hypothesize:

H7: Convenience positively influences purchase intention for repeat customers.

As potential customers do not have any prior purchase experience, they are not conversant with the pleasure of Internet shopping from a specific online vendor. On the other hand, repeat customers have at least one purchase experience and therefore, they form perceptions of pleasure of Internet shopping from a specific online vendor. The effect of pleasure is therefore, considered only in the case of repeat customers.

Research in customers' affective processing mechanism posits that the emotions elicited during consumption experiences leave strong affective traces or markers in customers' episodic memory (Cohen and Areni 1991). The memory elements are then believed to be highly accessible to current cognitive operations. When an evaluation of the relevant consumption experience (or its associated product or service) is required, the affective traces are readily retrieved and their variances are integrated into the evaluative judgment. Hedonic (affective) sources of value have long been recognized to affect customer perceived value (Sweeney and Soutar 2001). Thus, pleasure, as an emotional response to purchases made from the Internet vendor, would influence customer perceived value of Internet shopping. As only repeat customers have an idea of pleasure of purchasing from the online store, this relationship is likely to hold true only for repeat customers. Hence, we hypothesize:

H8: Pleasure positively influences perceived value for repeat customers.

When customers experience positive pleasure in conducting transactions with the online store, their pleasure is in a frame of gain. If multiple attributes are in the frame of gain, customers may opt for segregated evaluation. According to mental accounting theory, in such cases, pleasure of purchasing from the current online vendor would influence purchase intention.

Also, according to theory of emotion and adaptation (Lazarus 1991), coping responses are important mechanisms for inferring action and goal attainment from feelings. Depending on the feelings generated, behavioral intentions emerge to activate plans for the avoidance of undesirable outcomes or the increase/maintenance of positive outcomes (Bagozzi 1992). Coping with positive emotions often involves sharing one's good fortune, savoring the experience, and working to continue or increasing the rewards. In contrast, a negative emotion puts one in disequilibrium, and makes one desirous of returning to the normal state. Hence, pleasure, being a positive affect, will result in actions to savor the experience longer and increase the rewards. Thus, consumers experiencing pleasure in shopping with an online vendor would be encouraged to repurchase. In other words, customers would want to increase/maintain positive outcomes, and based on this, they develop their behavioral intentions. Previous research also supports the relationship between pleasure and purchase intentions (Bagozzi et al. 1999, Sherman et al. 1997). Donovan et al. (1994) found pleasure to be a significant predictor of extra time spent at a store and actual incremental spending. As only repeat customers have an idea of pleasure of purchasing from the online store, this relationship is likely to hold true only for repeat customers. Hence, we hypothesize:

H9: Pleasure positively influences purchase intention for repeat customers.

### 4.3. RESEARCH METHODOLOGY

### 4.3.1. Research Approach

In this research, we employed the survey research methodology because of its superiority over other approaches in establishing generalizability. We conducted an online survey on the real-life customers of an actual Internet bookstore. The unit of
analysis was an online customer who accesses the website of the online bookstore under study.

As books are one of the most popularly online purchased products, focusing on books would give us a fairly good representation of online shopping. Moreover, books are standard in terms of quality. Usually, the quality variation in books may occur if the online store carries both new and used books. However, in our case the online store carries all new books and hence the quality variation would be zero across online stores. Variation in quality across online stores would influence customer acquisition utility. Since, we are not measuring acquisition utility for reasons of practicability, focusing on books would not influence customer acquisition utility across online stores in our case.

### 4.3.2. Instrument Development

We developed the survey instrument by adopting existing validated items, wherever possible. Some items were self-developed for more accurate fit between the instrument and the context of our study. Questions for purchase intention, perceived price and perceived risk were adopted from Dodds et al. (1991), and Cheung and Lee (2001) respectively. Questions for perceived price were adapted from Gefen and Devine (2001). Questions for convenience were adapted from Torkzadeh and Dhillon (2002) and Childers et al. (2001). Questions for pleasure were adopted from Holbrook et al. (1984). Since customers form their perceptions of price by comparing actual prices with their reference prices (Dodds et al. 1991), we developed questions for perceived price that allowed customers to make such comparisons using the prices of other bookstores as references.

Questions for perceived value were adapted from Sirdeshmukh et al. (2002), with an additional question on risk included for completeness of the measures. Since perceived value is defined as the net benefits (benefits against costs) of a transaction with the Internet vendor (Zeithaml 1988), the items for perceived value are adapted so as to imply a comparison between benefits and costs. According to Downs (1961) the consumption costs include money, time and effort. As in Internet shopping uncertainty and risk also contributes to non-monetary cost (Ehrlich and Fisher 1982), we included an item to imply comparison between risk and the benefits of online shopping. There may be seemingly some overlap between the items of value and perceived price, perceived risk and convenience. However, the items of perceived value imply comparison between benefits and costs unlike perceived price, perceived risk and convenience. The costs in online shopping include risk apart from monetary outlay and the time and effort costs. For completeness, we have also included an overall item for measuring perceived value. We measured the variables on a sevenpoint Likert scale ( $1=$ strongly disagree, $7=$ strongly agree). The survey instrument for potential and repeat customers is shown below:

## i. Purchase Intention (Potential and Repeat customers)

Definition: "The likelihood that the buyer intends to purchase the product" (Grewal et. al. 1998)

- If I were to buy a product, I would consider buying it from XYZ (Dodds et al. 1991).
- The likelihood of my purchasing a product from XYZ is high (Dodds et al. 1991).
- My willingness to buy a product from XYZ is high (Dodds et al. 1991).
- The probability that I would consider buying a product from XYZ is high (Dodds et al. 1991).


## ii. Perceived value (Potential and Repeat customers)

Definition: A customer's overall assessment of benefits against sacrifice when shopping with a vendor (Sweeney and Soutar 2001, Thaler 1985, Zeithaml 1988)

- Considering the money I pay, Internet shopping at XYZ is a good deal (Sirdeshmukh et al. 2002).
- Considering the time and effort I spend, Internet shopping at XYZ is worthwhile. (Sirdeshmukh et al. 2002).
- Considering the risk I take, Internet shopping at XYZ has value (Selfdeveloped).
- Considering all monetary and non-monetary costs, Internet shopping at XYZ is of good value (self-developed).


## iii. Perceived price (Potential and Repeat customers)

Definition: A customer's subjective perception of the objective price (total amount that the customer has to pay to get the product) compared to the reference price

- It may be possible to get a better discount from another online store (Selfdeveloped).
- It may be cheaper to buy product at another online store (Self-developed).
- I will probably save more money buying products at another online store (Self-developed).
- I may need to pay more money buying products at XYZ than at another online store (Self-developed).


## iv. Perceived Risk (Potential and Repeat customers)

Definition: A consumer's perception of the uncertainty and adverse consequences of Internet transactions with a vendor (Dowling and Staelin 1994)

- Internet shopping at XYZ involves significant uncertainty (Cheung and Lee 2001).
- There is a significant chance of loss in Internet shopping at XYZ (Gefen and Devine 2001).
- There would be negative outcomes in Internet shopping at XYZ (Cheung and Lee 2001).
- My credit card and personal information may not be secure with XYZ (Gefen and Devine 2001).


## v. Convenience (Repeat customers)

Definition: A customer's perception of savings in time and effort related to transactions with a vendor (Berry et al. 2002)

- Internet shopping at XYZ saves me time (Childers et al. 2001, Torkzadeh and Dhillon 2002).
- Internet Shopping at XYZ minimizes my effort in shopping (Torkzadeh and Dhillon 2002).
- Internet shopping at XYZ is easy for me (Torkzadeh and Dhillon 2002).
- Internet shopping at XYZ minimizes personal hassle in shopping (Torkzadeh and Dhillon 2002).


## vi. Pleasure (Repeat customers)

Definition: As an emotional response, "the degree to which a customer feels good or happy with the previous transactions with a vendor" (Mehrabian and Russell 1974)

- How do you feel about your previous transactions with XYZ?
- Unsatisfied / Satisfied (Holbrook et al. 1984)
- Unhappy/ Happy (Holbrook et al. 1984)
- Annoyed / Pleased (Holbrook et al. 1984)
- Disappointed / Delighted (Spreng et al. 1996)


## vii. Demographics (Potential and Repeat customers)

- Gender: Male / Female
- Age: ( )
- Profession: Housewife / Student / Employed / Self-employed / Others
- Internet Experience: ( ) Years
- How many times have you bought products from this store? ( ) Times
- Internet shopping experience: Yes / No [only for potential customers]
- e-mail address:


### 4.3.3. Face and Content Validity

Face Validity is the judgment by the scientific community that the indicator really measures the construct. It addresses the question: On the face of it, do people believe that the definition and method of measurement fit? For example, few people would accept a measure of college student math ability using a question that asked students: $2+2=$ ? This is not a valid measure of college-level math ability on the face of it (Neuman 2003).

Content Validity is a special type of face validity. It addresses the question: Is the full content of a definition represented in a measure? A conceptual definition holds ideas; it is a "space" containing ideas and concepts. Measures should sample or represent all ideas or areas in the conceptual space. Content validity involves three steps (Neuman 2003), namely specifying the content in a construct's definition; sampling from all areas of definition; and developing an indicator that taps all of the parts of the definition.

The face and content validity of the instrument was reviewed by two information systems researchers and one marketing scholar. As a pre-test, the questionnaires were discussed in focus-group interviews of 34 people, with some of them having Internet shopping experience. Out of 34 people, 27 were graduate level students, 6 were PhD students and 1 was Professor at a large university in Singapore.

We gathered feedback about the length of survey, format of the scales, context and question ambiguities.

### 4.3.4. Pilot Study

A pilot survey was conducted with the above questionnaire and we obtained 131 cases in the first instance. The data so obtained was examined for completeness of responses, reliability and construct validity. Controls were incorporated in the online survey for missing responses. Therefore, there were no missing or partial responses. The reliability test was then conducted. The results of the reliability test are shown in Table 4-A. The results show that the Cronbach's alpha for each construct is greater than 0.7 , thus establishing reliability for each construct.

Table 4-A: Reliability Test for Pilot Study

| CONSTRUCT | CRONBACH'S ALPHA |
| :---: | :---: |
| Purchase Intention | 0.916 |
| Perceived Value | 0.922 |
| Perceived price | 0.809 |
| Perceived Risk | 0.827 |
| Convenience | 0.914 |
| Pleasure | 0.966 |

Construct validity was tested by conducting principal component analysis using VARIMAX rotation. There was some cross-loading between convenience and pleasure. We forced principal component analysis on six factors because the scree plot showed the possibility of six factors and the eigen-value of sixth factor was close to 1 . The results of the forced principal component analysis are shown in Table 4-B. The total variance explained by all constructs together in the data is $79.60 \%$. All items
are loaded on each distinct factor with factor loadings greater than 0.5 . PRCE4 was slightly cross-loaded with perceived value. Thus, the construct validity (convergent and discriminant validity) is established.

Table 4-B: Principal Component Analysis Using VARIMAX Rotation

|  | 1 | 2 | 3 | 4 | 5 | 6 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| PINT1 | 0.122 | 0.118 | $\mathbf{0 . 8 1 6}$ | 0.313 | -0.131 | -0.111 |
| PINT2 | 0.136 | 0.119 | $\mathbf{0 . 8 8 2}$ | 0.185 | -0.134 | -0.144 |
| PINT3 | 0.180 | 0.222 | $\mathbf{0 . 8 1 2}$ | 0.327 | -0.155 | -0.108 |
| PINT4 | 0.090 | 0.244 | $\mathbf{0 . 7 8 1}$ | -0.007 | -0.040 | -0.144 |
| PVAL1 | $\mathbf{0 . 8 2 1}$ | 0.105 | 0.225 | 0.225 | -0.014 | -0.177 |
| PVAL2 | $\mathbf{0 . 8 0 7}$ | 0.167 | 0.105 | 0.223 | -0.224 | -0.135 |
| PVAL3 | $\mathbf{0 . 7 7 0}$ | 0.153 | 0.036 | 0.297 | -0.279 | -0.036 |
| PVAL4 | $\mathbf{0 . 8 1 1}$ | 0.232 | 0.123 | 0.268 | -0.197 | -0.042 |
| PRCE1 | 0.047 | -0.194 | -0.076 | 0.001 | 0.017 | $\mathbf{0 . 8 1 5}$ |
| PRCE2 | -0.184 | -0.098 | -0.114 | -0.019 | 0.002 | $\mathbf{0 . 8 8 2}$ |
| PRCE3 | -0.291 | -0.028 | -0.270 | -0.080 | 0.284 | $\mathbf{0 . 7 3 1}$ |
| PRCE4 | -0.506 | -0.184 | -0.177 | -0.125 | 0.260 | $\mathbf{0 . 4 1 2}$ |
| RISK1 | -0.124 | -0.192 | -0.032 | -0.063 | $\mathbf{0 . 8 1 5}$ | -0.004 |
| RISK2 | -0.299 | -0.147 | -0.158 | -0.090 | $\mathbf{0 . 7 7 8}$ | 0.065 |
| RISK3 | -0.175 | -0.135 | -0.185 | -0.101 | $\mathbf{0 . 7 9 2}$ | 0.046 |
| RISK4 | -0.062 | -0.176 | -0.039 | -0.239 | $\mathbf{0 . 6 8 2}$ | 0.184 |
| CONV1 | 0.363 | 0.235 | 0.233 | $\mathbf{0 . 7 0 8}$ | -0.231 | -0.130 |
| CONV2 | 0.288 | 0.200 | 0.202 | $\mathbf{0 . 8 2 0}$ | -0.214 | -0.064 |
| CONV3 | 0.340 | 0.278 | 0.274 | $\mathbf{0 . 7 0 1}$ | -0.111 | 0.020 |
| CONV4 | 0.215 | 0.167 | 0.169 | $\mathbf{0 . 8 0 7}$ | -0.081 | 0.010 |
| PLEA1 | 0.207 | $\mathbf{0 . 8 6 5}$ | 0.133 | 0.121 | -0.161 | -0.074 |
| PLEA2 | 0.186 | $\mathbf{0 . 8 7 5}$ | 0.221 | 0.181 | -0.202 | -0.115 |
| PLEA3 | 0.149 | $\mathbf{0 . 8 4 3}$ | 0.205 | 0.283 | -0.235 | -0.157 |
| PLEA4 | 0.169 | $\mathbf{0 . 8 3 4}$ | 0.222 | 0.248 | -0.215 | -0.195 |
| Total Eigen Value | 3.67 | 3.56 | 3.33 | 3.10 | 3.03 | 2.41 |
| \% of Variance | 15.29 | 14.85 | 13.89 | 12.94 | 12.60 | 10.03 |
| Cumulative $\%$ | 15.29 | 30.14 | 44.03 | 56.97 | 69.57 | $\mathbf{7 9 . 6 0}$ |

-PINT: Purchase Intention, PVAL: Perceived Value, PRCE: Perceived price, RISK: Perceived Risk, CONV: Convenience, PLEA: Pleasure.

Minor changes were made in the sequencing of items of perceived value. The final survey instrument is as shown in Table 4-C.

Table 4-C: Survey Instrument

| CONSTRUCT | ITEM | QUESTION WORDING | SOURCE |
| :---: | :---: | :---: | :---: |
| Purchase Intention | PINT1 | If I were to buy a product, I would consider buying it from this store. | Dodds et al.(1991) |
|  | PINT2 | The likelihood of my purchasing a product from this store is high. |  |
|  | PINT3 | My willingness to buy a product from this store is high. |  |
|  | PINT4 | The probability that I would consider buying a product from this store is high. |  |
| Perceived Value | PVAL1 | Considering the time and effort I spend on buying products at this store, Internet shopping at this store is worthwhile. | Sirdeshmukh et al. (2002) |
|  | PVAL2 | Considering the risk I take in buying products at this store, Internet shopping here has value. | Self Developed |
|  | PVAL3 | Considering the money I pay for buying products at this store, Internet shopping here is a good deal. | Sirdeshmukh et al. (2002) |
|  | PVAL4 | Considering all monetary and non-monetary costs I incur in buying products at this store, Internet shopping here is of good value. | Self Developed |
| Perceived Price | PRCE1 | It may be possible to get a better discount from another online store. | Self Developed |
|  | PRCE2 | It may be cheaper to buy products at another online store. |  |
|  | PRCE3 | I will probably save more money buying products at another online store. |  |
|  | PRCE4 | I may need to pay more money buying products at this store than at another online store. |  |
| Perceived Risk | RISK1 | Internet shopping at this store involves significant uncertainty. | Cheung and Lee (2001) |
|  | RISK2 | There is a significant chance of loss in Internet shopping at this store. | Gefen and Devine (2001) |
|  | RISK3 | There would be negative outcomes in Internet shopping at this store. | Cheung and <br> Lee (2001) |
|  | RISK4 | My credit card and personal information may not be secure with this store. | Gefen and Devine (2001) |
| Convenience | CONV1 | Internet shopping at this store saves me time. | Childers et <br> al. (2001), Torkzadeh and Dhillon (2002) |
|  | CONV2 | Internet shopping at this store minimizes my effort in shopping. |  |
|  | CONV3 | Internet shopping at this store is easy for me. |  |
|  | CONV4 | Internet shopping at this store minimizes personal hassle in shopping. |  |
| Pleasure | How do you feel about your previous transaction with this store? |  | Holbrook et al. (1984), |


|  | PLEA1 | Unsatisfied / Satisfied. | Spreng et al. <br> (1996) |
| :--- | :--- | :--- | :---: |
|  | PLEA2 | Unhappy / Happy. |  |
|  | PLEA3 | Annoyed / Pleased. |  |
|  | PLEA4 | Disappointed / Delighted. |  |

### 4.3.5. Data Collection

We collected the data using the final survey instrument which was modified to suit the online bookstore (Table 4-C). As we have mentioned, most leading product categories in Internet shopping involve low-touch products and no-touch services (Lynch et al. 2001). We chose an Internet bookstore, as books belong to the category of low-touch products and vary little in quality (a possible confounding factor that could affect results) as compared to other products. It is not a well-known online bookstore such as Amazon.com, but a relatively small vendor. It receives about 144,000 customers visit daily and sells about 18,000 books everyday.

The empirical data was collected from actual online customers of the bookstore over a period of 10 days through an online survey (Appendix A). We publicized the survey with a banner at the bookstore's website, and respondents accessed the survey website from the store's homepage. The first page of the survey web site provided two links for questionnaire selection: one for potential customers and the other for repeat customers. The page clearly explained who is a potential customer and who is a repeat customer. To ensure that customers actually browsed the website, they were asked to note a book of their interest and its price before they proceeded to answer the questions. We offered US $\$ 10$ to 200 respondents by lottery to encourage participation. We received enough responses in 10 days from the site, as the site is very popular among Koreans.

For checking multiple responses deliberately or by mistake, we had incorporated beginning and ending time-stamps in the online survey. Any duplicate response would have the same beginning time-stamp, if the respondent pressed the submit button twice at the end of the survey. We also asked respondents to enter their e-mail addresses, so that we can contact them in case they were the lucky winners. This would also prevent duplicate responses by the same respondent. However, there was no way to check for duplicate responses in case the respondent provided multiple e-mail addresses and responded to the survey at different times. However, seeing the responses and addresses, we are confident that such cases would be highly unlikely and even if few customers respond using multiple e-mail IDs, their responses would not make a substantial difference, as the sample collected is very large.

### 4.3.6. Respondent Characteristics

A total of 1028 valid responses were collected via the Internet survey. Out of these, 218 were potential customers and 810 were repeat customers. According to Gefen et al (2000), the minimum required sample size for LISREL 8.54 testing is 150 cases, hence our sample is large enough for analysis. Table 4-D shows the demographic characteristics of potential and repeat customers. T-test was conducted to compare potential and repeat customer groups in terms of age and Internet usage experience. The t-test revealed no significant difference between the two customer groups in terms of their age $(t-v a l u e=1.59)$ and Internet usage experience $(t-v a l u e=1.51)$. Mann-Whitney test was conducted to test differences between potential and repeat customers in terms of gender ratio. The test revealed that the two groups are similar in terms of gender ratio (test statistic $=-1.89$ ). In summary, the samples of potential and
repeat customers are comparable in terms of their age, Internet experience and gender ratio.

Non-response bias was assessed by comparing the sample of repeat customers with the database of registered repeat customers of the Internet bookstore. T-tests showed that the sample of repeat customers and the population of registered repeat customers did not differ significantly in terms of age and purchase experience with the bookstore. A Mann-Whitney test revealed no significant difference in gender ratio between the sample of repeat customers and the population of registered repeat customers.

Table 4-D: Descriptive Statistics of the Respondent's Characteristics

| MEASURE | ITEMS | POTENTIAL |  |  | REPEAT |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | FREQ. | \% AGE | $\begin{gathered} \text { MEAN } \\ \text { (SD) } \end{gathered}$ | FREQ. | \% AGE | $\begin{gathered} \text { MEAN } \\ \text { (SD) } \end{gathered}$ |
| Gender | Female | 142 | 65.14 | -- | 580 | 71.60 | -- |
|  | Male | 76 | 34.86 |  | 230 | 28.40 |  |
| Age (years) | $<20$ | 29 | 13.3 | $\begin{gathered} 28.9 \\ (8.62) \end{gathered}$ | 62 | 7.65 | $\begin{gathered} 29.83 \\ (7.37) \end{gathered}$ |
|  | 20-29 | 98 | 44.95 |  | 351 | 43.33 |  |
|  | 30-39 | 62 | 28.44 |  | 321 | 39.63 |  |
|  | >39 | 29 | 13.3 |  | 76 | 9.38 |  |
| Internet Experience (years) | 1-3 | 27 | 12.39 | $\begin{gathered} 7.07 \\ (3.38) \end{gathered}$ | 54 | 6.67 | $\begin{gathered} 7.26 \\ (3.13) \end{gathered}$ |
|  | 4-6 | 79 | 36.24 |  | 299 | 36.91 |  |
|  | 7-9 | 69 | 31.65 |  | 305 | 37.65 |  |
|  | >=10 | 43 | 19.72 |  | 152 | 18.77 |  |
| Internet Shopping Experience | Yes | 201 | 92.2 | -- | 810 | 100.00 | -- |
|  | No | 17 | 7.8 |  | 0 | 0.00 |  |
| Purchase experience with the bookstore | 1 | 0 | 0 | -- | 63 | 7.78 | $\begin{gathered} 14.5 \\ (14.3) \end{gathered}$ |
|  | 2-6 | 0 | 0 |  | 268 | 33.09 |  |
|  | 7-10 | 0 | 0 |  | 152 | 18.77 |  |
|  | 11-20 | 0 | 0 |  | 141 | 17.41 |  |
|  | $>20$ | 0 | 0 |  | 186 | 22.96 |  |
| Profession | Employee | 57 | 26.15 | -- | 281 | 34.69 | -- |
|  | Housewife | 40 | 18.35 |  | 144 | 17.78 |  |
|  | Self-employed | 9 | 4.13 |  | 19 | 2.35 |  |
|  | Student | 89 | 40.83 |  | 259 | 31.98 |  |
|  | Others | 23 | 10.55 |  | 107 | 13.21 |  |
| Total |  | 218 | 100 |  | 810 | 100.00 |  |

Majority of the respondents were female (65-72\%) for both potential and repeat customer groups. The respondents are mostly young to middle-aged adults, with approximately $70-80 \%$ in the range of $20-39$ years. In terms of Internet experience, approximately $80-90 \%$ of the respondents have at least 4 years of Internet usage experience. Approximately $92 \%$ of the potential customers had previous Internet shopping experience with another online store. In terms of profession, the distribution is fairly well spread, with about $26-34 \%$ percent employed, $17-18 \%$ housewives, $30-40 \%$ students, and the rest 15 percent comprising of self-employed and other occupations.

### 4.4. DATA ANALYSIS AND RESULTS

### 4.4.1. Sample Size

It is necessary to obtain a highest cases-per-variable ratio ( $\sim$ 5-20) (Hair et al. 1998) to minimize the chance of "over fitting" the data (i.e., deriving factors that are sample specific with little generalizability). The number of variables studied in case of potential and repeat customers was 16 and 24 respectively. As we obtained 218 and 810 responses for potential and repeat customers respectively, the case-per-variable ratio is 13.6 and 33.8 respectively, which represents adequate sample size for analysis.

### 4.4.2. Assumptions in Factor Analysis

The critical assumptions underlying factor analysis are more conceptual than statistical. From a statistical standpoint, the departures from normality, homoscedasticity, and linearity apply only to the extent that they diminish the observed correlations. From the conceptual viewpoint, the researcher must ensure that
the data matrix have sufficient correlations to justify the application of factor analysis. Bartlett test of sphericity and measure of sampling adequacy are two tests for determining the appropriateness of the data for factor analysis. The results of the test are shown in Table 4-E. The results reveal that the data for both potential and repeat customers is conceptually valid for factor analysis.

Table 4-E: Results of Adequacy Test for Factor Analysis

| TEST | CRITERIA | POTENTIAL | REPEAT |
| :---: | :---: | :---: | :---: |
| Bartlett test of sphericity | Significant p-value | $\begin{gathered} \text { Approx. } \chi_{2}= \\ 2710.30 \\ \mathrm{df}=120 \\ \text { p-value }=0.000 \end{gathered}$ | $\begin{gathered} \text { Approx. } \chi_{2}= \\ 19346.47, \\ \mathrm{df}=378, \\ \text { p-value }=0.000 \end{gathered}$ |
| Measures of Sampling adequacy | $\begin{gathered} \geq 0.80 \text { (meritorious) } \\ \geq 0.70 \text { (middling) } \\ \geq 0.60 \text { (mediocre) } \\ \geq 0.50 \text { (miserable) } \\ <0.50 \text { (unacceptable) } \end{gathered}$ | 0.891 | 0.931 |

### 4.4.3. Principal Component Analysis using VARIMAX Rotation

As the objective of factor analysis in this research is to summarize most of the original information (variance) in a minimum number of factors for prediction purposes (the number of factors is known beforehand), principal component analysis is used for factor analysis (Hair et al. 1998). We conducted principal component analysis with VARIMAX rotation to assess the convergent and discriminant validity of constructs (Table 4-F). The analysis revealed a total of four and six factors (eigenvalue $>1.0$ ) for potential customers and repeat customers respectively. All constructs explained $78.64 \%$ of total variance for potential customers and $78.98 \%$ for repeat customers. All items were loaded on each distinct factor with a factor loading greater than 0.5 . Thus, the convergent and discriminant validity of the constructs is established. In the next step, we adopted the two-stage methodology (Anderson and

Gerbing 1988) using LISREL to examine the structural model based on the cleansed measurement models for potential and repeat customers.

Table 4-F: Principal Components Analysis Using VARIMAX Rotation

|  | POTENTIAL |  |  |  | REPEAT |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 5 | 6 |
| PINT1 | 0.85 | 0.23 | -0.19 | -0.11 | 0.17 | 0.21 | 0.82 | 0.18 | -0.12 | -0.12 |
| PINT2 | 0.89 | 0.27 | -0.11 | -0.11 | 0.15 | 0.19 | 0.87 | 0.19 | -0.12 | -0.09 |
| PINT3 | 0.86 | 0.32 | -0.18 | -0.08 | 0.18 | 0.17 | 0.84 | 0.23 | -0.14 | -0.09 |
| PINT4 | 0.88 | 0.26 | -0.12 | -0.04 | 0.18 | 0.13 | 0.79 | 0.16 | -0.06 | -0.09 |
| PVAL1 | 0.33 | 0.83 | -0.25 | -0.05 | 0.22 | 0.31 | 0.22 | 0.77 | -0.12 | -0.16 |
| PVAL2 | 0.22 | 0.82 | -0.29 | -0.06 | 0.23 | 0.27 | 0.24 | 0.76 | -0.08 | -0.23 |
| PVAL3 | 0.36 | 0.81 | -0.16 | -0.14 | 0.20 | 0.19 | 0.21 | 0.79 | -0.20 | -0.06 |
| PVAL4 | 0.29 | 0.82 | -0.19 | -0.08 | 0.23 | 0.31 | 0.28 | 0.73 | -0.13 | -0.18 |
| PRCE1 | -0.04 | 0.06 | 0.03 | 0.84 | -0.04 | -0.02 | -0.07 | 0.03 | 0.81 | 0.09 |
| PRCE2 | -0.04 | -0.01 | 0.09 | 0.86 | -0.08 | -0.04 | -0.07 | -0.07 | 0.88 | 0.07 |
| PRCE3 | -0.1 | -0.15 | 0.13 | 0.81 | -0.05 | -0.09 | -0.11 | -0.17 | 0.83 | 0.08 |
| PRCE4 | -0.13 | -0.37 | 0.23 | 0.61 | -0.08 | -0.11 | -0.11 | -0.20 | 0.76 | 0.16 |
| RISK1 | -0.11 | -0.17 | 0.86 | 0.1 | -0.15 | -0.08 | -0.07 | -0.13 | 0.07 | 0.78 |
| RISK2 | -0.22 | -0.19 | 0.81 | 0.18 | -0.15 | -0.07 | -0.16 | -0.16 | 0.14 | 0.77 |
| RISK3 | -0.15 | -0.2 | 0.86 | 0.13 | -0.17 | -0.10 | -0.07 | -0.07 | 0.11 | 0.83 |
| RISK4 | -0.08 | -0.18 | 0.80 | 0.05 | -0.10 | -0.16 | -0.03 | -0.06 | 0.08 | 0.68 |
| CONV1 |  |  |  |  | 0.21 | 0.85 | 0.18 | 0.21 | -0.07 | -0.13 |
| CONV2 |  |  |  |  | 0.21 | 0.87 | 0.19 | 0.24 | -0.08 | -0.13 |
| CONV3 |  |  |  |  | 0.24 | 0.76 | 0.23 | 0.31 | -0.08 | -0.13 |
| CONV4 |  |  |  |  | 0.21 | 0.83 | 0.18 | 0.20 | -0.08 | -0.15 |
| PLEA1 |  |  |  |  | 0.80 | 0.22 | 0.21 | 0.23 | -0.07 | -0.19 |
| PLEA2 |  |  |  |  | 0.87 | 0.22 | 0.17 | 0.19 | -0.09 | -0.19 |
| PLEA3 |  |  |  |  | 0.88 | 0.20 | 0.18 | 0.17 | -0.07 | -0.18 |
| PLEA4 |  |  |  |  | 0.86 | 0.22 | 0.19 | 0.19 | -0.09 | -0.19 |
| Total Eigen value | 3.53 | 3.3 | 3.16 | 2.6 | 3.50 | 3.42 | 3.38 | 2.99 | 2.91 | 2.76 |
| \% of <br> Variance | 22.08 | 20.61 | 19.72 | 16.23 | 14.58 | 14.24 | 14.07 | 12.47 | 12.11 | 11.51 |
| $\begin{array}{\|c\|} \hline \text { Cumulative } \\ \% \end{array}$ | 22.08 | 42.69 | 62.42 | 78.64 | 14.58 | 28.82 | 42.89 | 55.36 | 67.47 | 78.98 |

-PINT: Purchase Intention, PVAL: Perceived Value, PRCE: Perceived price, RISK: Perceived Risk, CONV: Convenience,
PLEA: Pleasure.

### 4.4.4. Confirmatory Factor Analysis

### 4.4.4.1. Unidimensionality test

We then conducted data analysis in accordance with a two-stage methodology (Anderson and Gerbing 1988) using LISREL. First, we checked for unidimensionality. Unidimensionality means that for each measurement item there should be one and only one underlying construct, i.e., the variance shared by items is not related to an unspecified latent variable. According to standard LISREL methodology, the measurement model was revised by dropping one at a time, items that shared a high degree of residual variance with other items (Gefen et al. 2000). The test results indicated that second item of perceived price (PRCE2) violate unidimensionality in case of both potential and repeat customers and dropping it would drop chi-square significantly. We, therefore, dropped PRCE2 for both potential and repeat customers Other items were not dropped as the error covariance between a pair of items resulted in a little change in chi-square ( $<20$ ), thus preventing overfitting. After dropping PRCE2, the CFA shows good fit for both potential and repeat customers as shown in Table 4-G.

Table 4-G: Fit Indices for Potential and Repeat Customers Measurement Models

| INDEX | LIMITS OF GOOD FIT (SOURCE) | POTENTIAL | REPEAT |
| :---: | :---: | :---: | :---: |
| Normed $\chi^{2}$ | $<3.00$ or $<5.00$ (Hair et al. 1998) | 1.94 | 3.03 |
| GFI | $>0.90$ (Hair et al. 1998) | 0.91 | 0.93 |
| AGFI | $>0.80$ (Hair et al. 1998) | 0.87 | 0.92 |
| NFI | $>0.90$ (Hair et al. 1998) | 0.97 | 0.98 |
| NNFI | $>0.90$ (Hair et al. 1998) | 0.98 | 0.98 |
| CFI | $>0.90$ (Hair et al. 1998) | 0.98 | 0.99 |
| RMSEA | $<0.08$ (Hair et al. 1998) | 0.066 | 0.05 |
| STD. RMR | $<0.05$ (Gefen et al. 2000) | 0.063 | 0.032 |

### 4.4.4.2. Convergent and discriminant validity tests

Second, we assessed the convergent validity and discriminant validity of the constructs. Convergent validity is the degree to which the items of a given construct measure the same underlying latent variable. Convergent validity was assessed using the following criteria: (a) Individual item lambda coefficients greater than 0.70 and each path loading should be greater than twice its standard error; (b) A significant t statistic for each path (significant standardized path loadings which are indicators of the degree of association between the underlying latent factor and each item) (Gefen et al. 2000); (c) The composite factor reliabilities (CR) for each construct should be greater than 0.7 ; (d) The average variance extracted (AVE) for each factor must exceed 50 percent (Fornell and Larcker 1981). As shown in Table 4-H, all standardized path coefficients (except PRCE1, PRCE4 in case of potential customers and PRCE1 and RISK4 in case of repeat customers) are greater than 0.7 . The individual path loadings are all greater than twice their standard error. The $t$-statistic is significant for all the items. The CR for each construct is greater than 0.7 , and the AVE for each construct is greater than 0.5 . Thus convergent validity is adequately established.

Table 4-H: Confirmatory Factor Analysis

|  | POTENTIAL CUSTOMERS |  |  |  |  | REPEAT CUSTOMERS |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ITEM | $\begin{array}{\|c\|} \hline \text { STD. } \\ \text { BETA } \end{array}$ | $\begin{gathered} \text { T- } \\ \text { VALUE } \end{gathered}$ | AVE | CR | ALPHA | $\begin{aligned} & \text { STD. } \\ & \text { BETA } \end{aligned}$ | $\begin{gathered} \text { T- } \\ \text { VALUE } \end{gathered}$ | AVE | CR | ALPHA |
| PINT1 | 0.87 | 16.10 | 0.82 | 0.95 | 0.95 | 0.88 | 31.50 | 0.76 | 0.93 | 0.92 |
| PINT2 | 0.93 | 17.96 |  |  |  | 0.92 | 33.83 |  |  |  |
| PINT3 | 0.92 | 17.53 |  |  |  | 0.90 | 32.81 |  |  |  |
| PINT4 | 0.90 | 17.11 |  |  |  | 0.76 | 25.21 |  |  |  |
| PVAL1 | 0.93 | 17.78 | 0.77 | 0.93 | 0.93 | 0.89 | 31.65 | 0.74 | 0.92 | 0.92 |
| PVAL2 | 0.86 | 15.58 |  |  |  | 0.87 | 30.92 |  |  |  |
| PVAL3 | 0.88 | 16.12 |  |  |  | 0.80 | 26.89 |  |  |  |
| PVAL4 | 0.85 | 15.36 |  |  |  | 0.89 | 31.85 |  |  |  |
| PRCE1 | 0.60 | 8.52 | 0.51 | 0.76 | 0.82 | 0.57 | 16.43 | 0.60 | 0.81 | 0.86 |


| PRCE3 | 0.85 | 12.23 |  |  |  | 0.88 | 27.32 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| PRCE4 | 0.68 | 9.71 |  |  |  | 0.84 | 25.91 |  |  |  |
| RISK1 | 0.82 | 14.37 | 0.69 | 0.90 | 0.89 | 0.72 | 22.14 | 0.54 | 0.82 | 0.81 |
| RISK2 | 0.87 | 15.86 |  |  |  | 0.80 | 25.28 |  |  |  |
| RISK3 | 0.90 | 16.59 |  |  |  | 0.83 | 26.67 |  |  |  |
| RISK4 | 0.71 | 11.65 |  |  |  | 0.57 | 16.45 |  |  |  |
| CONV1 | NA |  |  |  |  | 0.91 | 33.17 | 0.80 | 0.94 | 0.94 |
| CONV2 |  |  |  |  |  | 0.96 | 36.49 |  |  |  |
| CONV3 |  |  |  |  |  | 0.86 | 30.67 |  |  |  |
| CONV4 |  |  |  |  |  | 0.85 | 30.07 |  |  |  |
| PLEA1 |  |  | NA |  |  | 0.86 | 30.70 | 0.85 | 0.96 | 0.96 |
| PLEA2 |  |  |  |  | 0.93 | 35.01 |  |  |  |
| PLEA3 |  |  |  |  | 0.95 | 35.94 |  |  |  |
| PLEA4 |  |  |  |  | 0.94 | 35.76 |  |  |  |

-PINT: Purchase Intention, PVAL: Perceived Value, PRCE: Perceived price, RISK: Perceived Risk, CONV: Convenience, PLEA: Pleasure

Discriminant validity is the degree to which the measures of two constructs are empirically distinct. Discriminant validity is established when the inter-correlations among the variables are less than 0.6 (Carlson et al. 2000). All inter-correlations (Table 4-I) between the latent variables were below 0.6 except between purchase intention and perceived value ( 0.66 ) for potential customers and convenience and perceived value ( 0.64 ) for repeat customers. These inter-correlations were tested for discriminant validity by conducting pair-wise constrained test as suggested by McKnight et al. (2002). The steps in conducting pair-wise constrained test are: (a) Setting the correlation between one pair of latent variables to unity (1.0) and running the model again; (b) A $\chi^{2}$ difference test is used to compare the results from the constrained and original models (Anderson and Gerbing 1988). Discriminant validity is evidenced if the $\chi^{2}$ difference is significant (supporting the original model). The $\chi 2$ difference test revealed a significant difference between purchase intention and perceived value for potential customers $\left(\Delta \chi^{2}=625.93, \Delta \mathrm{df}=1, \mathrm{p}\right.$-value $\left.=0.000\right)$ and between convenience and perceived value $\left(\Delta \chi^{2}=2005.68, \Delta \mathrm{df}=1, \mathrm{p}\right.$-value $\left.=0.000\right)$ for repeat customers. This means the original model represents a better fit. Thus, the
discriminant validity among the constructs is established. Discriminant validity is also established if the square root of a construct's AVE is larger than its correlations with any other construct. As shown in the Table 4-I, the square root of a construct's AVE (along the diagonal) was greater than its correlation with any other construct thus demonstrating discriminant validity.

Table 4-I: Correlations between Latent Variables

| Group | ITEMS | Mean (SD) | PINT | PVAL | PRCE | RISK | CONV | PLEA |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Potential Customers | PINT | 5.72 (1.32) | 0.91 |  |  |  | NA | NA |
|  | PVAL | 5.51 (1.19) | 0.66 | 0.88 |  |  |  |  |
|  | PRCE | 3.65 (1.37) | -0.31 | -0.35 | 0.71 |  |  |  |
|  | RISK | 2.81 (1.24) | -0.41 | -0.53 | 0.39 | 0.83 |  |  |
| Repeat Customers | PINT | 5.99 (1.03) | 0.87 |  |  |  |  |  |
|  | PVAL | 5.58 (1.07) | 0.57 | 0.86 |  |  |  |  |
|  | PRCE | 3.41 (1.21) | -0.29 | -0.34 | 0.77 |  |  |  |
|  | RISK | 2.41 (1.01) | -0.3 | -0.4 | 0.29 | 0.73 |  |  |
|  | CONV | 5.60 (1.14) | 0.49 | 0.64 | -0.25 | -0.36 | 0.89 |  |
|  | PLEA | 5.50 (1.15) | 0.47 | 0.57 | -0.24 | -0.43 | 0.55 | 0.92 |

Note: The diagonal line shows the square root of AVE of each construct.
-PINT: Purchase Intention, PVAL: Perceived Value, PRCE: Perceived price, RISK: Perceived Risk, CONV: Convenience, PLEA: Pleasure.

### 4.4.5. Test for Common Method Variance

Since in this study the data were collected from a single source at a single point in time, common method variance may potentially affect the results. Therefore, we check for common method variance. Method variance refers to variance that is attributable to the measurement method rather than the construct of interest (Podsakoff et al. 2003). In order to examine whether common method variance is a serious issue or not in our research, we performed three widely used tests, namely Harman's single factor test (Podsakoff and Organ 1986), Widaman (1985) nested models test, and Bentler and Bonnet test (Song and Zahedi 2005). The details of the common method variance analysis are shown in Appendix B. The three tests allude to
the possibility of common method variance. Therefore, in the next step we proceed to estimate the effect of common method variance and if required control it statistically.

In this step we compare two models, namely, one without common method factor (without CMF) and the other with common method factor (with CMF). The two estimations are shown in Appendix B (Model 5 and 6). Existence of common method variance does not necessarily imply the existence of common method bias (Doty and Glick 1998). Common method bias influences the correlations between the latent variables. Therefore, by using the latent correlations obtained from Model 4 (Appendix B: Table A1-B) instead of those obtained from Model 2 (Appendix B: Table A1-B), we can ascertain the magnitude of common method bias and its influence on statistical path estimation. Thus, in the first path estimation (Appendix B: Model 5 and 6) we used latent correlations as data from Model 2 (Appendix B: Table A1-B), and in the second path estimation (Appendix B: Model 5 and 6) we used latent correlations as data from Model 4 (Appendix B: Table A1-B). The results from second path estimation are thus statistically controlled for common method bias. We found that the common method variance reduces $\mathrm{R}^{2}$ (Potential customers: $45 \%$ to $36 \%$; Repeat customers: $42 \%$ to $28 \%$ ) However, there is no major effect on the relationships except that common method bias usually weakens the strength of the relationships as expected. The parameter values of the significant paths in the two models for both potential customer and repeat customer groups are also quite similar. However, in case of potential customers, the relationship between perceived risk and purchase intention is different between the two models (With CMF and Without CMF). To test whether this difference is significant we conducted the between group constrained test using LISREL. We combined the two models (with CMF and without CMF) in one file which served as the base model. In the constrained model, we
constrained the relationship between perceived risk and purchase intention across the two models. We found that the difference in the relationship between perceived risk and purchase intention across the two models was insignificant $\left(\Delta \chi^{2}=0.60, \Delta \mathrm{df}=1\right.$, p -value $=0.438$ ). Therefore, we can conclude that although method factor influences $R^{2}$, it doesn't have significant influence on the relationships. Therefore we continue with original path estimation.

### 4.4.6. Hypothesis Testing

We examined the structural models for potential and repeat customer groups using LISREL. First, we checked the model fit indices. The structural models for both potential customers $\left(\right.$ Normed $\chi^{2}=1.94, \mathrm{GFI}=0.91, \mathrm{AGFI}=0.87, \mathrm{NNFI}=0.98, \mathrm{NFI}=$ $0.97, \mathrm{CFI}=0.98, \mathrm{RMSEA}=0.066, \mathrm{Std} . \mathrm{RMR}=0.063)$ and repeat customers had excellent fit indices (Normed $\chi^{2}=3.03, \mathrm{GFI}=0.93, \mathrm{AGFI}=0.92, \mathrm{NNFI}=0.99, \mathrm{NFI}=$ $0.98, \mathrm{CFI}=0.99$, RMSEA $=0.050, \mathrm{Std} . \mathrm{RMR}=0.032$ ).

ns = not significant; *: $p<0.05$; **: $p<0.01$; ***: $p<0.001$
Potential Customers: Normed $\chi 2=1.94$, RMSEA $=0.066$, RMR $=0.063$, NFI $=0.97$, NNFI $=0.98, \mathrm{CFI}=0.98$, GFI $=0.91$, AGFI $=0.87$ Repeat Customers: Normed $\chi 2=3.03$, RMSEA $=0.050$, $\mathrm{RMR}=0.032$, $\mathrm{NFI}=0.98$, $\mathrm{NNFI}=0.99$, $\mathrm{CFI}=0.99$, GFI $=0.93$, AGFI $=0.92$

Figure 4-B: Structural Models for Potential and Repeat Customers

As the model fit indices are good, the standardized path coefficients can be used for testing the hypotheses. Figure 4-B shows the standardized LISREL path coefficients. For potential customers, perceived price and perceived risk significantly influence perceived value and explain $31 \%$ of total variance. Purchase intention is only influenced by perceived value, which explains $45 \%$ of total variance. For repeat customers, perceived price, perceived risk, convenience and pleasure significantly influence perceived value and explain $57 \%$ of variance. Also, convenience, pleasure, perceived price and perceived value are significant antecedents of purchase intention and explain $42 \%$ of variance. Thus, Hypotheses 1, 2, 4, 6, 7, 8, and 9 are supported. H3 is supported only for repeat customers. H5 is not supported.

### 4.5. DISCUSSION AND IMPLICATIONS

### 4.5.1. Discussion of Findings

The objective of this study was to examine online (potential and repeat) customer purchase decision-calculus from the prospect theory and mental accounting theory perspective. First, we identified the factors that influence potential and repeat customer value perceptions of Internet shopping based on mental accounting theory. The difference in monetary (financial) terms of deals across online stores influence customers transaction utility, and hence total perceived value. From the monetary perspective, we hypothesized perceived price as an important predictor of customer perceived value. Based on previous research, we also proposed that apart from monetary perspective, there might be various non-monetary factors that would influence online customers value perceptions. From the non-monetary (risk and uncertainty) perspective, we identified perceived risk as an important predictor of online customers purchase decision-calculus. For repeat customers we also identified
convenience from the non-monetary (time and effort savings) perspective as an important predictor of their value perception of purchase decision-calculus. Furthermore, in case of repeat customers, we also hypothesized pleasure as influencing customer value perception as often customers are motivated to make purchase decisions based on intrinsic factors. The results of this study confirmed perceived price and perceived risk as important factors that influence value perception of purchase decision-making in case of potential customers and perceived price, perceived risk, convenience and pleasure as important factors that influence value perception of purchase decision-making in case of repeat customers.

Secondly, we examined how potential and repeat customers' value perceptions and other relevant factors influence their decisions to purchase from an Internet vendor. In case of potential customers, we found that only perceived value had a significant influence on their purchase intention. This implies that potential customers adopt integrated evaluation of attributes in their decision-making. However, in case of repeat customers, value perception, as well as, the attributes of transaction utility of Internet shopping (namely convenience, pleasure, and perceived price) had a significant positive influence on customer intention to purchase from the Internet vendor. This means that apart from integrated evaluation of attributes through perceived value, repeat customers also take into account individual determinants of value (perceived price, convenience and pleasure) through segregated evaluation, in making purchase decisions from an Internet vendor.

However, this result must be confirmed across various online stores in other countries as the Korean context may well bias the results. We suspect that in case of potential customers, these results may be very well justified as potential customers do face risk in conducting transactions with online stores except when it is an established
and reputed online store (e.g., BarnesandNoble.com and Amazon.com). However, in case of repeat customers, there may be some difference in these results. For example, if a repeat customer's purchase experience is un-pleasurable, then he/she may again adopt integrated evaluation if he decides to purchase again with the online store. Such a case would be most likely in the first few purchases with the online store. Particularly, Korean online stores, which are made with rich graphics and cool downloads, could be very exciting and pleasurable for young people. Whereas, many other online stores are not as cool in design as high speed access to Internet is not available everywhere. Therefore, customer shopping pleasure may be low for such online stores.

Compared to many previous studies our studies indicate a substantial improvement in the overall explanation of variance for both potential customers $(45 \%)$ and repeat customers ( $42 \%$ ). Chen and Dubinsky (2003) proposed a valuebased model for online customers and their model could explain $24 \%$ for variance in purchase intention. They did not differentiate between potential and repeat customers. Gefen et al. (2003) extended TAM to include trust for examining potential and repeat customer purchase intention and their model could explain $27 \%$ and $22 \%$ of variance in purchase intention for potential and repeat customers respectively. Pavlou (2003) also extended TAM to include trust, but did not differentiate between potential and repeat customers. Rather Pavlou (2003) conducted two studies, one for students and the other for actual customers. Pavlou's model could explain $64 \%$ and $56 \%$ of variance in purchase intention for student and actual customers respectively, which is better than our model. However, Pavlou's (2003) model doesn't differentiate between potential and repeat customers and therefore, it is difficult to generalize the results without further investigation.

Perceived risk, however, did not have a significant influence on purchase intention for both potential and repeat customers. Previous studies (e.g., Hoffman et al. 1999, Jarvenpaa and Todd 1997, Pavlou 2003) indicate that perceived risk is a major barrier to Internet transactions. This apparent contradiction may be because the potential customers in our study had prior Internet shopping experience from other online stores and repeat customers have already purchased from the same online store, which would alleviate their concerns about risk and uncertainty (Perceived Risk: Mean $=2.41, \mathrm{SD}=1.01)$ in shopping from the online vendor. Moreover, since the online bookstore is located in Korea, where a large number of people purchase online, the risk in online shopping might not be very significant. Looking beyond the role of Internet experience, the results of this study show that the effect of perceived risk on purchase intention is fully mediated by perceived value, for both potential customers and repeat customers. Thus, this study extends the finding of previous studies (Jarvenpaa and Todd 1997) by showing that perceived risk influences potential and repeat customer purchase intention indirectly through perceived value.

Perceived price did not have a significant influence on purchase intention for potential customers. This is in conflict with Reibstein's (2002) findings, who reported price as a dominating factor for attracting potential customers. Urbany et al. (1997) also suggested that the effect of price on customer purchase intention is significant only when the customers are more certain about what they are getting. As potential customers do not have full information about the service provided by any specific online vendor, the effect of price on purchase intention would be insignificant. According to information processing theory of customer choice, potential customer do not have sufficient ability to analyze price information in depth, since they lack any direct purchase experience with the Internet vendor. Therefore, they may not be able
to decide whether the price they have to pay is high or low for the service provided by the online vendor. Because of this lack of information, potential customers would be unable to make any price-based choice and rather go for an overall evaluation (such as overall value).

### 4.5.2. Post Hoc-Analysis: Evidence for Segregation and Integration

To examine the influence of segregation and integration effects in potential customers and repeat customers purchase decision-making, we further analyzed the data for potential customers and repeat customers using SPSS. We examined the combined and separate influence of the attributes (perceived price, perceived risk, convenience and pleasure) and evaluation (perceived price) on purchase intention. The results are shown in the Table 4-J. We can infer from Table 4-J that in case of potential customers, the influence of evaluation alone on purchase intention is almost as much as the combined influence of attributes and evaluation. This implies that potential customers make their purchases based on integrated evaluation (through perceived value) of attributes. In case of repeat customers, however, the influence of attributes alone is almost as much as the influence of evaluation alone. This implies that repeat customers make their purchases based on integrated and segregated evaluation.

Table 4-J: Variance Portioning Between Integrated and Segregated Evaluation

|  | POTENTIAL ( $\mathbf{R}^{2}$ PINT) | REPEAT (R ${ }^{2}$ PINT) |
| :---: | :---: | :---: |
| Attributes alone | $\mathbf{1 6 . 6 \%}$ | $\mathbf{3 2 . 6 \%}$ |
| Evaluation alone | $\mathbf{3 8 . 4 \%}$ | $\mathbf{3 2 . 2 \%}$ |
| Both attributes and evaluation | $\mathbf{3 9 . 5 \%}$ | $\mathbf{3 8 . 0 \%}$ |

Note: In case of potential customers attributes refer to perceived price and perceived risk only; PINT: Purchase Intention

### 4.5.3. Limitations and Future Research

The results of this study must be interpreted in the context of its limitations. First, the data for this study was collected from the customers of a single Internet bookstore. It would be useful to replicate this study over a variety of Internet vendors so that the robustness of the results can be established. The generalizability of this study may be affected by the type of products sold online. Lynch et al. (2001) classifies products sold online into low-touch and high-touch products. Books belong to low-touch products as they are fairly standard in quality. There are many other products which belong to low-touch category such as music, software and videos (Appendix C). The results of this study would also be applicable to these low-touch products as the product quality is same across online stores for these low-touch items. However, for high-touch products (such as flowers, and watches), which vary greatly in quality, the results may be different as acquisition utility of purchasing online should also be measured. Future studies can therefore, replicate this study over various online vendors and across various products, especially those which vary greatly in quality, to establish generalizability for low-touch products and improve upon the research model for high-touch products.

Secondly, the data was collected via an online survey for a period of 10 days. It is useful to assess the robustness of the results at other times of the year to account for seasonal variations, if any, in terms of the types of customers who visit the website of an Internet bookstore. The seasonal variation may affect the results, as many customers in Korea give books as gifts during festive occasions. As during the survey period there were no festive occasions, we could not capture any variation that may occur due to such occasions.

Thirdly, the data was collected from a Korean online bookstore and therefore, the cultural effects may hinder generalizability of the results of current study to other cultures. In Korea, purchasing online is quite common. However, in cultures, where adoption of Internet for shopping is still in nascent stage (such as Singapore, India, China) we believe that customers would perceive greater risks in purchasing online. Particularly, the KIASU syndrome among Singaporeans may prevent wide adoption of Internet shopping and they may perceive higher risks in purchasing from an online store. Moreover, in big Asian countries (like India and China), it is more convenient to purchase (especially routine goods such as grocery and books) directly from offline vendors as delivery from online store may take time. The results of this study therefore, need to be cross-validated across different cultures.

Moreover, conducing the study in a Korean online bookstore help us to keep the quality (and hence acquisition utility) consistent across the online bookstores. Korean online bookstores would carry many Korean titles thus differentiating them with other online bookstores. Therefore, the competition would be between local Korean online bookstores which carry only new titles and hence the acquisition utility would be the same.

Fourthly, we considered only transaction utility and total utility in examining customer purchase decision-calculus. This is partly justified as the product we studied in this research is fairly standard in quality. However, the influence of acquisition utility may be important for products that vary greatly in quality. Future studies may extend the research model by including components of acquisition utility for examining customer purchase decision-making for products that vary greatly in quality.

Lastly, since the questions of all constructs in this study were collected at the same point in time and via the same instrument, the potential for common method bias variance exists. However, we have taken a number of steps to reduce the common method bias, including instrument design and validation per Bourdreau et al. (2001) and following the recommendations of Podsakoff et al. (2003).

### 4.5.4. Implications for Theory and Practice

This study has several implications for theory. First we applied the concept of value for studying purchase decision-calculus of online (potential and repeat) customers. Although the concept of value is an evolving, complex, and multidimensional one, and varies from discipline to discipline, it is fundamentally seen as net gains (total benefits received less total costs incurred) (Zeithaml 1988) from a transaction. While, many studies in traditional context have used the concept of value (either price/quality or cost/benefit) for studying customer behavior, there is a stark absence of value in IS literature, with a few noted exceptions (e.g., Chen and Dubinsky 2003). In IS literature, most of the studies (e.g., Gefen et al. 2003) examine customer behavior from technology adoption perspective, which has limitations as adoption is different from purchase decision-making. Moreover, traditional studies using the concept of value do not consider the role of risk and uncertainty which influence customer judgment and decision-making in Internet shopping. Therefore, in this study, we extended the concept of value to Internet shopping based on the theoretical foundation provided by prospect theory and mental accounting theory. As Internet shopping is characterized by risks and uncertainty, mental accounting theory provides a proper theoretical foundation for identifying the factors that influence online customer perceived value of purchase decision. Furthermore mental accounting theory models
actual customer behavior rather than rational/optimal customer behavior. As customers deviate from rational behavior in Internet shopping because of risk and uncertainty, mental accounting theory is appropriate for explaining online customer purchase decision-calculus.

Secondly, we identified the factors other than price which influence online customer purchase decision-calculus. The orientation towards price in prior studies is a result of limited understanding of how customer utility is formed. Particularly, EUT emphasizes price as the sole factor that influence customer choice and decisionmaking. Many studies focus either on price (e.g., Dodds et al. 1991) or risk (e.g., Jarvenpaa and Todd 1997) as influencing customer shopping behavior on the Internet. Mental accounting theory, also, primarily considers monetary (financial) terms for decision-making. However, in practice, factors other than price may also influence customers' transaction utility as customers do not always purchase from stores with the lowest prices (Smith and Brynjolfsson 2001). Based on previous research, we proposed non-monetary factors (perceived risk for potential customers; perceived risk, convenience, and pleasure for repeat customers) that could influence customer value perception, and found all of them to be significant predictors of perceived value of Internet shopping for potential customer and repeat customer. Also, we found that apart from perceived price, these non-monetary factors (except perceived risk) also influence repeat customer purchase intention.

Thirdly, this research provides empirical support for the concept of transaction utility. One of the important issues is of customers' preference towards certain online stores over others when the ultimate consumption utility derived from product consumption across various online stores is the same. Mental accounting theory helps address this issue. It is because the perceived merits of the deal or transaction utility
of Internet shopping differs across stores. We found empirical support for the influence of components of transaction utility on perceived value of Internet shopping. The role of transaction utility has not been considered in most studies (e.g., Chen and Dubinsky 2003, Sweeney and Soutar 2001), where the focus is the role of value in customer choice and decision-making.

Lastly, we examined the role of affect in repeat customer value perceptions and Internet shopping behavior. We used pleasure to represent intrinsic (hedonic) motivation as it has been identified as representing a wide variety of emotions (Oliver 1997). Prior studies have argued for the importance of affect on online customer value perception (e.g., Sweeney and Soutar 2001) and decision-making (e.g., Havlena and Holbrook 1986). Affect is important because even a website with seemingly high prices may be perceived to be of greater value because of the emotions a customer attaches to it. This study thus contributes by identifying the significant role of affect in value perception and shopping behavior of repeat customers in the Internet context.

There are also several implications for practice. First, this research indicates that online vendors should differentiate themselves from other online stores on price, risk, convenience and pleasure. The differentiation will enhance customers' transaction utility of purchasing from the current online store. As customers differentiate across stores based on transaction utility of purchasing from the online store, differentiation across the components of transaction utility will increase the possibility of sales from the online store.

Secondly, this research facilitates the efforts of Internet vendors in developing strategies for enhancing online sales. Recent studies have noted that Internet vendors' preoccupation with price reduction as a strategy would lower profitability. For an alternative, the results of this study suggest that Internet vendors could benefit by
offering superior value to customers. This study thus affirms earlier suggestions that value, as perceived by customers in conducting transactions with an Internet vendor, is the source of the vendor's competitive advantage (Woodruff 1997). Hence, it is definitely worthwhile for Internet vendors to invest in efforts to enhance the value of Internet transactions as perceived by their customers.

To enhance customers' perceived value, this study shows that Internet vendors should make Internet shopping convenient, pleasurable, risk-free and affordable for online customers. For reducing risk perception, online vendors can provide live chat facility. This would also enhance customer convenience as customers can clarify their concerns directly with a customer representative. Risk can also be reduced by listing the website as one among the top online vendors with reputed search engines such as Yahoo, Google etc. This increases the credibility of the online store. Online vendors can also reduce customer risk perception by providing testimonials about the product purchased from the online store.

For increasing purchase convenience, online vendors can offer express delivery, convenient payment option (such as pre-paid cards, debit cards, cash-on delivery), and convenient search options (such as 'mylist' for frequently purchased items). Online vendors can also ensure that the returns are easy. They can ally with nearby offline stores for easy returns to the online store. Online vendors can also offer various delivery options to suit customer's time and other requirements. For assisting customers in their purchases, online vendors can provide more detailed information about the product. Amazon.com for example, provides testimonials from various customers about the product to assist customer in purchases.

An Internet vendor should also provide customers with pleasurable or satisfactory transaction experiences to increase the mitigating effect of pleasure.

Indeed, emotion marketing advocates (Robinette 2001) posit that emotion wins customer loyalty. In line with that observation, Internet vendors may pursue a number of options since customer pleasure may arise from a variety of factors such as content, service, and customization. For increasing pleasure of purchasing online, online vendors can provide virtual models (in case of apparels), so that customers can customize garments according to their size and fit. Landsend.com for example provides facility for its customers to customize garments according to their size. Online vendors can also increase tele-presence by providing 3D views of products to enhance customer pleasure of shopping on Internet.

Online vendors should also provide various value-added services, which enhance customer perceived value of shopping on Internet. Amazon.com, for example, provides customer reviews on books and products so that customers can evaluate them better. Moreover, it allows customers to view excerpts from the books so that customers can make informed purchase decisions. Amazon.com also provides a number of value-oriented services such as same-day delivery in select cities, and favorable payment options - all of which enhance customers' perceived value of shopping from the Internet store. Online vendors can also provide free covering or binding of the book or bundle the book with some interesting story book, so as to enhance customer perceived value of shopping with their store. To add value to their offerings online vendors can provide a platform where the customers can post their queries not only to the online vendors but to the other members also and seek their valuable guidance. This would also enhance the image of the online vendor.

## 5. COMPARISON OF ONLINE PURCHASE DECISIONCACLULUS BETWEEN POTENTIAL AND REPEAT CUSTOMERS

### 5.1. OVERVIEW OF THIS STUDY

In the first study, we found that potential and repeat customers differ from each other in their decision making. While potential customers primarily make purchase decision based on an integrated evaluation of all attributes, repeat customers make purchase decision based on integrated and segregated evaluation of the attributes. Therefore, the online vendors should differentiate between potential customers and repeat customers. The question then arises is, in what specific ways can online vendors differentiate between potential customers and repeat customers. In this study, we aim to examine the specific differences in online purchase decision-calculus between potential and repeat customers. Specifically, in this study, we compare the valueperceptions and purchase decision-calculus of potential customers and repeat customers from the information processing theory perspective.

### 5.2. THEORETICAL BACKGROUND

We classify customers who visit an Internet store into potential customers and repeat customers depending on their transaction experience with the store. Potential customers are those who may have browsed the web site of the store but have not yet purchased from the store. Repeat customers are those who have purchased from the online store at least once. The differences between potential customers and repeat customers can be discussed from the perspective of prospect theory and from the perspective of information processing theory of customer choice. Prospect theory
deals with the influence of individual attributes on purchase decision and information processing theory deals with the manner in which a repeat customer processes available information.

### 5.2.1. Prospect Theory Perspective

Compared to potential customers, repeat customers usually perceive a higher level of certainty in conducting transactions with a vendor because of direct transaction experience with the vendor. According to prospect theory (Kahneman and Tversky 1979), certainty in transaction with a vendor increases the aversion to losses and the desirability of gains from the transaction. Thus, the repeat customers would attempt to achieve more gains (i.e., monetary saving) from a transaction with the same vendor as compared to potential customers. In addition, loss aversion under condition of greater certainty gives rise to status-quo bias (Tversky and Kahneman 1991). Status-quo bias refers to favoring of retention of the status-quo over other options. Repeat customers, therefore, would be less willing to change from the transaction relationship with the current vendor and favor retention of status-quo in their decision-calculus, as transaction experience (no. of purchases) accumulates and certainty in transactions with the vendor increases.

In contrast, perceptions of uncertainty and risk are higher for potential customers than for repeat customers. Lambert (1972) reported that customers tend to go for higher price options when they experience uncertainty in conducting transactions with a vendor. In particular, when customers do not have enough quality information, they may select high price options by interpreting price as a quality signal (Lichtenstein et al. 1993). In addition, potential customers who perceive high uncertainty and risk may place more importance on gaining control in the transaction,
allowing prospects of control rather than of gains (i.e., monetary saving) to determine their behavior (Koller 1988), which confirms the risk aversion behavior as highlighted by prospect theory.

### 5.2.2. Information Processing Theory Perspective

As customers gain experience, they differ from each other in terms of the type of processing, type of information processed, and the amount of information processed for decision-making (Bettman 1979, Bettman and Park 1980, Howard and Sheth 1969). Consequently, prior experience with the product/service affects customers' decision processes (see Table 2-E). Information processing theory of customer choice (Bettman 1979) and subsequent empirical studies (e.g., Alba and Hutchinson 1987, Bettman 1986) have discussed the effects of prior knowledge and experience on customer choice and decision over three activities: information analysis, evaluation, and information storage in memory. The effect of prior knowledge and experience is discussed briefly in the following sub-sections.

First, regarding analysis of available information by customers, prior knowledge and experience increases the likelihood of analytical processing in general (Alba and Hutchinson 1987). With increased analytic processing a customer becomes more selective in information search and deeper in analysis of the available information. Repeat customers are better equipped to understand the meaning of transaction information as they have highly developed conceptual structures (such as beliefs and evaluation) through transaction experience with the vendor (Alba and Hutchinson 1987). In contrast, potential customers are inferior in comprehending and evaluating information and attributes of Internet shopping as compared to repeat customers because they do not have any transaction experience with the vendor.

Therefore, repeat customers can be more selective in information processing by focusing on relevant and important information as compared to potential customers.

Second, regarding evaluative processing, customers use either category processing approach or attribute processing approach depending upon their knowledge about shopping object and its category (Fiske 1982). In attribute processing approach, customers review the available information, evaluate each piece of information and through some attribute integration process arrive at a final judgment (Sujan 1985). In category processing approach, customers use previous evaluations stored in memory, previous attitudes about similar category of shopping objects, or overall impressions of the shopping object (Sujan 1985). Potential customers have a rudimentary knowledge structure regarding the shopping object. While, they may have some previous experience with the product, they lack experience of the service provided by the Internet vendor. Due to this rudimentary knowledge structure, potential customers prefer simplistic criteria in making judgment and choice than to process available information (Bettman and Park 1980) and thus tend to process information using category processing approach (Sujan 1985). In contrast, repeat customers have a deeper understanding of the attributes of shopping object in relation to their choice, which makes them selective in information processing and decision-making, thus reducing cognitive effort in decision-making. Therefore, they may use attribute processing approach in their choice decisions.

Third, regarding information storage in memory, prior experience and knowledge may also be relevant to a judgment. As customers have transaction experiences with the Internet vendor, their experiences and knowledge are accumulated in their memory. In case of repeat customers, the amount of information recalled depends upon the task for which the information is recalled (Bettman 1986).

When the task is regarding evaluating a shopping object, repeat customers recall most of the information needed for evaluation. When the task is to make a choice, they recall only the information relevant to decision-making (Johnson and Russo 1981). In contrast, potential customers rely on the available information or the information they obtain from external sources because of lack of purchase experience (Alba and Hutchinson 1987).

### 5.3. RESEARCH MODEL AND HYPOTHESIS

We do not consider convenience and pleasure for comparison between potential and repeat customers as potential customers do not have any direct information or experience about convenience and pleasure of purchasing from the online vendor. The research model (for both potential customers and repeat customers) for comparison hypotheses is shown in Figure 5-A.


Figure 5-A: Research Model for Study 2

Potential customers face considerable uncertainty in purchasing from an online vendor due to lack of transaction experience with the vendor. Under conditions of uncertainty, customers tend to be risk averse when making decisions as explained by prospect theory (Kahneman and Tversky 1979). That is, customers who perceive a relatively high level of uncertainty would put more weight on an option with certain
but lower benefits than an option with uncertain but higher benefits (e.g., monetary gain) in their value assessment to minimize loss in their transactions. In line with the risk aversion perspective in value assessment, potential customers may place more importance on gaining control rather than monetary savings in the transaction to minimize loss (Koller 1998). Since perceived price is a reflection of monetary gain in transactions (Dodds et al. 1991) and perceived risk is a reflection of uncertainty and loss (Mowen 1992), potential customers would put more weight on perceived risk than perceived price in their value assessment. Hence, we hypothesize:

H10: Perceived risk has a stronger effect than perceived price on perceived value for potential customers of an Internet store.

Conversely, repeat customers have enough information about the vendor because of direct transaction experience with the vendor. With direct transaction experience, they would tend to perceive a lower level of risk, and correspondingly, a higher level of certainty in transactions with the vendor. According to prospect theory (Kahneman and Tversky 1979), increased certainty in transaction with a vendor increases the desirability of gain (e.g., monetary gain) from the transaction. That is, customers who perceive a higher level of certainty would put more weight on an option with higher benefit than an option with lower benefit in their value assessment to maximize gain in their transactions. Thus, the repeat customers of an Internet vendor would put more weight on perceived price than perceived risk in their value assessment. Hence, we hypothesize:

H11: Perceived price has a stronger effect than perceived risk on perceived value for repeat customers of the same Internet vendor.

The impact of perceived price on purchase intention (H3) may also differ for potential customers and repeat customers of an Internet vendor. Under uncertainty, potential customers would put more weight on minimizing loss from transactions with the vendor. In addition, price can take the role of quality signal, especially in situations where customers do not have enough information about quality (e.g., vendor service quality) (Dodds et al. 1991, Zeithaml 1988). In contrast to the maximization of gain (e.g., monetary gain), customers are even likely to choose high price options when they are concerned about undesirable consequences of transactions (Lambert 1972). As the level of certainty increases, however, the desirability of gain from the transactions increases according to prospect theory. Repeat customers put more weight on enhancing gain in their online purchases from the online vendor as the perceived level of certainty increases. Therefore, as a reflection of monetary gain, perceived price would thus affect purchase intention more strongly for repeat customers than for potential customers of a particular Internet vendor.

Information processing theory also explains the different impact of perceived price on purchase intention between potential customers and repeat customers of an Internet vendor. As customers gain more transaction experience with an Internet vendor, they become more selective in information analysis and processing when shopping with the vendor being focused on relevant and important information. For repeat customers, monetary gain is of greater concern because they perceive a higher level of certainty in transactions with the vendor. Repeat customers are therefore able to process price information to a greater depth in their decision-making compared to potential customers. Therefore, the impact of perceived price on purchase intention may be stronger for repeat customers than for potential customers. Hence, we hypothesize:

H12: Perceived price has a stronger negative effect on purchase intention for repeat customers that than that for potential customers of the same Internet vendor.

The impact of perceived risk on purchase intention (H5) may differ for potential customers and repeat customers of an Internet vendor. Through learning effect (Michell and Prince 1993), direct transaction experience with the vendor allows customers to build up the perception that they have some control over the transaction environment. Based on such perception of control and the higher level of certainty, repeat customers would put more weight on enhancing gain in their transactions with the online vendor and lesser weight on uncertainty and risk. In a risky and uncertain transaction environment (as is the case with potential customers), however, the ability to control becomes more important in determining customer behavior (Koller 1988) as a way to minimize loss resulting from uncertainty and risk. A high level of risk and uncertainty implies low level of control on transactions for customers. Therefore, potential customers would put more weight on risk perception in their transactions.

Information processing theory also explains the different impact of perceived risk on purchase intention between potential customers and repeat customers of an Internet vendor. As experience with the Internet vendor increases, customers become more selective in information processing when shopping with the vendor, focusing on important information and disregarding less relevant information. For repeat customers, the relevancy of risk perception for online purchase behavior reduces as certainty increases. In contrast, risk is of greater concern for potential customers. Perceived risk would thus affect purchase intention more strongly for potential customers than for repeat customers of an Internet vendor. Hence, we hypothesize:

H13: Perceived risk has a stronger negative effect on purchase intention for potential customers than for repeat customers of the same Internet vendor.

The magnitude of the impact of perceived value on purchase intention (H1) may differ for potential customers and repeat customers of an Internet vendor. For explaining this difference we refer to attitude-behavior consistency (Fazio 1990). Perceived value in our research plays a similar role as attitude in predicting intentions. Here, perceived value is an individual's evaluation of the attributes of purchase, which is similar to attitude defined as a summary evaluation of the psychological object based on its attributes (Ajzen 2001). Therefore, attitude-behavior consistency theory should be applicable for explaining the differences in the relationship between perceived value and purchase intention between potential and repeat customers.

Attitude-behavior consistency theory discusses about the predictive power of attitude toward behavior over different moderating variables. Fazio and Zanna (1981) have repeatedly demonstrated that attitudes formed through direct experience with attitude objects predict behavior better than attitudes formed through indirect experience with attitude objects. Direct experience with an attitude object produces stronger attitude-evaluation associations than indirect experience, i.e., attitudes that are both better defined and are held with greater certainty and confidence (e.g. Fazio et al. 1989, Fazio and Zanna 1978). Moreover, stronger attitudes have greater predictive power because they are more accessible from memory (Fazio 1990, Fazio et al. 1982) making them more likely to be evoked when the object is presented and more likely to influence behavior (Fazio et al. 1989, Fazio et al. 1986). The attitude object in our case is the online store. With direct experience (i.e., repeat customers), customer would form value which would be held with greater certainty and
confidence as compared to customers with indirect experience (i.e., potential customers). Therefore, the influence of value on purchase intention should reduce for repeat customers as compared to potential customers. Hence, we hypothesize:

H14: Perceived value has a stronger positive effect on purchase intention for repeat customers than that for potential customers of the same Internet vendor.

### 5.4. DATA ANALYSIS AND RESULTS

To examine the different effects of the same antecedents (perceived price, perceived risk, and perceived value) on purchase intention between the two customer groups, the research model for repeat customers was revised by removing convenience and pleasure (Figure 5-A). First we established measurement invariance of the factorial structure across potential customer and repeat customer groups. We then conducted the analysis using two-stage methodology (Anderson and Gerbing 1988) using LISREL to examine the structural models based on cleansed measurement models for potential and repeat customers.

### 5.4.1. Establishing Measurement Invariance for Multi-group Comparison

 Multi-group comparison, whereby two or more groups are compared, requires that the measurement instrument is invariant across the two groups (Byrne 1998, Byrne and Watkins 2003, Carte et al. 2003, Reise et al. 1993, Van de Vijver and Leung 1997, Widaman and Reise 1997). Meaningful comparisons of statistics such as means and regression coefficients can only be made if the measures are comparable across different groups. Most applications also assume that the groups are independent. Examples of groups on which comparisons are commonly made include gender, age,ethnicity, culture, and experimental versus control groups. The two groups may be independent of each other (e.g., measuring across different countries) or may not be independent of each other (e.g., two administrations of a single measure of the same sample at different points of time). Since, we are measuring potential and repeat customers, we consider the two groups as independent of each other.

Measurement invariance involves testing the equivalence of measured constructs in two or more independent groups to assure that the same constructs are being assessed in each group. With continuous variables, the most frequently used technique for testing measurement invariance is multiple group confirmatory factor analysis (CFA). Measurement invariance can be tested at different levels and Byrne (1998), Meredith (1993), and Widaman and Reise (1997) described procedures for testing a hierarchical series of models to establish measurement invariance. They developed a specific hierarchical structure of the tests to maximize the interpretability of the results at each step of the hierarchy. The detailed description of the procedure is given in Appendix D. For the purpose of this study establishing only configural invariance and metric (factor loading) invariance would be sufficient. The summary of the results is shown in Table 5-A.

Table 5-A: Invariance Tests Between Potential and Repeat Customer Groups

| NO. | MODELS | $\boldsymbol{\chi}^{\mathbf{2}} / \mathbf{D F}$ | RMSEA | CFI | GFI | RESULT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Baseline Models |  |  |  |  |  |
| 1A | Potential Customers | $162.86 / 84$ | 0.066 | 0.98 | 0.91 | Acceptable |
| 1B | Repeat Customers | $309.08 / 84$ | 0.058 | 0.98 | 0.95 | Acceptable |
| 2 | Configural Invariance | $471.95 / 168$ | 0.059 | 0.98 | 0.95 | Acceptable |
| 3 | Full Metric Invariance | $493.62 / 179$ | 0.059 | 0.98 | 0.95 | $\Delta \chi^{(11)}=21.67$, <br> p-value $=0.027$ |
| 3A | Partial Metric <br> Invariance | $484.49 / 178$ | 0.058 | 0.98 | 0.95 | $\Delta \chi_{(10)}^{2}=12.54$, <br> p-value $=0.324$ |

The table establishes configural invariance and partial factor loading invariance $\left(\Delta \chi^{2}{ }_{(10)}=12.54, \mathrm{p}\right.$-value $\left.=0.324\right)$, which are sufficient to establish an invariant factor structure across groups and the differences between the two groups being due to the actual difference between the groups, we can safely proceed for further statistical analysis.

### 5.4.2. Confirmatory Factor Analysis

### 5.4.2.1. Unidimensionality test

According to standard LISREL methodology, the measurement model was revised by dropping one at a time, items that shared a high degree of residual variance with other items (Gefen et al. 2000). The test results indicated that second item of perceived price (PRCE2) violate unidimensionality in case of both potential and repeat customers and dropping it would drop chi-square significantly. We, therefore, dropped PRCE2 for both potential and repeat customers. Other items were not dropped as the error covariance between a pair of items resulted in a little change in chi-square ( $<20$ ), thus preventing over-fitting. After dropping PRCE2, the CFA shows good fit for both potential and repeat customers as shown in Table 5-B.

Table 5-B: Fit Indices for Potential and Repeat Customer Structural Models

| INDEX | LIMITS OF GOOD FIT (SOURCE) | POTENTIAL | REPEAT |
| :---: | :---: | :---: | :---: |
| Normed $\chi^{2}$ | $<3.00$ or $<5.00$ (Hair et al. 1998) | 1.94 | 3.68 |
| GFI | $>0.90$ (Hair et al. 1998) | 0.91 | 0.95 |
| AGFI | $>0.80$ (Hair et al. 1998) | 0.87 | 0.93 |
| NFI | $>0.90$ (Hair et al. 1998) | 0.97 | 0.98 |
| NNFI | $>0.90$ (Hair et al. 1998) | 0.98 | 0.98 |
| CFI | $>0.90$ (Hair et al. 1998) | 0.98 | 0.98 |
| RMSEA | $<0.08$ (Hair et al. 1998) | 0.066 | 0.058 |
| STD. RMR | $<0.05$ (Gefen et al. 2000) | 0.063 | 0.035 |

### 5.4.2.2. Convergent and Discriminant Validity Tests

Second, we assessed the convergent validity and discriminant validity of the constructs. As shown in Table 5-C, all standardized path coefficients (except PRCE1, PRCE4 in case of potential customers and PINT4, PRCE1 and RISK4 in case of repeat customers) are greater than 0.7 . The individual path loadings are all greater than twice their standard error. The t -statistic is significant for all the items. The CR for each construct is greater than 0.7 , and the AVE for each construct is greater than 0.5 . Thus convergent validity is adequately established.

Table 5-C: Results of Confirmatory Factor Analysis

| ITEM | POTENTIAL CUSTOMERS |  |  |  |  | REPEAT CUSTOMERS |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{array}{\|l\|} \hline \text { STD. } \\ \text { BETA } \\ \hline \end{array}$ | $\begin{array}{c\|} \text { T- } \\ \text { VALUE } \end{array}$ | AVE | CR | ALPHA | $\begin{array}{\|l\|} \hline \text { STD. } \\ \text { BETA } \\ \hline \end{array}$ | $\begin{array}{c\|} \text { T- } \\ \text { VALUE } \end{array}$ | AVE | CR | ALPHA |
| PINT1 | 0.87 | 16.10 | 0.82 | 0.95 | 0.95 | 0.86 | 29.84 | 0.69 | 0.90 | 0.89 |
| PINT2 | 0.93 | 17.96 |  |  |  | 0.89 | 31.45 |  |  |  |
| PINT3 | 0.92 | 17.53 |  |  |  | 0.88 | 31.16 |  |  |  |
| PINT4 | 0.90 | 17.11 |  |  |  | 0.68 | 21.29 |  |  |  |
| PVAL1 | 0.93 | 17.78 | 0.77 | 0.93 | 0.93 | 0.86 | 29.49 | 0.69 | 0.90 | 0.90 |
| PVAL2 | 0.86 | 15.58 |  |  |  | 0.83 | 28.11 |  |  |  |
| PVAL3 | 0.88 | 16.12 |  |  |  | 0.79 | 25.90 |  |  |  |
| PVAL4 | 0.85 | 15.36 |  |  |  | 0.85 | 29.19 |  |  |  |
| PRCE1 | 0.60 | 8.52 | 0.51 | 0.76 | 0.82 | 0.55 | 15.56 | 0.56 | 0.78 | 0.84 |
| PRCE3 | 0.85 | 12.23 |  |  |  | 0.82 | 25.52 |  |  |  |
| PRCE4 | 0.68 | 9.71 |  |  |  | 0.83 | 25.82 |  |  |  |
| RISK1 | 0.82 | 14.37 | 0.69 | 0.90 | 0.89 | 0.74 | 22.67 | 0.54 | 0.82 | 0.80 |
| RISK2 | 0.87 | 15.86 |  |  |  | 0.79 | 24.83 |  |  |  |
| RISK3 | 0.90 | 16.59 |  |  |  | 0.82 | 26.28 |  |  |  |
| RISK4 | 0.71 | 11.65 |  |  |  | 0.55 | 15.89 |  |  |  |

To examine discriminant validity we obtained inter-correlations among the variables (Table 5-D). All inter-correlations between the latent variables were below 0.6 except between purchase intention and perceived value ( 0.66 ) for potential customers. This inter-correlation was tested for discriminant validity by conducting
pair-wise constrained test as suggested by McKnight et al. (2002). The $\chi 2$ difference test revealed a significant difference between purchase intention and perceived value for potential customers $(\Delta \chi 2=625.93$, p -value $=0.000)$. This means the original model represents a better fit. Thus, the discriminant validity among the constructs is established. Also, as shown in the Table 5-D, the square root of a construct's AVE (along the diagonal) was greater than its correlation with any other construct thus demonstrating discriminant validity.

Table 5-D: Correlations between Latent Variables

|  | POTENTIAL CUSTOMERS |  |  |  | REPEAT CUSTOMERS |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ITEMS | MEAN <br> (SD) | PINT | PVAL | PRCE | RISK | MEAN <br> (SD) | PINT | PVAL | PRCE |
| RINK | $5.72(1.32)$ | $\mathbf{0 . 9 1}$ |  |  |  | $6.11(0.93)$ | $\mathbf{0 . 8 3}$ |  |  |  |
| PVAL | $5.51(1.19)$ | 0.66 | $\mathbf{0 . 8 8}$ |  |  | $5.64(0.99)$ | 0.51 | $\mathbf{0 . 8 3}$ |  |  |
| PRCE | $3.65(1.37)$ | -0.31 | -0.35 | $\mathbf{0 . 7 1}$ |  | $3.28(1.11)$ | -0.55 | -0.54 | $\mathbf{0 . 7 5}$ |  |
| RISK | $2.81(1.24)$ | -0.41 | -0.53 | 0.39 | $\mathbf{0 . 8 3}$ | $2.40(0.99)$ | -0.27 | -0.47 | 0.35 | $\mathbf{0 . 7 3}$ |

Note: The diagonal line shows the square root of AVE of each construct.
-PINT: Purchase Intention, PVAL: Perceived Value, PRCE: Perceived price, RISK: Perceived Risk.

### 5.4.3. Hypothesis Testing

We then examined the structural models for both customer groups using LISREL. First, we checked the model fit indices. The structural models for both potential customers $\left(\right.$ Normed $\chi^{2}=1.94, \mathrm{GFI}=0.91, \mathrm{AGFI}=0.87, \mathrm{NFI}=0.97, \mathrm{CFI}=0.98$, RMSEA $=0.066$, Std. $\mathrm{RMR}=0.063$ ) and repeat customers had excellent fit indices $\left(\right.$ Normed $\chi^{2}=3.68, \mathrm{GFI}=0.95, \mathrm{AGFI}=0.93, \mathrm{NFI}=0.98, \mathrm{CFI}=0.98, \mathrm{RMSEA}=$ 0.058 , Std. $\mathrm{RMR}=0.035$ ).

As the model fit indices are good, the standardized path coefficients can be used for testing the hypotheses. Figure 5-B shows the standardized LISREL path coefficients. For potential customers, perceived price and perceived risk significantly
influence perceived value and explain $31 \%$ of total variance. Purchase intention is only influenced by perceived value, which explains $45 \%$ of total variance. For repeat customers, perceived price and perceived risk significantly influence perceived value and explain $38 \%$ of variance. Also, perceived price and perceived value are significant antecedents of purchase intention and explain $37 \%$ of variance. The influence of perceived risk on purchase intention was insignificant.


$$
\text { ns = not significant; *: } p<0.05 ; * *: p<0.01 ; * * *: p<0.001
$$

Potential Customers: Normed $\mathrm{X}^{2}=1.94$, RMSEA $=0.066, \mathrm{RMR}=0.063$, $\mathrm{NFI}=0.98$, $\mathrm{NNFI}=0.98, \mathrm{CFI}=0.98$, GFI $=0.91$, AGFI $=0.87$
Repeat Customers : Normed $\mathrm{X}^{2}=3.68$, RMSEA $=0.058, \mathrm{RMR}=0.035$, $\mathrm{NFI}=0.98, \mathrm{NNFI}=0.98, \mathrm{CFI}=0.98$, GFI $=0.95$, AGFI $=0.93$
Figure 5-B: Comparison Models for Potential and Repeat Customers

Since the correlations among the variables were high and significant (Table 5D), the non-significance of a hypothesis could be due to multicollinearity among constructs. Highly collinear variables can distort testing results substantially. Therefore, we also conducted multicollinearity testing. For this purpose, we extracted variance inflation factor (VIF) values and a condition index. A maximum VIF greater than 10 is signals harmful multicollinearity (Hair et al. 1998). Condition indices greater than 30 are considered to indicate moderate to strong dependencies (Hair et al. 1998). We found that VIF values were in the range of 1.15-1.37 (potential customers) and $1.26-1.40$ (repeat customers), and the condition indices were within
the range of $1.0-18.48$ (potential customers) and $1.0-22.9$ (repeat customers). Therefore, multicollinearity should not distort testing results.

### 5.4.4. Comparative Effects

To examine the comparative effects of perceived price and perceived risk on perceived value for potential and repeat customer groups we employed the within group constrained test (Byrne 1988). First, the individual models for potential and repeat customers (Figure 5-B) were considered as the base models for respective groups. Then for each group, the equality constrained was imposed between the relationships: perceived price $\rightarrow$ perceived value and perceived risk $\rightarrow$ perceived value. If the $\chi^{2}$ difference between the base model and the constrained model is insignificant (low fitting) for any particular group, it can be concluded that perceived price and perceived risk have same effect on perceived value for that particular group. Table 5-E shows the results of the constrained test. The results reveal that $\chi^{2}$ difference is significant for both potential $\left(\Delta \chi^{2}=7.37, \Delta \mathrm{df}=1, \mathrm{p}\right.$-value $\left.=0.007\right)$ and repeat customers $\left(\Delta \chi^{2}=5.17, \Delta \mathrm{df}=1, \mathrm{p}\right.$-value $\left.=0.023\right)$. The path coefficients indicate that perceived risk had a stronger effect than perceived price on perceived value for potential customers and a weaker effect than perceived price on perceived value for repeat customers. Thus, both the hypothesis H 10 and H 11 were supported.

Table 5-E: Results of Constrained Test within Sub-Models

| CUSTOMER <br> TYPE | BASE <br> MODEL |  | CONSTRAINED <br> MODEL |  | DIFFERENCE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\chi^{2}$ | DF | $\chi^{2}$ | DF | $\Delta \chi^{2}$ | $\Delta \mathrm{DF}$ | P-VALUE |
| Potential | 162.86 | 84 | 170.23 | 85 | 7.37 | 1 | 0.007 |
| Repeat | 309.08 | 84 | 314.25 | 85 | 5.17 | 1 | 0.023 |

### 5.4.5. Different Effects

To examine the different effects of the same antecedents (perceived price, perceived risk, and perceived value) on purchase intention between the two customer groups, we employed the between-groups constrained test (Byrne 1988). First, a base model with all the hypothesized paths (Figure 5-B) was created using LISREL. Using this base model, two sub-models (one for potential customers and one for repeat customers) were estimated jointly with the respective datasets. If the $\chi 2$ difference between the base model and the constrained model was insignificant (low fitting), it can be concluded that the antecedents have same effect in the two groups. Table 5-F shows the results of the constrained test. For perceived price, the $\chi^{2}$ difference was significant $\left(\Delta \chi^{2}=10.62, \Delta \mathrm{df}=1, \mathrm{p}=0.001\right)$. However, the path coefficients indicate that perceived price has a stronger influence on purchase intention for repeat customers than for potential customers, thus supporting H12. For perceived risk, the $\chi 2$ difference was insignificant $\left(\Delta \chi^{2}=-0.14, \Delta \mathrm{df}=1, \mathrm{p}=0.708\right)$, thus not supporting H13. For perceived value, $\chi^{2}$ difference was significant $\left(\Delta \chi^{2}=16.81, \Delta \mathrm{df}=1, \mathrm{p}=0.000\right)$. The path coefficients indicate that perceived value has a stronger influence on purchase intention for potential customers than for repeat customers, thus partially supporting H14.

Table 5-F: Results of Constrained Tests between the Two Customer Groups

| EQUALITY CONSTRAINT <br> IMPOSED | BASE <br> MODEL |  | CONSTRAINED <br> MODEL |  | CHANGE IN <br> MODEL FIT |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\chi^{2}$ | DF | $\chi^{2}$ | DF | $\Delta \chi^{2}$ | $\Delta \mathrm{DF}$ | P-VALUE |
| PRCE $\rightarrow$ PINT | 471.95 | 168 | 482.57 | 169 | 10.62 | 1 | 0.001 |
| RISK $\rightarrow$ PINT | 471.95 | 168 | 471.81 | 169 | -0.14 | 1 | 0.708 |
| PVAL $\rightarrow$ PINT | 471.95 | 168 | 488.76 | 169 | 16.81 | 1 | 0.000 |

-PINT: Purchase Intention, PVAL: Perceived Value, PRCE: Perceived price, RISK: Perceived Risk

### 5.5. DISCUSSION AND IMPLICATIONS

### 5.5.1. Discussion of Findings

We have examined the differences in the online purchase decision-calculus between potential customers and repeat customers of an online vendor, from the value perspective. The explanatory power $\left(\mathrm{R}^{2}\right)$ for repeat customers was quite low $(0.37)$ as compared to potential customers (0.45). This may be because most of the repeat customers in our data are highly experienced purchasers (See Table 4-D). With increasing purchase customers tend to become automatic in their purchase decision making according to information processing theory of customer choice. Therefore, even though the factors are increased, the overall $\mathrm{R}^{2}$ decreases. We may need to further confirm this data by splitting the data into low and high transaction experience customers. Another reason could be that there could be other factors that may influence purchase intention for repeat customers which we could not include in our study.

Several interesting findings emerge from this comparison. The first finding is that the impact of perceived value on purchase intention is stronger in case of potential customers than in case of repeat customers. This finding is opposite to what we hypothesized based on attitude-behavior consistency theory. Millar and Millar (1996) did further work on studying attitude-behavior consistency and found that the attitudes produced by direct experience with attitude object tend to be affectively based, i.e., the person's feelings toward the object are most salient when the attitude is formed. In such a case, the influence of value (a cognitive construct) on purchase intention should decrease for repeat customers. From the information processing theory perspective, Sujan (1985) posits that the potential customers, whose knowledge structure regarding transactions is rudimentary, are more disposed toward overall
evaluation processing in their choice. In contrast the repeat customers are more likely to go through a process of selective encoding and retrieval thus recalling only the most discriminating information needed for making purchase decisions with the vendor (Johnson and Russo 1981). Thus, repeat customers consider key attributes of transactions with the vendor as well as overall value perception in their decisioncalculus. This weakens the influence of perceived value on purchase intention in case of repeat customers as compared to potential customers.

The second finding is that the influence of perceived risk on value assessment (perceived value) is stronger than that of perceived price for potential customers. In contrast the influence of perceived price on value assessment is stronger than that of perceived risk for repeat customers of the same vendor. This is consistent with the certainty effect of prospect theory (Kahneman and Tversky 1979). Potential customers perceive greater risk and uncertainty in carrying out transactions, while repeat customers perceive greater certainty in transactions with the Internet vendor. According to the certainty effect and risk aversion of prospect theory, potential customers would put more weight on risk perception (perceived risk) than on price perception (perceived price) in their value assessment (perceived value). Prospect theory also explains that the desirability of gain from a transaction increases as certainty in the transaction increases. Thus, compared to the potential customers, repeat customers would emphasize the price factor more than the risk factor in their value assessment due to perceiving greater certainty in the transaction.

The third finding is that the influence of perceived price on purchase intention is stronger for repeat customers than for potential customers. Although the effect of perceived risk is not significantly different between potential and repeat customers we find that repeat customers are more price-sensitive. This may be because the risk
assessment of potential customers is usually based on their previous experience and reputation of the online store. Therefore, even though the risk is low, still some uncertainty is there which is reflected in potential customers considering perceived risk as more important than perceived price in influencing their perceived value of purchasing from the online store. For repeat customers, however, the risk assessment is based on direct transaction experience and therefore takes a secondary role as compared to perceived price in influencing their perceived value. This certainty effect makes repeat customers more sensitive to perceived price as compared to potential customers.

However, the increase in price-sensitivity for repeat customers is contradictory with previous studies (e.g., Reibstein 2002). Reibstein (2002) noted the dominating role of price out of 10 factors in attracting new customers to an Internet vendor's web site. Reibstein (2002) also noted that price as the least important factor in attracting repeat customers. This contradictory result may be explained by the 'certainty effect' of prospect theory. As discussed earlier, certainty in a transaction increases the desire for gains from a transaction. The monetary gains are derived in the form of lower price compared to that of other vendors (Dodds et al. 1991). Certainty effect thus increases customer sensitivity to monetary gains in the case of repeat customers. This finding is consistent with that of Urbany et al. (1997) who found that transaction utility (perceived price in our study) significantly influences purchase intention only when customers are more certain about quality (e.g., service quality, vendor quality). Consistent with Urbany et al. (1997), we also found that perceived price does not have a significant influence on purchase intention directly for potential customers. Instead, the effect of perceived price on purchase intention is fully mediated by perceived value for potential customers.

### 5.5.2. Post-Hoc Analysis: Further Analysis of Price-Sensitivity

A number of studies (e.g., Reichheld and Schefter 2000, Reichheld and Teal 1996) have reported that repeat customers actually become less price-sensitive as the number of purchases with a vendor increases. To test this, we conducted post-hoc analysis of the effect of transaction experience on the relationship between perceived price and purchase intention for repeat customers. The results reveal that transaction experience significantly moderates the relationship $\left(\Delta \mathrm{R}^{2}=0.022, \mathrm{~F}=7.68, \mathrm{p}<\right.$ 0.001 ): perceived price (coefficient $=-0.436, \mathrm{p}<0.000$ ), perceived price * transaction experience (coefficient $=0.335, \mathrm{p}<0.01$ ), transaction experience (coefficient $=-$ $0.376, \mathrm{p}>0.1$ ). The results imply that repeat customers who have greater purchase experience with an Internet vendor are less sensitive to price in making their purchase decisions compared to less experienced repeat customers of the same Internet vendor. Thus, the results of this research are still consistent with that of previous research (e.g., Reichheld and Schefter 2000, Reichheld and Teal 1996).

### 5.5.3. Limitations and Future Research

The results of this study must be interpreted in the context of its limitations. First, this study examined online purchase decision-making from the value perspective. Regarding the antecedents of value perception, this study considered only the two common factors, perceived price from the monetary perspective and perceived risk from the non-monetary perspective, for both potential customers and repeat customers. There can be many other antecedents of value perception. Also, there are some antecedents (e.g., service quality), which are applicable only for repeat customers. Future studies could identify some other antecedents of value perception
and examine their effects on value perception and purchase behavior. Second, this study classified the customers of an Internet vendor into potential customers and repeat customers. Future studies can classify repeat customers into less experienced customers and more experienced customers and examine the differences in their online purchase decision-making with the same Internet vendor. Lastly, since this is a cross-sectional research, we do not measure the purchase decision-making of the same customer over a period of time. Longitudinal studies would perhaps give a more accurate picture of the customer decision-making. However, we could not proceed with a longitudinal study, as it is difficult to track online customers in such a short span. Particularly, because of cross-sectional survey, errors may result in common method bias. However, we have taken a number of steps to reduce the common method bias, including instrument design and validation (Bourdreau et al. 2001) as well as statistical controls (Podsakoff et al. 2003). Future studies may conduct longitudinal survey using the same model and this would be useful in establishing the generalizability of the model. Moreover, comparison of the results from this study with the new study would give more useful practical insights to the online vendors as well as to the academic rigor.

### 5.5.4. Implications for Theory and Practice

This study has several implications for theory. First, a number of studies (e.g., Gefen et al. 2003, Reibstein 2002) have identified the factors that influence online purchase intention. However, little has been said about how potential customers and repeat customers of an online store differ in their purchase decision-calculus. Drawing from prospect theory and information processing theory, this study explained how potential customers of a particular online store make initial purchase decision differently from
repeat customers of the same online store. Going beyond the findings of previous studies, this study showed that the impact of value perception and price comparison on purchase intention changes over customer type (as one progresses from being a potential customer to being a repeat customer) with the theoretical support from prospect theory and information processing theory. Specifically, perceived value tends to reduce in importance while perceived price tends to increase over customer type. However, the effect of perceived price on purchase intention is fully mediated by perceived value for potential customers. In spite of this changing impact of perceived value and perceived price over customer type, perceived value exerts a significant impact on purchase intention for both potential and repeat customers of the online vendor.

This study also showed that potential customers and repeat customers put different weights on price comparison and risk perception in their value assessment. As prospect theory suggests that loss aversion is the best-known generalization in customer choice and decision-making under conditions of uncertainty, potential customers who have no previous transaction experience with the current vendor put more emphasis on risk perception than price perception in their value assessment. In contrast, repeat customers being more certain about transactions with the vendor put more emphasis on price perception than risk perception.

This study examined the differences between potential customer and repeat customers' purchase decision-calculus based on the information processing theory of customer choice. This research empirically validated the effect of experience on the type of information processed (Bettman and Park 1980), and on the amount of information processed (Lynch and Srull 1982). The role of information processing has not been considered in IS studies, although it has been considerably researched in
consumer behavior studies. The manner in which a customer processes information would significantly influence his choice decisions. Thus, the findings of this research are a forerunner for future IS studies for considering the role of customers' information processing in choice and decision-making. A few studies (e.g., Gefen et al. 2003) have examined the differences between potential and repeat customers, based on the theory of buyer behavior (Howard and Sheth 1969). This research confirms their finding about differences in potential and repeat customers' Internet shopping behavior.

The results of this study also show some support for researches studying online repeat purchase behavior. Many previous studies (e.g., Reichheld and Schefter 2000, Reichheld and Teal 1996) assert that cost of serving repeat customers is low and that they pay higher prices. The moderating effect of transaction experience on the relationship between perceived price and purchase intention renders support to previous research (Reichheld and Schefter 2000, Reichheld and Teal 1996) by showing that repeat customers do become less sensitive to price in their purchase decisions with increase in their transaction experience with the online vendor.

This study also has several implications for practice. First, this study affirms earlier suggestions (Chang and Wildt 1994, Chen and Dubinsky 2003, Dodds et al. 1991, Kahneman and Tversky 1979, Thaler 1985, Zeithaml 1988) that value is one of the most important drivers of transactions with an online vendor. Hence, it is definitely worthwhile for online vendors to invest in enhancing the perceived value of online transaction as perceived by the customers. Examples of such efforts may include enhancing service quality and web site quality, lowering the perceived level of risk in the transactions, and providing monetary gains.

Internet vendors may also want to adjust their efforts in enhancing the value perceived by customers according to customer type (potential customers and repeat customers). Given the importance of perceived risk over perceived price for potential customers in their value perception, Internet vendors should put more emphasis on lowering the risk perceived by their potential customers than providing monetary gains (in the form of lower price compared to that of other vendors) to the potential customers. To lower the risk perception level, Internet vendors can improve their trustworthiness using TRUSTe, registering with reputed search engines such as Yahoo, and by providing customer reviews, since trust lowers risk perception (Jarvenpaa et al. 2000). In contrast, given the importance of perceived price over perceived risk for repeat customers in their value perception, Internet vendors should put more emphasis on providing monetary gains derived from lower perceived price to the repeat customers.

This study facilitates Internet vendors in developing different strategies for targeting initial sales with their potential customers and repeat sales with their returning customers. For enhancing initial sales with potential customers of an online store, Internet vendors should focus on maximizing overall value as the value perception fully mediates the effects of perceived price and perceived risk on initial purchase intention in the case of potential customers. Most online vendors tend to reduce prices for attracting potential customers. In practice, however, it has been found that this strategy of offering lower prices is thwarted because even pricesensitive customers do not always buy from the lowest-priced online stores (Smith and Brynjolfsson 2001). The results of this study thus show that an online vendor should enhance the overall value of Internet shopping as perceived by their potential customers.

For enhancing repeat sales with returning customers, Internet vendors should focus on providing monetary gains, as well as, greater value to their repeat customers. Internet vendors should focus on targeting repeat customers on the basis of specific allurements, which reduce perceived price. Examples of such efforts include the use of price discounts, frequency programs, and loyalty points. This study also suggests that repeat customers do not become price insensitive with just a few transaction experiences with a vendor, although the impact of perceived price on purchase intention decreases as repeat customers have more transactions at the vendor. Overall, however, repeat customers of an Internet vendor are more sensitive to monetary gains compared to potential customers of the same vendor.

Third, this research facilitates online vendors in understanding the differences between potential customers and repeat customers in terms of the impact of perceived price and perceived value on their Internet shopping behavior. Perceived value has a stronger influence on the purchase decisions of potential customers than on purchase decisions of repeat customers. Also, perceived price has a stronger influence on the decisions of less experienced repeat customers than more experienced repeat customers than the potential customers. This has implications for increasing repeat sales with repeat customers. Previous research (Reichheld and Teal 1996, Reichheld and Schefter 2000) suggests that repeat customers are less price-sensitive. However, this research suggests that Internet vendors should discriminate between less experienced repeat customers and more experienced repeat customers for their pricesensitivity. Repeat customers do not become price sensitive with just few purchases. So, online vendors should focus on targeting less experienced repeat customers on the basis of specific allurements, which reduce perceived price, till they become sufficiently experienced. Online vendors can employ strategies like coupons, price
discounts, and loyalty points for targeting repeat customers. When the repeat customers become sufficiently experienced, they can be offered premium and value added services.

## 6. THE EFFECT OF TRANSACTION EXPERIENCE ON ONLINE REPURCHASE DECISION-CALCULUS

### 6.1. OVERVIEW OF THIS STUDY

In the second study, we found the specific ways in which online vendors can differentiate between potential customers and repeat customers. We also found that repeat customers may differ in their decision making over transaction experience. If it is so, then online vendors should differentiate among repeat customers over their transaction experience which requires an understanding of their purchase decisioncalculus. In this study, therefore, we aim to examine the effect of transaction experience on repeat customer purchase decision-calculus. In this study, transaction experience refers to the number of purchases made by a customer from a particular online store.

### 6.2. THE ROLE OF TRANSACTION EXPERIENCE

The role of transaction experience as a moderator is ambiguous as it is not certain whether there is any relationship between value and its antecedents and transaction experience. It can be argued that if a customer has higher perception of value (or its antecedents) of purchasing from an online store, the number of purchases from that online store would increase. If this is true, then the transaction experience cannot be studied as a moderator. However, it can also be argued that unless customer makes purchase first, he cannot develop a definite value perception of the offering of the online store. This would be particularly true in Internet shopping as there are considerable risk and uncertainty in purchasing online. In social research, to establish causality, three factors, namely temporal order, association, and elimination of
plausible alternatives need to be established (Neuman 2003, pg. 56). There may be some association between transaction experience and the attributes of purchasing. In case of online purchases, customers make transaction and then develop some definite conception of value, convenience, and pleasure of purchasing from the online store. Therefore, temporal order condition is not fulfilled. Even with a few transactions, customer's perceived value of purchasing may be high. Therefore, we can safely argue that transaction experience can be studied as a moderator variable.

### 6.3. THEORETICAL BACKGROUND

The effect of transaction experience need to be studied in two parts, namely, establishing that there is a moderation effect and the polarity (positive or negative) of the moderation effect. While there is considerable theoretical and empirical support for the explanation of the moderation effect, there is little theoretical and empirical support for the explanation of polarity of the moderation effect. Therefore, in the section that follows, we will present theoretical support for explaining the role of transaction experience and then we will explain the polarity of the individual hypothesis based on empirical generalizations.

### 6.3.1. Explanation of the Moderating Effect

Various theories have been proposed which explain the moderating effect of customer transaction experience on customer beliefs and evaluation on customer purchase decision-making. Prominent among them are belief-adjustment model and cognitivedissonance theory. Belief-adjustment model (Hogarth and Einhorn 1993) is useful for explaining the changes in customer beliefs (such as convenience and perceived price) over transaction experience. Cognitive-dissonance theory was formulated by

Festinger (1957) to explain how discrepancies (dissonance) between one's cognition and reality change the person's subsequent cognition and/or behavior. Cognition, in this context, refers to one's beliefs, affect, opinion, values, and knowledge about one's environment, while behavior refers to actions initiated in response to this cognition and/or personal evaluation of that behavior (Festinger 1957, Bhattacherjee and Premkumar 2004).

### 6.3.1.1. The Belief-Adjustment Model

Hogarth and Einhorn (1992) proposed the belief-adjustment model for studying how customers update their beliefs with time. When the decisions are made in a sequence, customers update their beliefs with the current information according to a sequential anchoring-and-adjustment process. In the first purchase, a customer develops a general sense of the attributes of the purchase-decision. The strength of this attribute is known as anchor, which is adjusted with the new information received in subsequent transactions. The degree of this adjustment depends upon the strength of the prior anchor and the polarity of the new information. If the strength of the prior anchor is strong and the new information received is positive, then there would be slight increase in the strength of the prior anchor. However, if the new information is negative, then there would be a considerable decrease in the strength of the prior anchor. Over the number of transactions, these adjustments would decrease in magnitude and the strength of anchor would become constant. Thus the moderation effect of transaction experience is that the magnitude of adjustments in the customer beliefs will decrease as customer transaction experience increases with the online vendor.

### 6.3.1.2. Cognitive Dissonance Theory

Cognitive dissonance theory, in the context of Internet shopping, suggests that as customers gain first-hand experience with Internet shopping, they evaluate the extent to which their initial cognition (beliefs, affect, and value) is consonant or dissonant with actual experience, and revise their cognition and/or behavior to achieve greater consonance. Over transaction experience, repeat customers' cognitions reach steadystate equilibrium, as they become more realistic and entrenched in observed behavior (Bhattacherjee and Premkumar 2004). Cognitive dissonance theory is also suited to explain moderating effect of transaction experience in Internet shopping, as over a period of time, customers reach steady-state equilibrium in their cognition about Internet shopping.

In essence, belief-adjustment model and cognitive dissonance theory explain that the adjustments in beliefs or cognition attain steady-state equilibrium as customer transaction experience increases with the Internet vendor. Once the steady-state equilibrium is attained, customers need not go through the process of cognitive evaluation of their purchases and their decision-making becomes more or less automatic.

### 6.3.2. Polarity of Moderating Effect

Although, we understand that there is a moderating effect, we are still unclear about the polarity of the moderating effect of transaction experience. Information processing theory (Bettman 1979) gives some general propositions about the polarity of the moderating effect. According to information processing theory, as customer transaction experience increases, decision-making is a function of most important and decision-relevant information which could be either overall evaluation or any belief.

So, the polarity of moderating effect would be positive for most important and decision-relevant information and negative for unimportant information. Now we will explain individual hypothesis and analyze their importance to decision-making based on empirical generalizations from previous studies.

### 6.4. RESEARCH MODEL AND HYPOTHESIS

Since with transaction experience customer decision-calculus changes, we will analyze the effect of transaction experience in repurchase decision-calculus. As the influence of risk on purchase intention was not significant in previous studies, we would not study the effect of transaction experience on the relationship between perceived risk and purchase intention. Moreover, for repeat customers perceived risk is not important as they already have purchase experience with the online store. One who has conducted at least one transaction would feel as much security as the one who has conducted many transactions with the online store. Therefore, we drop it in this study. The research model for effect of transaction experience is shown in Figure 6-A.


Figure 6-A: Research Model for Study 3 (Repeat Customers)

According to cognitive dissonance theory, customers would modify their evaluation to remove any dissonance between their current evaluation and previous evaluation till they reach steady-state equilibrium, thus indicating the moderating effect of transaction experience.

According to Ajzen (2001), frequent performance of a behavior influences future purchase intention very strongly to such an extent that the behavior becomes largely independent of attitudes and intentions (Ajzen 2001). Frequency of past behavior has been shown (e.g., Conner et al. 1999, O'Callaghan et al. 1999, Verplankan et al. 1998) to influence additional variance in intentions (Ajzen 2001). Ajzen (2001) argues that intentions may become largely irrelevant when a behavior has been performed many times. Several empirical generalizations (e.g., Allen et al. 1992, Charng et al. 1988, Ronis et al. 1989) support the idea that intentions become relatively autonomous of attitudes and conscious evaluation when the behavior has been performed a large number of times. Perceived value in our research plays a similar role as attitude in predicting intentions. Perceived value in our research is an individual's evaluation of the attributes of purchase, which is similar to attitude defined as a summary evaluation of the psychological object based on its attributes (Ajzen 2001). Therefore, based on these empirical generalizations, we can safely predict that transaction experience would negatively moderate the influence of perceived value on purchase intention. Hence, we hypothesize:

H15: Transaction experience will moderate the relationship between perceived value and purchase intention for repeat customers.

Customer perception of prices at an online store may vary with successive transactions according to the belief-updating model. As the total price consists of
product price, search cost and disappointment costs (Ehrlich and Fisher 1982), customers may perceive in later purchases that even though the product price is low, other costs raise the overall costs and vice-versa. Thus, with every subsequent purchase customers would adjust their price perception about the online stores. The magnitude of such adjustment would, however, reduce over time. This adjustment indicates that transaction experience has a moderating effect on the relationship between perceived price and purchase intention.

For polarity of moderating effect, we turn to empirical studies. Studies in customer repeat purchase behavior (e.g., Reichheld and Schefter 2000, Reichheld and Teal 1996) suggest that repeat customers are less price-sensitive and spend more with the Internet store, which suggests that the influence of perceived price on purchase intention should weaken over transaction experience. Consistent with the proposition of the information processing theory of customer choice, one of the reasons for decreasing price-sensitivity could be that customers becomes less motivated to evaluate price information as their transaction experience increases with the Internet vendor. Another reason for decreasing price-sensitivity among repeat customers is that only those customers who are not price-sensitive stay with the online vendor. Reibstein (2002) found that price-sensitive customers may be the least loyal as the customers who come for the low prices are just as likely to go to another site the next time around if it happens to offer low prices. In other words, the cohort of more experienced customers would contain less number of price-sensitive customers. Therefore, the impact of perceived price on purchase intention should decrease with transaction experience. Hence, we hypothesize:

H16: Transaction experience will moderate the relationship between perceived price and purchase intention for repeat customers

According to the belief-updating model, customers would adjust their beliefs about convenience of purchasing from the Internet vendor with every successive transaction. Convenience is subjected to high fluctuations, as problems may creep in search, payment, and delivery in any transaction. However, these adjustments in convenience would reduce in magnitude with customer transaction experience, according to the belief updating model, thus indicating a moderating effect.

For polarity of moderating effect, we turn to empirical studies. Gefen et al. (2003) found empirical support to the theoretical assertion that the relationship between perceived usefulness and behavioral intention should become stronger as individuals gain direct experience with the IT (Gefen et al. 2003). Convenience is one of the most important benefits (perceived usefulness) of Internet shopping (Torkzadeh and Dhillon 2002) and hence, we can argue on similar lines that relationship between convenience and purchase intention should strengthen over transaction experience. Also, according to Information processing theory of customer choice, customer decision-making reduces to most relevant and decision-relevant information as customer transaction experience increases. Bhatnagar et al. (2000) assert that customer risk perception of shopping on Internet is over-shadowed by its relative convenience, indicating that convenience is an important attribute for online customer purchase decision-making. Therefore, as the transaction experience increases, customers would rely on simple cues like convenience rather than complete rational assessment according to the information processing theory of customer choice. Thus, the effect of convenience on purchase intention should become stronger with transaction experience. Hence, we hypothesize:

H17: Transaction experience will moderate the relationship between convenience and purchase intention.

In service / product purchase there are always chances of failures. Especially it is important in online purchases where failures may occur during ordering, processing or delivery. Failures cause dissatisfaction and displeasure and a negative perception of the offering of the Internet store in the minds of the customers. Customers' cumulative pleasure with the previous purchases is therefore dynamically adjusted with the new information such as service failure/success and it affects his purchase intention. However, the magnitude of this adjustment will depend upon customers' transaction experience with the Internet store. Customers, who have longer transaction experience with the Internet store, weigh prior cumulative pleasure more heavily than the new information regarding success or failure.

For polarity of moderating effect, we turn to empirical studies. According to the theory of emotion and adaptation (Lazarus 1991) coping responses are important mechanisms for inferring action and goal attainment from feelings. Depending on the feelings generated, behavioral intentions emerge to activate plans for the avoidance of undesirable outcomes or the increase/maintenance of positive outcomes (Bagozzi 1992). Coping with positive emotions (such as pleasure) often involves sharing one's good fortune, savoring the experience, and working to continue or increasing the rewards. In contrast, a negative emotion puts one in disequilibrium, and makes one desirous of returning to the normal state. Hence, pleasure, being a positive affect, will result in actions to savor the experience longer and increase the rewards. Thus, consumers experiencing pleasure in shopping with an online vendor would be encouraged to repurchase. Many previous studies (e.g., Bhattacherjee 2001a, Bolton
1998) support the assertion that satisfaction (conceptually similar to pleasure in our research) is an important predictor of customer repurchase intentions. Allen et al. (1992), assert that when prior experience has been extensive, emotion may emerge as a dominant influencer of behavior. Thus, the effect of pleasure on purchase intention should become stronger with transaction experience. Hence, we hypothesize:

H18: Transaction experience will moderate the relationship between pleasure and purchase intention.

We also propose the direct influence of transaction experience on purchase intention. It is related to the role of past behavior. Frequent performance of a behavior influences behavior independent of attitudes and intentions (Ajzen 2001). Several investigators have found that including a measure of past behavior accounts for a substantial portion of additional variance in intentions and actual behavior (e.g., Conner et al. 1999, O’ Callaghan et al. 1999). In other words, the frequency with which a behavior is performed in the past tends to correlate well with later actions. According to cognitive dissonance theory, after a few repeated transactions, customer's beliefs and attitudes stabilized in prediction intention and hence the purchase decision becomes largely automatic. Hence we hypothesize:

H19: Transaction experience will positively influence purchase intention.

### 6.5. DATA ANALYSIS AND RESULTS

First, we tested the association between transaction experience and the attributes of Internet shopping. We run the regression model with transaction experience as the dependent variable and perceived value, perceived price, convenience and pleasure as independent variables. The results are shown in the Table 6-A. From the results it is
clear that the association between the predictor variables and transaction experience is very low and only convenience is having a significant influence on transaction experience. As the $\mathrm{R}^{2}$ of the model is very poor (2.7\%), this significant influence may be due to spuriousness. So our conclusion that transaction experience can be used as a moderator variable is confirmed here.

Table 6-A: Regression Results with Transaction Experience as a Dependent Variable

| Variables |  | Standardized Beta |
| :---: | :---: | :---: |
| Criterion | Transaction Experience | $\mathbf{R}^{2}=\mathbf{0 . 0 2 3}$ |
| Predictors | Perceived Value (PVAL) | 0.021 |
|  | Perceived Price (PRCE) | 0.032 |
|  | Convenience (CONV) | $0.163^{* *}$ |
|  | Pleasure (PLEA) |  |
|  | $p<0.05 ; * *: p<0.01 ; * *: ~ P<0.001$ |  |

To test the moderating role of transaction experience, we conducted moderated regression analysis (MRA) as suggested by Sharma et al. (1981). A moderator variable can modify either the form and/or strength of the relationship between the predictor and the criterion variable. Depending upon whether the moderator modifies the form of relationship or the strength of relationship or both, a moderator is classified as a mere predictor variable, pure moderator variable or quasimoderator variable respectively. To understand the proper moderating effect of transaction experience we therefore conducted MRA which is an analytic approach which maintains the integrity of a sample and yet provides a basis for controlling the effects of a moderator variable (Sharma et al. 1981). The procedure for conducting MRA is as follows:

First, the overall significance of a model comprising only the predictor variables is evaluated. This can be termed as Model I. Second, the moderator variable is added to the Model I. This model can be termed as Model II. If the $\mathrm{R}^{2}$ increase
between Model I and Model II and the relationship between the moderating variable and criterion variable are significant, then the moderating variable could be a quasimoderator variable. If the moderator variable is not related to criterion variable, the moderator could be a pure moderator variable. Third, the interaction terms are added to Model II. The resulting model can be termed Model III. If the $\mathrm{R}^{2}$ increase between Model II and Model III is significant, then the interaction terms are then examined for significance. If one or more of the interaction terms are significant, it indicates the presence of a moderating effect. In such a case, if the moderating variable (in Model II) is related to criterion variable, then it is a quasi-moderator variable. If the moderating variable (in Model II) is not related to criterion variable, then it is a pure moderator variable. If none of the interaction terms are significant, then there is no moderating effect.

As the scale of moderator variable was different from that of predictor variables this could lead to multicollinearity problems between the interaction terms and the constituent variables. To prevent the multicollinearity problem due to scale invariance (Cohen et al. 2003), we centered the predictor variables and the moderator variable. Interaction terms were then obtained by multiplying the centered predictor variables with the centered moderator variable. The criterion variable was not centered as when it is in the original scale the predicted scores will also be in the units of the original scale and will have the same arithmetic mean as the observed criterion scores (Sharma et al. 1981). The correlation between the centered variables is shown in the Table 6-B. The results reveal that none of the interactions are highly correlated ( $>0.06$ ) thus preventing multicollinearity (Carlson et al. 2000).

Table 6-B: Correlation of Centered Variables with Interaction Terms

| Interaction | Moderator | Predictors |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | TranExp | PVAL | PRCE | CONV | PLEA |
| TranExp*PVAL | 0.161** | -0.119** | -- | -- | -- |
| TranExp*PRCE | -0.135** | -- | -0.067 | -- | -- |
| TranExp*CONV | 0.189** | -- | -- | -0.043 | -- |
| TranExp*PLEA | -0.130** | -- | -- | -- | 0.000 |

The MRA was then conducted according to the procedure outlined above. The results of the analysis are shown in Table 6-C. The results reveal that transaction experience significantly influences purchase intention $(\beta=0.114, p$-value $=0.000)$. Hence, H19 was supported. Also, the Models I, II and III are all significantly different from each other. Now, we consider the coefficients of the interaction terms. The results reveal that the transaction experience negatively moderates the effect of perceived price on purchase intention $(\beta=0.105$, $p$-value $=0.001$ ) and convenience on purchase intention $(\beta=-0.107$, $p$-value $=0.003$ ). There is no moderating effect of transaction experience on the relationship of perceived value, and pleasure with purchase intention. This implies that the transaction experience is a quasi-moderator (Sharma et al. 1981) of the relationships between perceived price and purchase intention, and convenience and purchase intention. Thus, H16 and H17 are supported, while H15 and H18 are not supported. The inclusion of moderating effect improves the explanation of customers' purchase intention by $2.9 \%$ and thus the total variance explained by the moderation effects model is $35.2 \%$. We also test the multicollinearity diagnostics. The VIF values are in the range of $1.096-2.399$ and the condition indices are less than 3.22. Thus, multicollinearity is not likely to be a problem.

Table 6-C: Moderated Regression Analysis

| Variables |  |  | Standardized Beta |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Model I | Model II | Model III |
| Criterion |  | Purchase Intention |  |  |  |
| Predictors | Perceived Value (PVAL) |  | 0.166*** | 0.164*** | 0.190*** |
|  | Perceived Price (PRCE) |  | $-0.298^{* * *}$ | -0.301*** | -0.288*** |
|  | Convenience (CONV) |  | 0.162 *** | 0.144*** | 0.125** |
|  | Pleasure (PLEA) |  | 0.110** | 0.115** | 0.108** |
| Moderator | Transaction Experience (TranExp) |  |  | 0.114*** | 0.133*** |
| Interaction Terms | TranExp*PVAL |  |  |  | 0.079 |
|  | TranExp*PRCE |  |  |  | 0.105** |
|  | TranExp*CONV |  |  |  | -0.107** |
|  | TranExp*PLEA |  |  |  | -0.027 |
| Results of Analysis |  | $R^{2}$ | 0.323 | 0.335 | 0.352 |
|  | $\Delta R^{2} / F$-stat | Model I and II | $0.012 / 14.49$ *** |  |  |
|  |  | Model II and III | $0.017 / 5.24$ ** |  |  |
|  |  | Model I and III | 0.029 / 7.15*** |  |  |

Figure 6-B shows the results in structural form. The $\mathrm{R}^{2}$ is different from other previous testing as MRA testing was done using SPSS whose estimates are based on correlation matrix, whereas LISREL's estimation procedure is based on covariance matrix.


Figure 6-B: Hypothesis Testing and MRA results for Study 3 (Repeat Customers)

The moderating effect of transaction experience on convenience $\rightarrow$ purchase intention and perceived price $\rightarrow$ purchase intention is graphically shown in Figure 6C. The graphs shows that with increasing transaction experience the influence of both convenience and perceived price on purchase intention is decreasing.


Figure 6-C: Significant Moderating Effects

### 6.6. DISCUSSION AND IMPLICATIONS

### 6.6.1. Discussion of Findings

In this study, we have examined the moderating effect of transaction experience in explaining customer choice and decision-making based on belief updating model and cognitive dissonance theory. The $\mathrm{R}^{2}$ increase because of interaction terms although low (2.9\%) was significant. This is acceptable as our focus is on identifying the presence of moderating effects in repeat customer purchase decision-calculus. The empirical results of this study show that customer transaction experience acts as a quasi-moderator rather than a pure moderator as it has a significant influence ( $\beta=$ $0.114, \mathrm{p}$-value $=0.000$ ) on customer purchase intention. This finding is consistent with many previous studies (e.g., Ajzen 2001, Allen et al. 1992, Charng et al. 1988, Ronis et al. 1989, Verplanken et al 1998), which found that past experience is a significant predictor of repurchase behavior when the behavior has been repeated
many times. However, these studies (e.g., Conner et al 1999, O’Callaghan et al 1999) also argue that the past experience explains a substantial amount of variance in repurchase behavior when the behavior becomes habitual. Since, the amount of variance explained in customer purchase intention by addition of transaction experience in our research is quite low, we can infer that customers in our study have not yet become habitual.

Regarding individual relationships, transaction experience had a significant moderating effect on the relationship between perceived price and purchase intention. With increasing transaction experience, the influence of perceived price on purchase intention reduces in strength. This is consistent with the belief-adjustment model as the adjustments made by customers in their beliefs reduce in strength over purchase experience. This also provides support to the studies (e.g., Reichheld and Schefter 2000, Reichheld and Teal 1996) which argue that repeat customers are less pricesensitive.

We also found that the influence of convenience on purchase intention was reduced in strength with increase in transaction experience. We argued that convenience being an important benefit of Internet shopping may be important and decision-relevant information and hence may influence customer purchase intention with increasing transaction experience. The results of our study, on the contrary, show that the important of convenience decreases with transaction experience. It is possible that once customer develop the perceptions about convenience, customers would assume that purchasing from the store would be convenient so they need not even need to recall it for decision-making in later transactions. Usually, customers forgo minor aberrations in purchases if they perceive that shopping from a particular store is convenient. For example, a customer purchasing from a nearby convenience store
prefers to patronize it for want of convenience even it he has to forgo some advantages of price etc.

Also, contrary to our hypothesis, the moderating effect of transaction experience on the relationship between pleasure and purchase intention was insignificant. Pleasure being an affective attribute may not be subjected to cognitive evaluation with every subsequent purchase. In such cases, there would be no change in the influence of pleasure on purchase intention with transaction experience. Moreover, online shopping for low-involvement products, such as books, may not be affectively involving for customers. Just the recall of previous pleasure would be enough for conducting new transaction.

Also, contrary to our hypothesis, the effect of transaction experience on the relationship between perceived value and purchase intention was insignificant. This is a surprising finding as either emotion (pleasure) $\rightarrow$ purchase intention or perceived value $\rightarrow$ purchase intention should have a significant moderating effect of transaction experience (Allen et al. 1992). According to Allen et al. (1992), emotion is a better predictor of behavior than attitude (value in our research) when the behavior has become habitual. As we have argued earlier, the relatively low explanation of past behavior on intention implies that customer purchase behavior in our study has not yet become habitual. Therefore, we would expect that influence of value on purchase intention should increase in strength. In order to analyze this relationship further we conducted a post-hoc analysis.

### 6.6.2. Post-Hoc Analysis: Nature of Moderating Effect

To further analyze the exact nature of moderating effect and to find differences between less-experienced and more-experienced customers, we adopted sub-group
analysis test as suggested by Sharma et al. (1981). Generally, it is recommended to adopt both MRA and sub-group analysis for a proper understanding of the moderating effect. The data was divided into two sets namely, Low transaction experience (LTE) and High transaction experience (HTE) by splitting the data into two parts about the mean transaction experience (14.5). The descriptive statistics for the two groups are shown in Table 6-D.

Table 6-D: Descriptive Statistics for LTE and HTE Groups

| Variables | LTE |  | HTE |  |
| :--- | :---: | :---: | :---: | :---: |
|  | Mean | SD | Mean | SD |
| Purchase Intention | 5.99 | 0.99 | 6.30 | 0.79 |
| Perceived Value | 5.55 | 1.04 | 5.77 | 0.89 |
| Perceived Price | 3.23 | 1.13 | 3.22 | 1.08 |
| Convenience | 5.50 | 1.11 | 5.86 | 1.06 |
| Pleasure | 5.46 | 1.15 | 5.62 | 1.08 |

Before comparing the two groups, first we established the factorial invariance of the measurement instrument. Then we conducted further statistical tests.

### 6.6.3. Establishing Measurement Invariance across Low and High Transaction

## Customer Groups

For comparing invariance related to a single measurement invariance, we follow the procedure detailed by Byrne (1998, Chapter 9), which is essentially the same as the procedure for multi-group comparison (Chapter 8). To establish invariance of factor structure, we will establish only configural invariance and factor loading invariance. The details of the analysis are shown in Appendix E. The results are summarized in Table 6-E, which establishes the configural invariance and full metric (factor loading) in variance.

Table 6-E: Invariance Tests between Low and High Transaction Experience Customer Groups

| No. | Models | $\chi^{\mathbf{2}} / \mathbf{d f}$ | RMSEA | CFI | GFI | NOTES |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
| 1 | Baseline Models |  |  |  |  |  |
| 1A | LTE Customers | $362.27 / 142$ | 0.056 | 0.99 | 0.93 | Excellent |
| 1B | HTE Customers | $300.40 / 142$ | 0.060 | 0.98 | 0.91 | Excellent |
| 2 | Configural Invariance | $662.68 / 284$ | 0.057 | 0.98 | 0.91 | Excellent |
| 3 | Full Metric Invariance | $686.10 / 298$ | 0.057 | 0.98 | 0.90 | $\Delta \chi_{(14)}^{2}=23.42$, <br> p-value $=0.054$ |

Table 6-E establishes configural invariance and full metric invariance ( $\Delta \chi^{2}{ }_{(14)}$ $=23.42, \mathrm{p}$-value $=0.054$ ). Establishing configural invariance and full metric invariance is sufficient for a factor structure to be invariance across groups. Therefore, we can safely proceed for further statistical analysis.

ns $=$ not significant; ${ }^{*}: p<0.05 ;{ }^{* *}: p<0.01 ;^{* * *}: p<0.001$
LTE: Normed $\chi^{2}=2.55$, RMSEA $=0.056$, RMR $=0.035, \mathrm{NFI}=0.98$, $\mathrm{NNFI}=0.98, \mathrm{CFI}=0.99, \mathrm{GFI}=0.93$, AGFI $=0.90$ HTE: Normed $\chi^{2}=2.11$, RMSEA $=0.060, \mathrm{RMR}=0.043, \mathrm{NFI}=0.97, \mathrm{NNFI}=0.98, \mathrm{CFI}=0.98, \mathrm{GFI}=0.91$, $\mathrm{AGFI}=0.88$

Figure 6-D: Structural Models for LTE and HTE Groups

### 6.6.4. Path Estimation

Since, the measurement instrument has already been validated for convergent and discriminant validity in previous study, we proceeded with path estimation for LTE and HTE customer groups. The two models are shown in Figure 6-D. For LTE group, perceived value, perceived price, and convenience had a significant influence on
purchase intention. The total variance explained was $46 \%$. For HTE group only perceived value had a significant influence on purchase intention and the total variance explained was $23 \%$.

To compare LTE and HTE groups, we used between-groups constrained test (Byrne 1988). First, a base model with all the hypothesized paths (Figure 6-D) was created using LISREL. Using this base model, two sub-models (one for LTE group and one for HTE group) were estimated jointly with the respective datasets. If the $\chi^{2}$ difference between the base model and the constrained model was insignificant (low fitting), it could be concluded that the antecedents have same effect in the two groups. The results of the comparison are shown in the Table 6-F. For perceived value, the $\chi^{2}$ difference was significant $\left(\Delta \chi^{2}=6.08, \Delta \mathrm{df}=1, \mathrm{p}=0.014\right)$. The path coefficients (Figure 6-D) indicate that perceived value has a stronger influence on purchase intention for HTE group as compared to LTE group. For perceived price, the $\chi^{2}$ difference was significant $\left(\Delta \chi^{2}=7.17, \Delta \mathrm{df}=1, \mathrm{p}=0.007\right.$ ). The path coefficients (Figure 6-D) indicate that perceived price has a weaker influence on purchase intention for HTE group as compared to LTE group. For convenience, the $\chi^{2}$ difference was significant ( $\Delta \chi^{2}=7.86$, $\Delta \mathrm{df}=1, \mathrm{p}=0.005$ ). The path coefficients (Figure 6-D) indicate that convenience has a weaker influence on purchase intention for HTE group as compared to LTE group. Chi-square difference was not significant for pleasure ( $\Delta \chi^{2}=0.09, \Delta \mathrm{df}=1, \mathrm{p}=0.764$ ).

Table 6-F: Between-Groups Constrained Test for LTE and HTE Groups

|  | BASE MODEL |  | CONSTRAINED <br> MODEL |  | DIFFERENCE |  |
| ---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Purchase Intention | $\boldsymbol{\chi}^{\mathbf{2}}$ | $\mathbf{D F}$ | $\chi^{\mathbf{2}}$ | $\mathbf{D F}$ | $\Delta \chi^{\mathbf{2}}$ | $\Delta$ DF |
| Perceived Value | 662.68 | 284 | 668.76 | 285 | $\mathbf{6 . 0 8}$ | 1 |
| Perceived Price | 662.68 | 284 | 669.85 | 285 | $\mathbf{7 . 1 7}$ | 1 |
| Convenience | 662.68 | 284 | 670.54 | 285 | $\mathbf{7 . 8 6}$ | 1 |
| Pleasure | 662.68 | 284 | 662.77 | 285 | 0.09 | 1 |

### 6.6.5. Findings from Post-Hoc Analysis

From Table 6-D, we can infer that the means for the variables are higher for HTE group. Customers from HTE group have greater intention to purchase and they perceive greater value, convenience and pleasure of shopping from the Internet vendor. Moreover, their perceived price is lower as compared to LTE group. However, the individual relationships between value-antecedents and purchase intention are less strong for HTE groups as compared to LTE group (Figure 6-D). This confirms that with greater transaction experience although customers' ability to analyze attribute information increases, they become less motivated to analyze attribute information for decision-making as proposed by Bettman and Park (1980).

Regarding the moderating effect of transaction experience on the relationship between perceived value and purchase intention, the results from sub-group analysis show an increase in the influence of perceived value on purchase intention with transaction experience. From Figure 6-D, we can note that only perceived value influences purchase intention for HTE group customers. This contradicts our hypothesis that the influence of transaction experience on the relationship between perceived value and purchase intention should be negative. One of the reasons could be the mean split. As we do not know exactly where the split the sample, the split itself could produce biased results. However, accepting the mean split, the results imply that that perceived value is the most important purchase decision criteria for more-experienced repeat customers according to information processing theory, and therefore, its influence on purchase intention is increasing with transaction experience.

The insignificant difference for pleasure $\rightarrow$ purchase intention and significant difference for perceived value $\rightarrow$ purchase intention between LTE and HTE groups
also merits some further attention. Theorizations on repeat purchases behavior (e.g. Charng et al. 1988, Ronis et al. 1989) suggest that emotion predicts purchase intention better than attitude when the behavior has become habitual. As value plays a similar role as attitude in our study, we can argue that pleasure should predict purchase intention better than value. We compared the relative strength of value on purchase intention and pleasure on purchase intention (after constraining all other relationships) using constrained test and found that value was stronger predictor of purchase intention than emotion $\left(\Delta \chi^{2}=10.73, \Delta \mathrm{df}=1, \mathrm{p}\right.$-value $\left.=0.000\right)$. In other words, the behavior has not become habitual even after so many purchases (Mean transaction experience $=14.50)$.

Figure 6-D also supports our earlier finding regarding low explanatory power $\left(\mathrm{R}^{2}\right)$ for repeat customer purchase intention in second study. Here, we can see that the $\mathrm{R}^{2}$ for low transaction experience customers is slightly higher than potential customers, which is quite low for high transaction experience customer group.

### 6.6.6. Limitations and Future Research

The results of this study must be interpreted in the context of its limitations. First, books fall into the category of low involvement products. For high involvement products, the transaction experience may have different moderating effect. Future studies may replicate this study in the context of high involvement product for establishing generalizability of our results. Secondly, for comparing less experienced customers and more experienced customers we used mean split, as it is used in previous research. However, in practice, it is difficult to determine the right boundary at which we can decide that a customer is less experienced or more experienced. This boundary may also vary from one product to another product and from customer to
customer. Hence, the results of this study must be interpreted in the context of this limitation.

### 6.6.7. Implications for Theory and Practice

This research has several implications for theory. First, this research shows that customers differ in their decision-calculus over transaction experience. Therefore, it is important to consider continuous processing of information for decision-making over transaction experience for decision that are made repeatedly or frequently over time (Hogarth 1981). Previous studies focus on the role of cognitive processing that occurs immediately prior to the act of purchase. That is, they only consider the processing of available information regarding purchase and neglect the role of recall of prior information and evaluations stored in memory. Due to sunk costs of decision-making, repeat customers recall their previous decisions which influence their purchase decision-making. In such instances, the relationship between attributes of Internet shopping on purchase intention would become weaker than when the decision is made without reference to previous purchases.

Secondly, the empirical examination of moderating effect of transaction experience reveals that the moderating effect is significant for beliefs, and not for affect and evaluation. Since the difference in decision-making arises due to beliefs, satisfaction based models (e.g., Bhattacherjee 2001b) would not show differences in customer purchase decision-making over transaction experience. Also, since both pleasure and perceived value influence customer purchase intention over transaction experience significantly, the findings of this study extends that of previous studies (e.g., Bhattacherjee 2001b). Bhattacherjee (2001) identifies only satisfaction (an experiential attribute equivalent to pleasure in our research) as a significant predictor
of customer continuance intention. We extend their finding by considering the importance of perceived value.

Lastly, this research provides an understanding of repeat purchase decisioncalculus. With increasing transaction experience, customer purchase decision-calculus becomes less attribute-information oriented and more overall evaluation oriented. Repeat customers have been considered less price-sensitive (e.g., Reichheld and Schefter 2000). However, caution must be exercised in applying this generalization as less-experienced repeat customers are sensitive to price, whereas more-experienced customers are not sensitive to price. Moreover, less-experienced repeat customers (LTE group) evaluate attribute information more deeply than more-experienced repeat customers as is evident by smaller means for variables in case of LTE group customers (Table 6-D) and greater strength of relationship between attribute information and purchase intention (Figure 6-D).

This study also has several implications for practice. First, the results of this study indicate that Internet vendors should differentiate among repeat customers based on their transaction experience. Repeat customers become less sensitive to convenience and perceived price over transaction experience. Therefore, Internet vendors should provide greater convenience options, price discounts or coupons for less experienced customers. Internet vendors should also seek customer feedback on convenience provided by the Internet vendor. With more-experienced repeat customers, Internet vendors should focus on providing greater value and pleasure in shopping. Here, they can provide value-added options in shopping. For example, they may provide same day delivery, features like book browsing and so on.

Secondly, Internet vendors should accelerate the transaction experience of repeat customers as increased transaction experience has a direct and significant effect
on customer purchase intention. For example, Internet vendors can develop rebate programs whereby a customer with more than a specific number of transactions can enjoy privilege services in their purchases. In this manner they would not only accelerate less-experienced repeat customers to the more-experienced stage, but their sales will also increase (Reichheld and Schefter 2000).

Thirdly, as repeat customers tend to reduce cognitive effort in decisioncalculus by recalling their previous experience, Internet vendors should aid repeat customers in recalling their previous experience with the Internet vendor. For example, Internet vendors may enumerate past successful experiences (e.g., success rate) of customer with the Internet vendor. Internet vendors may aid recall by enumerating success rate of other customers with the online store. They may also provide customer purchase profile with the online store in regards to the points earned in shopping with the Internet vendor, and how those points can help the customer in gaining purchase benefits in shopping with the Internet vendor.

Fourthly, we inferred from the findings that even after so many purchases (Mean transaction experience $=14.50)$ customers behavior has not become habitual. That means, we can expect that customer would be inclined toward rational decisionmaking. Therefore, online vendors should continue to provide value-added services to their customers even when customers have conducted many transactions with the online store.

Lastly, Internet vendors must ensure a closer fit between their strategies and customer requirements. Customers with lower transaction experience are more cognitive information oriented, particularly perceived price and convenience. Therefore, Internet vendors should communicate increased convenience and low price as their strategy to the customers. With greater transaction experience, customers
become less inclined toward cognitive information, and therefore, Internet vendor should communicate its image as a value-added service provider. In other words, Internet vendors should provide more value-added services for customers with greater transaction experience and thus prevent their premature exodus from the online store.

## 7. OVERALL DISCUSSION AND IMPLICATIONS

The overall objective of this research was to examine online customer value-driven purchase decision-calculus. For a systematic and in-depth examination of the subject of online purchase decision-calculus, we conducted three studies, each of which telescopically develops from the previous study. The aim of first study was to examine and explain the online purchase decision-calculus of online (potential and repeat) customers. The aim of second study was to examine and explain the differences in online purchase decision-calculus of potential and repeat customers. And the aim of third study was to examine and explain the moderating effect of transaction experience on repurchase decision-calculus. We present here the overall implications of the research to theory and practice, a summary of the overall findings of the research, and overall limitations.

### 7.1. OVERALL IMPLICATIONS FOR PRACTICE

In the first study, we identified the factors that influence purchase decision calculus of online customers (potential customers and repeat customers) based on prospect theory and mental accounting theory. We also examined how these factors as well as the overall assessment of these factors (i.e., perceived value) influence customer intention to purchase from the online store. The major findings from this study were that both monetary and non-monetary factors significantly influence online customer perceived value of purchasing online. While, potential customers make their purchase decision based on an integrated evaluation of these factors, repeat customers make their purchase decision based on integrated and segregated evaluation of these factors. Therefore, while online vendors should focus on providing greater value for enhancing sales with their potential customers and repeat customers, they should also
differentiate themselves from other vendors across individual attributes of purchase decision. This study would help online vendors in outlining strategies for increasing initial sales with potential customers and repeat sales with repeat customers.

In the second study, we compared value perception and purchase decisioncalculus of potential customers and repeat customers based on the information processing theory of customer choice, as it is known that customer's evaluation and decision-making criteria changes with purchase experience. We found further evidence for segregated evaluation of attributes in case of repeat customers as the influence of value on purchase intention decreased in strength from potential customers to repeat customers. We found that, while in case of potential customers perceived risk has a greater influence on perceived value than perceived price, it is the other way round in case of repeat customers. Therefore, online vendors should emphasize more on secure purchases rather than low prices for potential customers. We also found that the influence of perceived price on purchase intention is strongest in case of less experienced repeat customers, which gives a clue that online vendors should differentiate between customers over their transaction experience. Thus, this study provides insights to vendors about differentiating between their potential and repeat customers for increasing sales.

Prompted by the results of second study, we studied repurchase decisioncalculus in greater detail in the third study based on the belief adjustment model and cognitive dissonance theory. In the third study, we examined the changes in customer repurchase decision-calculus over transaction experience. Transaction experience is an easiest and practical means to differentiate among various repeat customers. A number of interesting findings emerged from this study. We found that customers differ over transaction experience in terms of the cognitive attributes of decision-
making and their evaluation of these attributes decreases over time so much so that the repeat customers become automatic in their decision-calculus with increasing number of purchases made with the online vendor. So, while less experienced repeat customers are quite evaluative in their decision-making, more experienced repeat customers are more automatic in their decision-making. Therefore, it is worthwhile to provide more experienced repeat customers with greater value-added offerings and premium services. Moreover, online vendors should attempt to accelerate the transaction experience of customers with suitable price discounts and value-added strategies so that they become more automatic in their decision-making in future purchases.

Thus, the three studies comprehensively explain the subject of online decisioncalculus and will be helpful to the practitioners (especially online vendors).

### 7.2. OVERALL IMPLICATIONS FOR THEORY

The three studies also made significant contributions to theory. In general, we found support for the ideas suggested by Howard and Sheth (1969) that in the beginning stages, customer-decision making is largely limited to information gathering. As customers gain some purchase experience they go through extensive deliberation about the attributes and when they have gained sufficient purchase experience their purchase decision-calculus becomes more or less automatic. Our findings resonate to some extent with that of Payne et al (1993), who build upon Bettman's (1979) information processing theory of customer choice. According to Payne et al. (1993), under risky and unfamiliar environment, customers employ analytical processing and thus consider more criteria. This is the case with potential and less-experienced repeat customers. Potential customers gather information from the environment as they do
not have the ability to analyze attributes of purchasing from the online vendor to a greater detail as compared to less-experienced repeat customers. Accordingly, the decision strategy of potential customers changes from integrated evaluation to segregated evaluation in case of less-experienced repeat customers. However, as customers become more experienced they again make their decisions based on integrated evaluation not because they are unable to analyze the individual attributes, but because of the automaticity they have attained in decision-making and also because value emerges as the most-important and decision-relevant factor for more experienced repeat customers.

### 7.3. SUMMARY OF OVERALL FINDINGS OF THIS RESEARCH

We found that the role of value is very important for potential customers and for more-experienced repeat customers. It reduces in importance for less-experienced repeat customers, who wish to analyze individual attributes in greater detail. However, on the contrary, the role of monetary and non-monetary factors is lessimportant in decision-making for potential customers and more-experienced repeat customers. Monetary and non-monetary factors play an important role for lessexperienced repeat customers who are inclined toward segregated evaluation in decision-making. These findings are consistent with the propositions of information processing theory of customer choice (Bettman 1979), and subsequent empirical work based on information processing theory of customer choice (Alba and Hutchinson 1987, Bettman and Park 1980).

Two major implications for online vendors are in terms of sales strategy and differentiation strategy. Online vendors should adopt value-strategy with emphasis on risk-reduction for potential customers. With more-experienced customers also, online
vendor should adopt value-strategy but with emphasis on providing value-added services to their customers. With less-experienced customers, online vendors should provide flexibility for individual value components, namely, perceived price, convenience and pleasure. For competitive differentiation, online vendors should differentiate in terms of overall value with all customers, particularly potential customers and more experienced repeat customers. With less-experienced repeat customers, online vendors should also differentiate among them in terms of individual attributes, namely, convenience, perceived price and pleasure also. The overall results of this research are summarized in the Table 7-A.

Table 7-A: Summary of the Results of this Research

|  | POTENTIAL <br> CUSTOMERS | REPEAT CUSTOMERS |  |
| :---: | :---: | :---: | :---: |
|  |  | MORE <br> EXPERIENCED |  |
| CUSTOMER <br> DECISION MAKING | Information <br> gathering | Large <br> deliberation | Automaticity |
| DECISION <br> STRATEGY | Integrated | Segregated | Integrated |
| ROLE OF VALUE | Important | Less Important | Important |
| ROLE OF <br> MONETARY <br> FACTORS | Less-important | Very-important | Less-important |
| ROLE OF NON- <br> MONETARY <br> FACTORS | Less-important | Very-important | Less-important |
| SALES STRATEGY | Value strategy/ <br> risk reduction | Individual value <br> components | Value-added <br> service provider |
| DIFFERENTIATION <br> STRATEGY | Value | Convenience and <br> Low price | Value-added <br> services |

On a closer look the overall results seem to be the same as that for offline stores. For example, the customer decision making would be same for online and offline customers. However, the role of risk changes the customers' decision strategy. In offline context, price reduction strategy has a significant impact on potential
customer purchase decision. However, in online context, risk is more important consideration than price. So, offline potential customers would most likely adopt segregated evaluation strategy. Similarly, the sales strategy for offline potential customers would be most likely value strategy rather than risk reduction strategy. The results for repeat customers would remain the same as repeat customers do not face as much risk as potential customers face. Moreover, acquisition utility may differ across online bookstores, if the bookstores are different in the type of books they carry and the market they serve (for example, children books versus college books). In our research, the Korean online bookstore would compete with other Korean online bookstores which usually carry the same types of books and hence acquisition utility would be constant across the stores.

In summary, the price-reduction strategy of online vendors for potential customers is not practical, as it cuts into profits and also does not increase sales. This research provides a number of insights to online vendors for improving their initial and repeat sales and to develop strategies for targeting customers at various levels of purchase experience. This study would also be useful for academics for its number of theoretical implications, and in particular, the theoretically based concept of value in online purchase decision-calculus.

### 7.4. OVERALL LIMITATIONS

There were a number of avenues in which we could have improved for a better understanding of online purchase decision-calculus. This research is just a milestone for future studies on online purchase decision-calculus. We identified most parsimonious factors that influence online customer purchase decision-calculus. However, there could be other factors that may influence decision-calculus, which we
might have missed, and which might not be covered by the factors that we have already considered.

Moreover, this study was a cross-sectional study, as we wanted to understand the decision-calculus of online customers at their specific purchase experience. Probably, longitudinal studies might have predicted the online customer decisioncalculus over a period of time better than this study. We could not pursue a longitudinal study, due to lack of time and practical difficulties in identifying specific repeat customers. Future studies can empirically examine the research model developed in this research using a longitudinal survey. This would prevent common method bias, which arise due to studying both value and purchase intention at the same time. Although we took statistical precautions in designing the survey as well as in data testing, using longitudinal study would prevent such a bias.

Lastly, the Korean online context may bias the results as Korean online stores are very slick and exciting in design with lots of rich graphics and downloads. Thus, customers' purchase evaluation may be biased by the excitement of shopping online. Moreover, a large Korean population conducts purchases online which may reduce customer's purchase risk. Future studies can examine and compare these results for different online contexts.

## 8. CONCLUSIONS

For remaining competitive, online vendors need to increase sales. Although there could be many approaches for increasing online sales, we adopted a fundamental approach of examining the purchase decision-calculus of online customers. Since value has been widely used for predicting customer choice and decision-making, we adopted the concept of value for examining online customer purchase decisioncalculus. Using prospect theory and mental accounting theory, we identified the factors that influence customer value perception of Internet shopping for both potential customers and repeat customers. Since online vendors tend not to use the same sales strategy with potential customers and repeat customers, we examined the differences between the decision-calculus of potential customers and repeat customers from the information processing theory perspective. We also examined the changes in purchase decision criteria of repeat customers over transaction experience using belief updating model and status quo bias.

Thus, in this research we comprehensively examined and explained the subject of online customer purchase decision-calculus. We found that value plays an important role in customer purchase decision-calculus. With low price strategy, the sales suffer. Based on the differences in decision-calculus of customers at various levels of purchase experience, this research theoretically and empirically demonstrated the effectiveness of value strategy in online customer purchase decision-calculus. This study also suggested strategies for differentiation among repeat customers with different transaction experiences.

As e-commerce is evolving with an increasing number of online vendors, price competition may intensify further. Therefore, online vendors should understand the decision-calculus of their customers for adopting appropriate strategies for increasing
sales with potential customers and repeat customers. The results of this study would help online vendors in adopting suitable strategies for a competitive differentiation with other online stores and for increasing sales with their potential customers and repeat customers as well as improving repurchases from their repeat customers.

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## APPENDIX A: ONLINE SURVEY CONDUCTED AT ONLINE BOOKSTORE

INTRODUCTION PAGE


We are a group of students from National University of Singapore, studying customer shopping behavior on Internet as a part of our dissertation. Aladdin is a reputed online bookstore in Korea and is therefore of interest to us. This project will be useful in customer's oriented site development for online purchasing.

All information gathered by this survey will be kept confidential according to University rules and will not be used for any purpose other than academic study. This research is not part of a marketing or other commercial study.

As an appreciation of your participation, we will give USD10 to 200 participants by drawing lots. The results will be announced on $4^{\text {th }}$ February, 2005.

It will take around $3 \sim 5$ minutes to complete the survey questionnaire.

The success of this survey depends on your participation and candid responses. We would therefore greatly appreciate your assistance in answering the questionnaire.

- Survey Ends: $31^{\text {st }}$ January, 2005
"There are two different questionnaires."
Please select one questionnaire depending on your experience.


[^3]Aladdin Home Survey Home Internet Shopping Survey

This questionnaire is meant for those who haven't purchased previously from Aladdin. For those who have purchased from Aladdin at least once, please use a different questionnaire.

0 . After Searching Aladdin, please enter the name of a book of your interest and its price.
[Please do not use quotation marks (') in the name of the book]
Name of the Book:
Price :


1. The following questions are about your Intention to Purchase from Aladdin's bookstore. Please choose the most appropriate option.
Strongly

Disagree Neutral | Strongly |
| :---: |
| Agree |

1-1
If I were to buy a book, I would consider buying it from Aladdin
00000000

1-2
The likelihood of my purchasing a book from Aladdin is high

1-3 My willingness to buy a book from Aladdin is high

1-4 The probability that I would consider buying a book from Aladdin is high
2. The following questions are about your assessment of value of purchases made at Aladdin's bookstore. Please choose the most appropriate option.
Strongly

Disagree Neutral | Strongly |
| :---: |
| Agree |

Considering the time and effort I spend on buying
$2-1$ books at this store, Internet shopping at Aladdin is worthwhile.

2-2 Considering the risk I take in buying books at this store,
Internet shopping at Aladdin has value.

2-3 Considering the money I pay for buying books at this store, Internet shopping at Aladdin is a good deal.

Considering all monetary and non-monetary costs ।
2-4 incur in buying books at this store, Internet shopping at Aladdin is of good value.
3. The following questions are about your perception of risk in purchasing from Aladdin's bookstore. Please choose the most appropriate option.

Strongly
Disagree
Internet shopping at Aladdin involves significant uncertainty.

There is a significant chance of loss in Internet shopping at Aladdin.

There would be negative outcomes in Internet shopping at Aladdin.

My credit card and personal information may not be secure with Aladdin.
4. The following questions are about your perception of prices in Aladdin's bookstore. Please choose the most appropriate option.
Strongly

Disagree Neutral | Strongly |
| :---: |
| Agree |$>$

4-1
It may be possible to get a better discount from another online store.

4-2 It may be cheaper to buy books at another online store.

I will probably save more money buying books at another online store.

I may need to pay more money buying books at this store than at another online store.
5. Please provide your personal details regarding shopping at Aladdin. This information will only be used for Analysis and will not be disclosed to anyone.

| $5-1$ Gender | $\bigcirc$ Male $\bigcirc$ Female |
| :--- | :--- |
| $5-2$ Age | $\square$ Years |


| 5-3 | Profession | Not Answered $\nabla$ |
| :---: | :---: | :---: |
| 5-4 | How long have you been using Internet? | Not Answered $\boldsymbol{\square}$ Years |
| 5-5 | Have you purchased on Internet previously from any other online store? | $\bigcirc$ Yes O No |
| 5-6 e-mail ID |  |  |
|  | Submit |  |

Aladdin Home Survey Home
Internet Shopping Survey

- This questionnaire is meant for those who have purchased previously at lease once from Aladdin. For those who haven't purchased from Aladdin, please use a different questionnaire.

1. The following questions are about your Intention to Purchase from Aladdin's bookstore. Please choose the most appropriate option.
Strongly

Disagree Neutral | Strongly |
| :---: |
| Agree |

1-1 If I were to buy a book, I would consider buying it from Aladdin

1-2 The likelihood of my purchasing a book from Aladdin
00000000 is high

1-3 My willingness to buy a book from Aladdin is high

1-4 The probability that I would consider buying a book from Aladdin is high
2. The following questions are about your assessment of value of purchases made at Aladdin's bookstore. Please choose the most appropriate option.

$$
\begin{aligned}
& \text { Strongly } \\
& \text { Disagree }
\end{aligned} \text { Neutral } \begin{gathered}
\text { Strongly } \\
\text { Agree }
\end{gathered}
$$

Considering the time and effort I spend on buying
2-1 books at this store, Internet shopping at Aladdin is worthwhile.

2-2 Considering the risk I take in buying books at this store, Internet shopping at Aladdin has value.

2-3
Considering the money I pay for buying books at this store, Internet shopping at Aladdin is a good deal.

Considering all monetary and non-monetary costs I
2-4 incur in buying books at this store, Internet shopping at Aladdin is of good value.
3. The following questions are about your perception of risk in purchasing from Aladdin's bookstore. Please choose the most appropriate option.
Strongly
Disagree
Neutral
Strongly
Agree

3-1
Internet shopping at Aladdin involves significant uncertainty.

00
0
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0
0

There is a significant chance of loss in Internet
3-2
shopping at Aladdin.

3-3
There would be negative outcomes in Internet shopping at Aladdin.

3-4 My credit card and personal information may not be secure with Aladdin.
4. The following questions are about your perception of prices in Aladdin's bookstore. Please choose the most appropriate option.
Strongly

Disagree Neutral | Strongly |
| :---: |
| Agree |

4-1
It may be possible to get a better discount from another online store.

4-2 It may be cheaper to buy books at another online store.

4-3
I will probably save more money buying books at another online store.

I may need to pay more money buying books at this
4-4 store than at another online store.
6. The following questions are about the convenience of purchasing from Aladdin's bookstore. Please choose the most appropriate option.
Strongly
Neutral
Strongly
Disagree
Agree

6-1 Internet shopping at Aladdin saves me time.

6-2 Internet shopping at Aladdin minimizes my effort in shopping.

6-3 Internet shopping at Aladdin is easy for me.

Internet shopping at Aladdin minimizes personal hassle
6-4 in shopping.
7. Please provide your personal details regarding shopping at Aladdin. This information will only be used for Analysis and will not be disclosed to anyone.
7-1 Gender

- Male
$\bigcirc$ Female
7-2 Age
$\square$ Years
7-3 Profession
Not Answered $\boldsymbol{\nabla}$
7-4 How long have you been using Internet?
Not Answered $\nabla$ Years
7-5 $\begin{aligned} & \text { How many times have you bought products from this } \\ & \text { store? }\end{aligned}$

7-6 Please provide your Alladin e-mail ID


## Submit

## APPENDIX B: ESTIMATING COMMON METHOD VARIANCE

Method variance refers to the variance that is attributable to the measurement method rather than the construct of interest (Podsakoff et al. 2003). Common method variance can result from various sources, such as due to a common rater, a common measurement context, a common item context, or from the characteristics of the items themselves (Podsakoff et al. 2003). In any given study, it is possible for several of these factors to be operative. Therefore, it is important to carefully evaluate the conditions under which the data are obtained to assess the extent to which method biases may be a problem. Method biases are likely to be particularly powerful in studies in which the data for both the predictor and criterion variable are obtained from the same person in the same measurement context using the same item context and similar item characteristics.

Common method variance may result in spurious relationships among some of the variables of interest (Campbell and Fiske, 1959), which means that the observed results could also be interpreted as reflecting an artifact of the measurement procedures as opposed to meaningful relationships among theoretical constructs. The seriousness of the method variance problem has been debated in the literature. Spector (1987) analyzed data from several studies and found little evidence that method variance biases observed relationships. However, Williams et al. (1989) argued that Spector's (1987) conclusions were incorrect because inappropriate analytical procedures were used. Using CFA on the same data, they concluded that method variance accounts for approximately $25 \%$ of the variance in the variables measured. Finally, in yet another reanalysis of the data, Bagozzi and Yi (1990) concluded that method variance is more prevalent than Spector (1987) concluded, but less of a problem than Williams et al. (1989) asserted.

Common method variance can be tested in various ways (Podsakoff et al. 2003). In order to examine whether common method variance is a serious issue or not in our research, we performed three widely used tests, namely Harman's single factor test (Podsakoff and Organ 1986), Widaman (1985) nested Models test, and Bentler and Bonnet test (Song and Zahedi 2005).

### 8.1.1.1. Harman's Single Factor test (Podsakoff and Organ 1986)

Harman's single-factor test is the first statistical procedure to be used to test for common method variance. In this procedure, all the variables of interest are entered into a factor analysis, and the result of the un-rotated factor solution is examined to determine the number of factors that are necessary to account for the variance in the variables. The basic assumption of this technique is that if a substantial amount of common method variance is present, either (a) a single factor will emerge from the factor analysis, or (b) one 'general' factor will account for the majority of the covariance in the independent and criterion variables. Although the single-factor test is reasonably straightforward and easy to apply, there are some problems inherent in its use. First, the likelihood of finding more than one factor increases as the number of variables increases. Thus, the single-factor test becomes increasingly less conservative as the total number of variables increases. Secondly, no specific rules have been explicated on how many factors the researcher should expect from the
factor analytic procedure. Obviously, when only one factor emerges from the analysis, it is quite possible that common method variance accounts for most of the interrelationships. The un-rotated factor solution for both potential customers and repeat customers is shown in the Table A1-A.

Table A1-A: Un-rotated Factor Solution for Potential and Repeat Customers Groups

| Items | Potential Customers |  |  |  | Repeat Customers |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 5 | 6 |
| PINT1 | 0.75 | 0.28 | 0.25 | -0.34 | 0.69 | 0.04 | 0.38 | -0.39 | -0.14 | -0.15 |
| PINT2 | 0.76 | 0.34 | 0.32 | -0.31 | 0.69 | 0.03 | 0.44 | -0.42 | -0.14 | -0.14 |
| PINT3 | 0.79 | 0.33 | 0.24 | -0.28 | 0.70 | 0.02 | 0.41 | -0.41 | -0.10 | -0.08 |
| PINT4 | 0.74 | 0.38 | 0.27 | -0.32 | 0.61 | 0.08 | 0.36 | -0.43 | -0.10 | -0.11 |
| PVAL1 | 0.81 | 0.21 | -0.05 | 0.39 | 0.77 | 0.06 | 0.11 | 0.18 | -0.09 | 0.42 |
| PVAL2 | 0.76 | 0.14 | -0.11 | 0.43 | 0.77 | 0.07 | 0.05 | 0.11 | -0.12 | 0.43 |
| PVAL3 | 0.80 | 0.18 | 0.08 | 0.40 | 0.70 | -0.03 | 0.18 | 0.14 | -0.01 | 0.50 |
| PVAL4 | 0.77 | 0.19 | 0.00 | 0.43 | 0.80 | 0.05 | 0.12 | 0.13 | -0.10 | 0.37 |
| PRCE1 | -0.24 | 0.67 | -0.45 | 0.05 | -0.29 | 0.72 | -0.08 | -0.07 | -0.17 | 0.14 |
| PRCE2 | -0.32 | 0.69 | -0.42 | 0.01 | -0.37 | 0.76 | -0.09 | -0.11 | -0.21 | 0.08 |
| PRCE4 | -0.44 | 0.61 | -0.37 | -0.05 | -0.43 | 0.71 | -0.14 | -0.14 | -0.14 | 0.02 |
| PRCE5 | -0.57 | 0.42 | -0.20 | -0.17 | -0.48 | 0.65 | -0.07 | -0.11 | -0.09 | 0.01 |
| RISK1 | -0.62 | 0.29 | 0.55 | 0.18 | -0.47 | 0.15 | 0.52 | 0.16 | 0.35 | -0.01 |
| RISK3 | -0.69 | 0.28 | 0.42 | 0.20 | -0.53 | 0.21 | 0.45 | 0.20 | 0.35 | -0.01 |
| RISK4 | -0.66 | 0.29 | 0.52 | 0.17 | -0.49 | 0.19 | 0.56 | 0.16 | 0.36 | 0.06 |
| RISK5 | -0.56 | 0.24 | 0.54 | 0.14 | -0.41 | 0.13 | 0.46 | 0.06 | 0.33 | 0.08 |
| CONV1 |  |  |  |  | 0.73 | 0.22 | 0.06 | 0.42 | -0.11 | -0.30 |
| CONV2 |  |  |  |  | 0.76 | 0.22 | 0.07 | 0.44 | -0.11 | -0.29 |
| CONV3 |  |  |  |  | 0.77 | 0.21 | 0.09 | 0.35 | -0.10 | -0.18 |
| CONV5 |  |  |  |  | 0.71 | 0.21 | 0.05 | 0.41 | -0.11 | -0.30 |
| PLEA1 |  |  |  |  | 0.75 | 0.18 | -0.24 | -0.13 | 0.40 | 0.01 |
| PLEA3 |  |  |  |  | 0.75 | 0.18 | -0.30 | -0.13 | 0.46 | -0.02 |
| PLEA4 |  |  |  |  | 0.73 | 0.20 | -0.29 | -0.15 | 0.47 | -0.03 |
| PLEA5 |  |  |  |  | 0.75 | 0.18 | -0.28 | -0.14 | 0.45 | -0.03 |
| Total Eigen <br> Value | 7.09 | 2.36 | 1.90 | 1.23 | 10.10 | 2.49 | 2.08 | 1.63 | 1.51 | 1.14 |
| \% of Variance | 44.33 | 14.72 | 11.89 | 7.71 | 42.07 | 10.39 | 8.65 | 6.81 | 6.31 | 4.75 |
| Cumulative \% | 44.33 | 59.05 | 70.93 | 78.64 | 42.07 | 52.45 | 61.11 | 67.92 | 74.23 | 78.98 |

This analysis produced 4 factors for potential customers and 6 factors for repeat customers. The first factor for potential customer group explained $44 \%$ of the variance and the first factor for repeat customer group explained $42 \%$ of the total variance. There was no general factor apparent in the un-rotated factor solution. Few IS studies report Harman's single factor. One exception is Igbaria et al. (1997), who
report that the general factor in their analysis explained $20 \%$ of variance and conclude that it is not large enough to indicate common method bias. However, Podsakoff et al. (2003) observe that "there is no guideline on how much variance the first factor should extract before it is considered a general factor" (p. 890). In other words, the presence of common method variance is not so clear from this test. Therefore, we follow the recommendation by Podsakoff et al. (2003) for checking and controlling for common method variance using a more rigorous test procedure developed by Widaman (1985).

### 8.1.1.2. Widaman’s Nested Model Tests (Widaman 1985)

The first step suggested by Widaman (1985) is to test for the presence of trait and method variance by using a series of hierarchically nested Models. Four basic Models were examined to determine whether trait or method variance is present.
Model 1 is a null Model in which the variance in the measures is explained only by random error (no trait or method factors). Model 2 is a trait-only Model in which the variance in the measures is explained by trait factors and random error ( t trait factors, freely estimated inter-correlations, no method factors). Model 3 is a method-only Model in which the variance in the measures is explained by method factors and random error ( m method factors, freely estimated inter-correlations, no trait factors). Model 4 is a trait and method Model in which the variance in the measures is explained by trait factors, method factors, and random error ( t trait factors, m method factors, freely estimated inter-correlation among trait factors, freely estimated intercorrelations among method factors, fixed zero inter-correlations between trait and method factors).
The presence of trait factors can be determined by examining the improvement in the $\chi 2$ goodness-of-fit value caused by adding trait factors to null Model and method Model. If trait factors are present, the trait Model should have a significantly better fit than the null Model and trait and method Model should have a significantly better fit than method Model. In other words, Model 2 should have a significantly lower $\chi 2$ goodness of fit than Model 1 and Model 4 should have a significantly lower $\chi^{2}$ goodness of fit than Model 3. If both of these conditions are met, one can conclude that trait factors are present.

The presence of method factors is determined by using a similar rationale. If method factors are present, the method Model (Model 3) should have a significantly better fit than the null model (Model 1) and the trait and method model (Model 4) should have a significantly better fit than the trait Model (Model 2). If both these conditions hold, one can conclude that method factors are present.
Once trait and method variance have been shown to exist, their magnitude can be estimated. CFA allows for the partitioning of variance accounted for by trait factors, method factors, and unique sources. Specifically, for each item, the square of the trait factor loading and of the method factor loading indicate the amount of variance due to trait and method factors, respectively. Further, the sum of the squared loadings can be used to index the total amount of variation in the data due to trait and method factors (c.f. Williams et al., 1989). Variation not accounted for by these sources represents unique variance.

The square of the trait factor loadings indicates the percentage of variance in a measure due to traits and the square of the method factor loadings indicates the amount of variance due to methods (Widaman 1985). Fisher's r to z transformation (see Hays 1973) was used to calculate the average amount of variance due to trait, method, and random error across the 70 data sets.

We used CFA to test the four alternative measurement Models. The four Models are shown at the end of this Appendix. The summary of the nested Model testing is shown in the Table A1-B.

Table A1-B: Widaman's Nested Model Tests

| Group | Model | $\chi^{\mathbf{2}}$ | df | GFI | AGFI | NFI | RMSEA |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Potential <br> Customers | 1. Null Model | 5013.56 | 120 | -- | -- | -- | 0.000 |
|  | 2. Traits Model | 162.86 | 84 | 0.91 | 0.87 | 0.97 | 0.066 |
|  | 3. Method Model | 1674.08 | 90 | 0.49 | 0.32 | 0.76 | 0.285 |
|  | 4. Trait and Method Model | 102.35 | 69 | 0.94 | 0.90 | 0.98 | 0.047 |
| Repeat <br> Customers | 1. Null Model | 39076.99 | 276 | -- | -- | -- | 0.000 |
|  | 2. Traits Model | 650.98 | 215 | 0.93 | 0.92 | 0.98 | 0.050 |
|  | 3. Method Model | 9858.80 | 230 | 0.49 | 0.38 | 0.80 | 0.227 |
|  | 4. Trait and Method Model | 464.15 | 192 | 0.95 | 0.93 | 0.99 | 0.042 |

Trait Factors: The presence of trait factors can be determined by examining the improvement in the $\chi 2$ goodness-of-fit value caused by adding trait factors to the null Model and to the method Model. If trait factors are present, the trait Model should have a significantly better fit than the null Model and the trait and method Model should have a significantly better fit than the method Model. In other words, Model 2 should have a significantly lower $\chi 2$ goodness of fit than Model 1 and Model 4 should have a significantly lower $\chi 2$ goodness of fit than Model 3. If both of these conditions are met, one can conclude that trait factors are present.

The $\chi 2$ of Model 2 is significantly lower than that of Model 1 for both potential customer $\left(\Delta \chi^{2}=4850.70, \Delta \mathrm{df}=36, \mathrm{p}\right.$-value $\left.=0.000\right)$ and repeat customer $\left(\Delta \chi^{2}=\right.$ 38426.01, $\Delta \mathrm{df}=61, \mathrm{p}$-value $=0.000$ ) groups. Moreover, the $\chi 2$ of Model 4 is significantly lower than that of Model 3 for both potential customer ( $\Delta \chi 2=1571.73$, $\Delta \mathrm{df}=21, \mathrm{p}$-value $=0.000)$ and repeat customer $(\Delta \chi 2=9394.65, \Delta \mathrm{df}=38, \mathrm{p}$-value $=$ 0.000 ) groups. As both the conditions as specified by Nested Model procedure as described above are met we can conclude a significant presence of trait factors.
Method Factors: The presence of method factors is determined by using a similar rationale. If method factors are present, the method Model (Model 3) should have a significantly better fit than the null Model (Model 1) and the trait and method Model (Model 4) should have a significantly better fit than the trait Model (Model 2). If both these conditions hold, one can conclude that method factors are present.

The $\chi 2$ of Model 3 is significantly lower than that of Model 1 for both potential customer $\left(\Delta \chi^{2}=3339.48, \Delta \mathrm{df}=30, \mathrm{p}\right.$-value $\left.=0.000\right)$ and repeat customer $\left(\Delta \chi^{2}=\right.$ $29218.19, \Delta \mathrm{df}=46, \mathrm{p}$-value $=0.000$ ) groups. Moreover, the $\chi 2$ of Model 4 is significantly lower than that of Model 2 for both potential customer $(\Delta \chi 2=60.51, \Delta \mathrm{df}$
$=15, \mathrm{p}$-value $=0.000)$ and repeat customer $(\Delta \chi 2=186.83, \Delta \mathrm{df}=23, \mathrm{p}$-value $=0.000)$ groups. As both the conditions as specified by Nested Model procedure as described above are met we can conclude a significant presence of methods factors also.
Magnitude of Trait and Method Variance: As both trait factors and method factors exist, their magnitude needs to be estimated. CFA allows for the partitioning of variance accounted for by trait factors, method factors, and unique (error) sources. Specifically, for each item, the square of the trait factor loading and of the method factor loading indicate the amount of variance due to trait and method factors, respectively. Further, the sum of the squared loadings can be used to index the total amount of variation in the data due to trait and method factors (c.f. Williams et al., 1989). Variation not accounted for by these sources represents unique (error) variance.

The variance proportioning is shown in the Table A1-C. The percentage variance shows that significant trait factors ( $49 \%$ for potential customers and $50 \%$ for repeat customers) are present in the data. Apart from trait variance, the results show a significant presence of method factors ( $40 \%$ for potential customers and $39 \%$ for repeat customers). The amount of variance due to errors is $11 \%$ for potential customers and $12 \%$ for repeat customers. As yet there is no guideline as to how much variance would be considered significant for common method variance to exist. However, as both trait variance and method variance have little difference we can conclude the presence of significant common method variance.

Table A1-C: Variance Proportioning For Potential and Repeat Customers

| ITEMS | POTENTIAL CUSTOMERS |  | REPEAT CUSTOMERS |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | TRAIT | METHOD | ERROR | TRAIT | METHOD | ERROR |
| PINT1 | 0.66 | 0.57 | 0.24 | 0.71 | 0.52 | 0.23 |
| PINT2 | 0.71 | 0.60 | 0.14 | 0.76 | 0.53 | 0.14 |
| PINT3 | 0.64 | 0.66 | 0.15 | 0.71 | 0.56 | 0.18 |
| PINT4 | 0.69 | 0.58 | 0.19 | 0.61 | 0.46 | 0.42 |
| PVAL1 | 0.42 | 0.82 | 0.15 | 0.17 | 0.86 | 0.23 |
| PVAL2 | 0.60 | 0.69 | 0.16 | 0.23 | 0.85 | 0.22 |
| PVAL3 | 0.14 | 0.92 | 0.13 | -0.51 | 0.96 | -0.18 |
| PVAL4 | 0.31 | 0.79 | 0.28 | 0.24 | 0.86 | 0.20 |
| PRCE1 | 0.63 | -0.09 | 0.60 | 0.55 | -0.16 | 0.67 |
| PRCE3 | 0.82 | -0.30 | 0.24 | 0.84 | -0.34 | 0.18 |
| PRCE4 | 0.50 | -0.49 | 0.51 | 0.72 | -0.37 | 0.34 |
| RISK1 | 0.76 | -0.32 | 0.32 | 0.64 | -0.32 | 0.49 |
| RISK2 | 0.78 | -0.40 | 0.23 | 0.68 | -0.40 | 0.38 |
| RISK3 | 0.82 | -0.37 | 0.19 | 0.79 | -0.31 | 0.28 |
| RISK4 | 0.63 | -0.32 | 0.50 | 0.50 | -0.27 | 0.68 |
| CONV1 |  |  |  | 0.71 | 0.57 | 0.17 |
| CONV2 |  |  |  | 0.75 | 0.60 | 0.08 |
| CONV3 |  |  | 0.58 | 0.65 | 0.24 |  |
| CONV4 |  |  |  | 0.65 | 0.55 | 0.28 |


| PLEA1 |  |  |  | 0.66 | 0.56 | 0.25 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| PLEA2 |  |  |  | 0.76 | 0.54 | 0.13 |
| PLEA3 |  |  |  | 0.80 | 0.52 | 0.09 |
| PLEA4 |  |  |  | 0.77 | 0.54 | 0.12 |
| Eigen Value | 6.05 | 4.92 | 1.39 | 9.70 | 7.49 | 2.25 |
| \% of Variance | 48.95 | 39.80 | 11.25 | 49.90 | 38.53 | 11.57 |

The summary of the results of comparison for both potential customers and repeat customers is shown in Table A1-D. The results show that there is a marked improvement in Normed-Chi square and the fit indices after including common method factor for both potential customers (1.94 to 1.64) and repeat customers (3.03 to 2.67). Because the two Models are nested, we could test the difference between the two Chi-squares. The difference was statistically significant for both potential $\left(\Delta \chi^{2}=\right.$ $36.55, \Delta \mathrm{df}=7$, p -value $=0.000$ ) and repeat customers $\left(\Delta \chi^{2}=117.83, \Delta \mathrm{df}=15\right.$, $\mathrm{p}-$ value $=0.000$ ). As shown in Table A1-D, other fit indices, namely GFI, AGFI, RMSEA, and Std. RMR show slight improvement in the controlled estimation (With CMF) for both the potential customers and the repeat customers. This is an indication of some degree of common method variance, which has been controlled by including the common method factor.

Table A1-D: Comparison of Fit-Statistics between CMV Controlled and Uncontrolled Estimations for Potential and Repeat Customers

| FIT INDICES | POTENTIAL |  | REPEAT |  |
| :--- | :---: | :---: | :---: | :---: |
|  | WITHOUT <br> CMF | WITH <br> CMF | WITHOUT <br> CMF | WITH <br> CMF |
| Chi-Square | 162.86 | 126.31 | 650.98 | 533.15 |
| Degrees of Freedom (df) | 84 | 77 | 215 | 200 |
| Normed Chi-square | 1.94 | 1.64 | 3.03 | 2.67 |
| RMSEA | 0.066 | 0.054 | 0.050 | 0.045 |
| GFI | 0.91 | 0.93 | 0.93 | 0.95 |
| AGFI | 0.87 | 0.89 | 0.92 | 0.93 |
| CFI | 0.98 | 0.99 | 0.99 | 0.99 |
| NFI | 0.97 | 0.97 | 0.98 | 0.99 |
| NNFI | 0.98 | 0.99 | 0.99 | 0.99 |
| STD RMR | 0.063 | 0.057 | 0.032 | 0.029 |

### 8.1.1.3. Bentler and Bonnet test

We also tested for common method variance following Bentler and Bonnet (1980). This test has been reported in various MIS researches (e.g., Straub et al. 1995, Song and Zahedi, 2005). In this test the $\chi^{2}$ values of three estimations: the null Model (MM0) that has no underlying factors, a common-factor measurement Model (MM1), in which all items have one underlying factor, and the measurement Model for potential and repeat customers (MM2). MM0 assumes no relationships. "If, for example, the $\chi^{2}$ of another competing Model, MM1 is $20 \%$ of the $\chi^{2}$ of MM0, we can conclude that MM1 explains $80 \%$ of the total variation" (Straub et al. 1995). This percentage is calculated as:

$$
\text { Delta }=\frac{\chi_{M M 0}^{2}-\chi_{M M i}^{2}}{\chi_{M M 0}^{2}},
$$

Where, $\mathrm{MMi}=$ one of several alternative measurement Models
Delta is an indication of the extent to which the Chi-square goodness of fit statistic of the null Model can be improved by a superior Model. The findings of the three measurement Models for potential and repeat customers are summarized in Table A1E.

Table A1-E: LISREL $\chi^{2}$ Comparisons

| MODEL | POTENTIAL |  |  | REPEAT |  |  | REFERENCE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\chi^{2}$ | df | Delta | $\chi^{2}$ | df | Delta | Detta <br> (Strub et <br> al. 1995) | Delta <br> (Shang and <br> Zahedi 2005) |
| MM0 | 5013.56 | 120 | --- | 39076.99 | 276 | --- | --- | --- |
| MM1 | 1674.08 | 90 | 0.666 | 9858.80 | 230 | 0.745 | 0.484 | 0.488 |
| MM2 | 162.86 | 84 | 0.967 | 650.98 | 215 | 0.983 | 0.671 | 0.954 |

Because there is no cutoff value for delta, we report the delta values reported in Straub et al. (1995) and Song and Zahedi (2005) for comparing our results. Furthermore, following Straub et al. (1995), a test of significance for the difference between the Chi-square values of MM1 and MM2 shows the fit of MM2 is statistically superior to the fit of MM1 ( $p<0.0000$ ). Because the above test shows that the measurement Model fits the data better than a single-factor Model, it provides support for the validity of constructs in the measurement Model.

## WIDAMAN'S NESTED MODEL TESTS

## MODEL 1: NULL MODELS FOR POTENTIAL AND REPEAT CUSTOMERS

TI: NULL MODEL FOR POTENTIAL CUSTOMERS RAW DATA from file
'D:\... $\backslash P o t e n t i a l \backslash P o t e n t i a l ~$ .psf'
Sample Size = 218
Latent Variables COMMON
Relationships
Path Diagram
End of Problem


## MODEL 1: NULL MODELS FOR POTENTIAL AND REPEAT CUSTOMERS

TI: NULL MODEL FOR REPEAT CUSTOMERS
RAW DATA from file
'D:\...\Repeat $\backslash$ Repeat.psf'
Sample Size = 810
Latent Variables COMMON Relationships

Path Diagram
End of Problem


## Repeat Customers



Chi-Square $=39076.99$
df $=276$
P-value = 0.00000 RMSEA $=0.000$

## MODEL 2: TRAIT MODELS FOR POTENTIAL AND REPEAT CUSTOMERS

TI: TRAIT MODEL FOR POTENTIAL CUSTOMERS RAW DATA from file 'D:\...\Potential\Potentia
l.psf'

Sample Size = 218
Latent Variables PINT PVAL
PRCE RISK
Relationships
PINT1 = PINT
PINT2 = PINT
PINT3 = PINT
PINT4 = PINT

PVAL1 = PVAL
PVAL2 = PVAL
PVAL3 = PVAL
PVAL4 = PVAL

PRCE1 = PRCE
PRCE3 = PRCE
PRCE4 = PRCE

RISK1 = RISK
RISK2 = RISK
RISK3 = RISK
RISK4 = RISK
Path Diagram
End of Problem

## MODEL 2: TRAIT MODELS FOR POTENTIAL AND REPEAT CUSTOMERS

TI: TRAIT MODEL FOR REPEAT CUSTOMERS
RAW DATA from file
'D:\...\Repeat $\backslash$ Repeat.psf'
Sample Size = 810
Latent Variables PINT PVAL PRCE RISK CONV PLEA Relationships

PINT1 = PINT
PINT2 = PINT
PINT3 = PINT
PINT4 = PINT
PVAL1 = PVAL
PVAL2 = PVAL
PVAL3 = PVAL
PVAL4 = PVAL
PRCE1 = PRCE
PRCE3 = PRCE
PRCE4 = PRCE

RISK1 = RISK
RISK2 = RISK
RISK3 = RISK
RISK4 = RISK
CONV1 = CONV
CONV2 = CONV
CONV3 = CONV
CONV4 = CONV
PLEA1 = PLEA
PLEA2 = PLEA
PLEA3 = PLEA
PLEA4 = PLEA
Path Diagram End of Problem


## MODEL 3: METHOD MODELS FOR POTENTIAL AND REPEAT CUSTOMERS

TI: METHOD MODEL FOR POTENTIAL CUSTOMERS RAW DATA from file
'D:\...\Potential\Potential
.psf'
Sample Size = 218
Latent Variables PINT PVAL
PRCE RISK COMMON
Relationships
PINT1 = COMMON
PINT2 = COMMON
PINT3 = COMMON
PINT4 = COMMON
PVAL1 = COMMON
PVAL2 = COMMON
PVAL3 $=$ COMMON
PVAL4 = COMMON
PRCE1 = COMMON
PRCE3 = COMMON
PRCE4 = COMMON
RISK1 = COMMON
RISK2 = COMMON
RISK3 = COMMON
RISK4 = COMMON
Path Diagram
End of Problem


## MODEL 3: METHOD MODELS FOR POTENTIAL AND REPEAT CUSTOMERS

TI: METHOD MODEL FOR REPEAT CUSTOMERS
RAW DATA from file
'D:\...\Repeat\Repeat.psf'
Sample Size = 810
Latent Variables PINT PVAL PRCE RISK CONV PLEA COMMON Relationships

PINT1 = COMMON
PINT2 = COMMON
PINT3 = COMMON
PINT4 = COMMON
PVAL1 = COMMON
PVAL2 = COMMON
PVAL3 = COMMON
PVAL4 = COMMON
PRCE1 = COMMON
PRCE3 = COMMON
PRCE4 = COMMON

RISK1 = COMMON
RISK2 = COMMON
RISK3 = COMMON
RISK4 = COMMON
CONV1 = COMMON
CONV2 = COMMON
CONV3 = COMMON
CONV4 = COMMON
PLEA1 = COMMON
PLEA2 = COMMON
PLEA3 = COMMON
PLEA4 = COMMON

Path Diagram End of Problem


## MODEL 4: TRAIT AND METHOD MODELS FOR POTENTIAL AND REPEAT CUSTOMERS

TI: TRAIT AND METHOD MODEL FOR POTENTIAL CUSTOMERS RAW DATA from file 'D:\...\Potential\Potential .psf'
Sample Size = 218
Latent Variables PINT PVAL PRCE RISK COMMON Relationships

PINT1 = PINT COMMON
PINT2 = PINT COMMON
PINT3 = PINT COMMON
PINT4 = PINT COMMON
PVAL1 = PVAL COMMON
PVAL2 = PVAL COMMON
PVAL3 = PVAL COMMON
PVAL4 = PVAL COMMON
PRCE1 = PRCE COMMON
PRCE3 = PRCE COMMON
PRCE4 = PRCE COMMON

RISK1 = RISK COMMON
RISK2 = RISK COMMON
RISK3 = RISK COMMON
RISK4 = RISK COMMON
Set Covariance of COMMON
and PINT as zero
Set Covariance of COMMON
and PVAL as zero
Set Covariance of COMMON
and PRCE as zero
Set Covariance of COMMON
and RISK as zero

Path Diagram
End of Problem


## MODEL 4: TRAIT AND METHOD MODELS FOR POTENTIAL AND REPEAT CUSTOMERS

TI: TRAIT AND METHOD MODEL FOR REPEAT CUSTOMERS RAW DATA from file 'D:\...\Repeat\Repeat.psf' Sample Size = 810
Latent Variables PINT PVAL PRCE RISK CONV PLEA COMMON Relationships
PINT1 = PINT COMMON
PINT2 = PINT COMMON
PINT3 = PINT COMMON
PINT4 = PINT COMMON
PVAL1 = PVAL COMMON
PVAL2 = PVAL COMMON
PVAL3 = PVAL COMMON
PVAL4 = PVAL COMMON
PRCE1 = PRCE COMMON
PRCE3 = PRCE COMMON
PRCE4 = PRCE COMMON
RISK1 = RISK COMMON
RISK2 = RISK COMMON
RISK3 = RISK COMMON
RISK4 = RISK COMMON
CONV1 = CONV COMMON
CONV2 = CONV COMMON
CONV3 = CONV COMMON
CONV4 = CONV COMMON
PLEA1 = PLEA COMMON
PLEA2 = PLEA COMMON
PLEA3 = PLEA COMMON
PLEA4 = PLEA COMMON
Set Covariances of COMMON and PINT to 0.00
Set Covariances of COMMON and PVAL to 0.00
Set Covariances of COMMON and PRCE to 0.00
Set Covariances of COMMON and RISK to 0.00
Set Covariances of COMMON and CONV to 0.00
Set Covariances of COMMON and PLEA to 0.00

Path Diagram
End of Problem


## MODEL 5: CMV ESTIMATION MODELS FOR POTENTIAL CUSTOMERS

```
TITLE: STRUCTURAL MODEL WITHOUT CONTROLLING FOR COMMON
METHOD BIAS
Observed Variables: C_PINT C_PVAL C_PRCE C_RISK
CORRELATION MATRIX
1.00
0.66 1.00
-0.31 -0.35 1.00
-0.41 -0.53 0.39 1.00
Sample Size = 218
Latent Variables PINT PVAL PRCE RISK
Relationships
C_PINT = PINT
C_PVAL = PVAL
C_PRCE = PRCE
C_RISK = RISK
Set Error Variance of C_PINT to 0
Set Error Variance of C-PVAL to 0
Set Error Variance of C-PRCE to 0
Set Error Variance of C_RISK to 0
PINT = PVAL PRCE RISK
PVAL = PRCE RISK
Path Diagram
End of Problem
```


## PATH DIAGRAM OBTAINED FROM RUNNING THE ABOVE MODEL



NOTE: The correlation matrix used for estimating this model is obtained from the Trait model (Model II) for potential customers. The trait model gives correlation among latent variables as output. We can note that the results obtained by using correlation matrix for path estimation are that based on the raw data. We have identified latent variable with single items, namely, C_PRCE, C_RISK, C_PINT and C_PVAL and the error covariance of these items are set to zero. This is to facilitate obtaining the structural model based on latent correlations.

```
TITLE: STRUCTURAL MODEL CONTROLLED FOR COMMON METHOD BIAS
Observed Variables: C_PINT C_PVAL C_PRCE C_RISK
CORRELATION MATRIX
1.00
```

```
0.58 1.00
-0.21 -0.19 1.00
-0.26 -0.21 0.26 1.00
Sample Size = 218
Latent Variables PINT PVAL PRCE RISK
Relationships
C_PINT = PINT
C_PVAL = PVAL
C_PRCE = PRCE
C_RISK = RISK
Set Error Variance of C PINT to 0
Set Error Variance of C-PVAL to 0
Set Error Variance of C_PRCE to 0
Set Error Variance of C_RISK to 0
PINT = PVAL PRCE RISK
PVAL = PRCE RISK
Path Diagram
End of Problem
```

PATH DIAGRAM OBTAINED FROM RUNNING THE ABOVE MODEL (TVALUES)


NOTE: The correlation matrix used for estimating this model is obtained from the traits and methods model (Model IV) for potential customers. The trait and method model gives correlation among latent variables as output, which also includes the influence of common method factor. By using this latent correlation, we can ensure that the path estimation would control for the influence of common method bias. Again we have identified latent variable with single items, namely, C_PRCE, C_RISK, C_PINT and C_PVAL and the error covariance of these items are set to zero. This is to facilitate obtaining the structural model based on latent correlations.

## MODEL 6: CMV ESTIMATION MODELS FOR REPEAT CUSTOMERS

```
TITLE: STRUCTURAL MODEL WITHOUT CONTROLLING FOR COMMON
METHOD BIAS
Observed Variables: C_PINT C_PVAL C_PRCE C_RISK C_CONV
C_PLEA
CO\overline{RRELATION MATRIX}
1.00
0.61 1.00
-0.34 -0.4 1.00
-0.34 -0.46 0.35 1.00
0.52 0.68 - -0.29 -0.39 1.00
0.49 0.59 0.0.27 0.0.47 0.56 1.00
Sample Size = 810
Latent Variables PINT PVAL PRCE RISK CONV PLEA
Relationships
C_PINT = PINT
C_PVAL = PVAL
C PRCE = PRCE
C_RISK = RISK
C-CONV = CONV
C-PLEA = PLEA
Set Error Variance of C PINT to 0
Set Error Variance of C PVAL to 0
Set Error Variance of C-PRCE to 0
Set Error Variance of C-RISK to 0
Set Error Variance of C-CONV to 0
Set Error Variance of C_PLEA to 0
PINT = PVAL PRCE RISK CONV PLEA
PVAL = PRCE RISK CONV PLEA
Path Diagram
End of Problem
```

PATH DIAGRAM OBTAINED FROM RUNNING THE ABOVE MODEL


NOTE: The correlation matrix used for estimating this model is obtained from the Trait model (Model II) for repeat customers. The trait model gives correlation among latent variables as output. We can note that the results obtained by using correlation matrix for path estimation are that based on the raw data.

```
TITLE: STRUCTURAL MODEL CONTROLLED FOR COMMON METHOD BIAS
Observed Variables: C_PINT C_PVAL C_PRCE C_RISK C_CONV
C PLEA
CŌRRELATION MATRIX
1.00
0.49 1.00
-0.26 -0.29 1.00
-0.19 -0.34 0.27 1.00
0.39 0.58 - -0.20 -0.25 1.00
0.31 0.41 - -0.15 0.0.32 0.40
1.00
Sample Size = 810
Latent Variables PINT PVAL PRCE RISK CONV PLEA
Relationships
    C_PINT = PINT
    C-PVAL = PVAL
    C-PRCE = PRCE
    C-RISK = RISK
    C_CONV = CONV
    C_PLEA = PLEA
Set Error Variance of C_PINT to 0
Set Error Variance of C-PVAL to 0
Set Error Variance of C-PRCE to 0
Set Error Variance of C_RISK to 0
Set Error Variance of C_CONV to 0
Set Error Variance of C_PLEA to 0
PINT = PVAL PRCE RISK CONV PLEA
PVAL = PRCE RISK CONV PLEA
Path Diagram
End of Problem
```



NOTE: The correlation matrix used for estimating this model is obtained from the traits and methods model (Model IV) for repeat customers. The trait and method model gives correlation among latent variables as output, which also includes the influence of common method factor. By using this latent correlation, we can ensure that the path estimation would control for the influence of common method bias.

## APPENDIX C: WHAT CONSUMERS BUY ON THE WEB

Figure A2-A shows the Forrester classification of the products sold online into small ticket and large ticket items. The corresponding monthly sales are also depicted in the Chart.


Source: NRF/Forrester Online Retail Index, December 2002
Figure A2- A: Monthly Sales of Online Products

# APPENDIX D: MEASUREMENT INVARIANCE FOR 

## COMPARISON BETWEEN POTENTIAL AND REPEAT

## CUSTOMER GROUPS

Multi-group comparison, whereby two or more groups are compared, requires that the measurement instrument is invariant across the two groups (Byrne 1998, Byrne and Watkins 2003, Carte et al. 2003, Reise et al. 1993, Van de Vijver and Leung 1997, Widaman and Reise 1997). Meaningful comparisons of statistics such as means and regression coefficients can only be made if the measures are comparable across different groups. Most applications also assume that the groups are independent. Examples of groups on which comparisons are commonly made include gender, age, ethnicity, culture, and experimental versus control groups. The two groups may be independent of each other (e.g., measuring across different countries) or may not be independent of each other (e.g., two administrations of a single measure of the same sample at different points of time). Since, we are measuring potential and repeat customers, we consider the two groups as independent of each other.

Measurement invariance involves testing the equivalence of measured constructs in two or more independent groups to assure that the same constructs are being assessed in each group. With continuous variables, the most frequently used technique for testing measurement invariance is multiple group confirmatory factor analysis (CFA). Measurement invariance can be tested at different levels and Byrne (1998), Meredith (1993), and Widaman and Reise (1997) described procedures for testing a hierarchical series of models to establish measurement invariance. They developed a specific hierarchical structure of the tests to maximize the interpretability of the results at each step of the hierarchy. We will briefly review their work for understanding the concepts applicable to our study.

The most basic level of measurement invariance is configural invariance (Steenkamp and Baumgartner 1998). The central requirement is that the same item must be an indicator of the same latent factor in each group; however, the factor loadings can differ across groups (Chen et al. 2005). When this level of invariance is achieved, similar, but not identical, latent variables are present in the groups being compared (Widaman and Reise 1997).

The second level of invariance is metric (factor loading) invariance (Steenkamp and Baumgartner 1998). When the loading of each item on the underlying factor is equal in two (or more) groups, the unit of the measurement of the underlying factor is identical. Of importance, this level of invariance does not require that the scales of the factors have a common origin. When this level of invariance is met, relations between the factor and other external variables can be compared across groups, because one unit of change in one group would be equal to one unit of change in another. However, the factor means of the scale still cannot be compared across groups, as the origin of the scale may differ. Metric invariance is tested by constraining the factor loadings to be the same across groups.

The third level of invariance is scalar (intercept) invariance. Intercepts represent the origin of the scale. Scalar invariance implies that cross-group differences in the means of the observed items are due to differences in the means of the underlying construct(s) (Steenkamp and Baumgartner 1998). In testing this form of invariance, intercepts of the measured variables are constrained to be equal across groups, in addition to factor loadings of the latent variables. This level of invariance is required for comparing latent mean differences across groups (Widaman and Reise, 1997). When this level of invariance is achieved, it means that scores from different groups have the same unit of measurement (factor loading) as well as the same origin (intercept), and thus the factor means can be compared across groups. Otherwise, it cannot be determined whether any difference between groups on factor means is a true group difference or a measurement artifact.

The fourth form of invariance is factor covariance invariance. This establishes that the structural relations among the facets of the constructs are equivalent. To test factor covariance invariance, factor covariances are constrained across groups. This test is further strengthened by constraining factor variances across groups. If both the factors variances and covariances are invariant, the correlations between the latent constructs are invariant across groups (Steenkamp and Baumgartner 1998).

The fifth form of invariance is error (residual) invariance. In testing this form of invariance, the residual (uniqueness or measurement error) associated with each measured variable is constrained to be equal across groups, in addition to the loadings of the latent variables and the intercepts of the measured variables. When error invariance is established, all group differences on the items are due only to group differences on the common factors. Residual invariance, however, can be difficult to achieve for a variety of reasons (see Widaman and Reise 1997).

The covariances among the factors and the variances of the factors are typically of greater substantive interest than the error variances because they have a direct bearing on the magnitude of structural effects, even when corrected for measurement error. Furthermore, the covariances among the factors have important implications for the factor structure (e.g., in terms of discriminant validity), while the factor variances provide interesting information about the homogeneity of factor scores in the population (Steenkamp and Baumgartner 1998).

### 8.1.1.4. Baseline models

Prior to testing for invariance across multi-group samples, it is customary to first establish baseline models separately for each group under study. The models are shown at the end of this Appendix. The baseline models (Model 1) for potential and repeat customers reported excellent fit indices. Overall fit (Table A3-A) for potential customers and repeat customers was $\chi_{(84)}^{2}=162.86, \mathrm{CFI}=0.98, \mathrm{GFI}=0.91$ and $\chi_{(84)}^{2}=309.08, \mathrm{CFI}=0.98, \mathrm{GFI}=0.95$ respectively. The $\chi^{2} / \mathrm{df}$ ratio for repeat customers is greater than cut-off value of ' 3 ' (Gefen et al. 2000). However, it can be accepted as the $\chi^{2} / \mathrm{df}$ ratio is sensitive to sample size and increases for higher sample size as in our case ( $\mathrm{n}=810$ ). Having established the baseline models, we will proceed further with testing measurement invariance.

### 8.1.1.5. Configural invariance

For establishing configural invariance, we include the specifications for both potential customers and repeat customers in the same file (Model 2) according to the procedure detailed by Byrne (1998). It is the model against which the all further models will be compared. The fit of the configural variance was satisfactory (Table A3-A). Although the $\chi^{2}$ was significant $\left(\chi_{(168)}^{2}=471.95, \mathrm{p}<0.000\right)$, the RMSEA of 0.059 indicated an acceptable fit, and the two other practical fit indices were also above the commonly recommended 0.9 level $(\mathrm{CFI}=0.98, \mathrm{GFI}=0.95)$. All factor loadings were highly significant for both the groups and 27 out of 30 standardized factor loadings exceeded 0.6 (the minimum loading was 0.56 ) (Steenkamp and Baumgartner 1998). Thus, it can be concluded that the measurement instrument exhibited configural invariance across potential and repeat customer groups.

### 8.1.1.6. Metric (factor loading) invariance

For establishing full metric invariance, we constrained the matrix of factor loading to be invariant across groups (Model 3). From Table A3-A it can be seen that the $\chi^{2}$ difference between the model of configural invariance (Model 2) and the model of metric invariance (Model 3) was significant $\left(\Delta \chi^{2}{ }_{(11)}=21.67\right.$, $p$-value $<0.05$ ), although the fit did not decrease much in terms of the alternative fit indices. Therefore, we proceed to establish partial metric invariance by constraining individual factor loading as suggested by Byrne (1998) one by one to find out which one is causing variance across the groups. We found that the variance was due to PINT4 and hence, we set this factor loading free across two groups. All other factor loadings were constrained across two groups and we found that the difference between the resultant model (Model 3a) and the model of configural invariance was insignificant $\left(\Delta \chi^{2}{ }_{(10)}=12.54\right.$, p -value $>0.1$ ). Thus, partial metric invariance is established.

Table A3-A: Invariance Tests Between Potential and Repeat Customer Groups

| NO. | MODELS | $\chi^{\mathbf{2}} / \mathbf{D F}$ | RMSEA | CFI | GFI | RESULT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Baseline Models |  |  |  |  |  |
| 1A | Potential Customers | $162.86 / 84$ | 0.066 | 0.98 | 0.91 | Acceptable |
| 1B | Repeat Customers | $309.08 / 84$ | 0.058 | 0.98 | 0.95 | Acceptable |
| 2 | Configural Invariance | $471.95 / 168$ | 0.059 | 0.98 | 0.95 | Acceptable |
| 3 | Full Metric Invariance | $493.62 / 179$ | 0.059 | 0.98 | 0.95 | $\Delta \chi^{(11)}=21.67$, <br> p-value $=0.027$ |
| 3A | Partial Metric <br> Invariance | $484.49 / 178$ | 0.058 | 0.98 | 0.95 | $\Delta \chi_{(10)}^{2}=12.54$, <br> p -value $=0.324$ |

## MODEL 1: BASELINE MODELS FOR POTENTIAL AND REPEAT CUSTOMERS

## A: POTENTIAL CUSTOMERS

TI: Potential
DA $N I=19$ NO=218 NG=1 MA=CM
RA FI='D:\...\multigroup comparison\potential.PSF'
SE
$\begin{array}{lllllllllllllll}1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 10 & 13 & 14 & 15 & 17 & 18 & 19\end{array}$
MO NX=15 NK=4 LX=FU,FI PH=SY,FR TD=DI,FR
LK
PINT PVAL PRCE RISK
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2)
$\operatorname{LX}(10,3) \operatorname{LX}(11,3) \operatorname{LX}(13,4)$
FR LX $(14,4) \operatorname{LX}(15,4)$
VA 1.00 LX $(1,1) \operatorname{LX}(5,2) \operatorname{LX}(9,3) \operatorname{LX}(12,4)$
PD
OU

$$
\begin{gathered}
\chi^{2}=162.86, \mathrm{df}=84, \mathrm{RMSEA}=0.066, \mathrm{RMR}=0.063, \mathrm{NFI}=0.98, \\
\mathrm{NNFI}=0.98, \mathrm{CFI}=0.98, \mathrm{GFI}=0.91, \mathrm{AGFI}=0.87
\end{gathered}
$$

## B: REPEAT CUSTOMERS

TI: Repeat
DA NI=19 NO=810 NG=1 MA=CM
RA FI='D:\...\multigroup comparison\repeat.PSF'
SE
$\begin{array}{lllllllllllllll}1 & 2 & 3 & 4 & 5 & 6 & 7 & 10 & 13 & 14 & 15 & 17 & 18 & 19\end{array}$
MO NX=15 NK=4 LX=FU,FI PH=SY,FR TD=DI,FR
LK
PINT PVAL PRCE RISK
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2)
LX $(10,3) \operatorname{LX}(11,3) \operatorname{LX}(13,4)$
FR LX(14,4) LX(15,4)
VA 1.00 LX(1,1) LX(5,2) LX(9,3) LX(12,4)
PD
OU

$$
\begin{gathered}
\chi^{2}=309.08, \mathrm{df}=84, \mathrm{RMSEA}=0.058, \mathrm{RMR}=0.035, \mathrm{NFI}=0.98, \\
\mathrm{NNFI}=0.98, \mathrm{CFI}=0.98, \quad \mathrm{GFI}=0.95, \mathrm{AGFI}=0.93
\end{gathered}
$$

MODEL 2: MULTIGROUP MODEL FOR CONFIGURAL INVARIANCE

```
TI: Potential
DA NI=19 NO=218 NG=2 MA=CM
RA FI='D:\...\multigroup comparison\potential.PSF'
SE
1 2 3 4 5 6 7 8 10 13 14 15 17 18 19 /
MO NX=15 NK=4 LX=FU,FI PH=SY,FR TD=DI,FR
LK
PINT PVAL PRCE RISK
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2)
LX(10,3) LX(11,3) LX(13,4)
FR LX(14,4) LX(15,4)
VA 1.00 LX(1,1) LX(5,2) LX(9,3) LX(12,4)
PD
OU
TI: Repeat
DA NI=19 NO=810 MA=CM
RA FI='D:\...\multigroup comparison\repeat.psf'
SE
1 2 3 4 5 6 7 8 10 13 14 15 17 18 19 /
MO NX=15 NK=4 LX=FU,FI PH=SY,FR TD=DI,FR
LK
PINT PVAL PRCE RISK
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2)
LX(10,3) LX(11,3) LX(13,4)
FR LX(14,4) LX(15,4)
VA 1.00 LX(1,1) LX(5,2) LX (9,3) LX(12,4)
PD
OU
```

$\chi^{2}=471.95, \mathrm{df}=168, \mathrm{RMSEA}=0.058, \mathrm{CFI}=0.98, \mathrm{GFI}=0.95$

## MODEL 3: MODEL FOR FULL METRIC INVARIANCE

```
TI: Potential
DA NI=19 NO=218 NG=2 MA=CM
RA FI='D:\...\multigroup comparison\potential.PSF'
SE
1 2 3 4 5 6 7 8 10 13 14 15 17 18 19 /
MO NX=15 NK=4 LX=FU,FI PH=SY,FR TD=DI,FR
LK
PINT PVAL PRCE RISK
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2)
LX(10,3) LX(11,3) LX(13,4)
FR LX(14,4) LX(15,4)
VA 1.00 LX(1,1) LX(5,2) LX(9,3) LX(12,4)
PD
OU
TI: Repeat
DA NI=19 NO=810 MA=CM
RA FI='D:\...\multigroup comparison\repeat.psf'
SE
1 2 3 4 5 6 7 8 10 13 14 15 17 18 19 /
MO NX=15 NK=4 LX=IN PH=SY,FR TD=DI,FR
LK
PINT PVAL PRCE RISK
!FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2)
LX(10,3) LX(11,3) LX(13,4)
!FR LX(14,4) LX(15,4)
!VA 1.00 LX(1,1) LX(5,2) LX(9,3) LX(12,4)
PD
OU
```

$\chi^{2}=493.62, \mathrm{df}=168, \mathrm{RMSEA}=0.059, \mathrm{CFI}=0.98, \mathrm{GFI}=0.95$

## MODEL 3A: MODEL FOR PARTIAL METRIC INVARIANCE

```
TI: Potential
DA NI=19 NO=218 NG=2 MA=CM
RA FI='D:\...\multigroup comparison\potential.PSF'
SE
1 2 3 4 5 6 7 8 10 13 14 15 17 18 19 /
MO NX=15 NK=4 LX=FU,FI PH=SY,FR TD=DI,FR
LK
PINT PVAL PRCE RISK
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2)
LX(10,3) LX(11,3) LX(13,4)
FR LX(14,4) LX (15,4)
VA 1.00 LX(1,1) LX (5,2) LX (9,3) LX(12,4)
PD
OU
TI: Repeat
DA NI=19 NO=810 MA=CM
RA FI='D:\...\multigroup comparison\repeat.psf'
SE
1 2 3 4 5 6 7 8 10 13 14 15 17 18 19 /
MO NX=15 NK=4 LX=FU,FI PH=SY,FR TD=DI,FR
LK
PINT PVAL PRCE RISK
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2)
LX(10,3) LX(11,3) LX(13,4)
FR LX(14,4) LX(15,4)
VA 1.00 LX(1,1) LX(5,2) LX(9,3) LX(12,4)
EQ LX(1,2,1) LX(2,1)
EQ LX (1,3,1) LX (3,1)
!EQ LX(1,4,1) LX(4,1) //[PINT -> PINT4]//
EQ LX(1,6,2) LX (6,2)
EQ LX(1,7,2) LX(7,2)
EQ LX(1,8,2) LX(8,2)
EQ LX(1,10,3) LX (10,3)
EQ LX(1,11,3) LX(11,3)
EQ LX(1,13,4) LX(13,4)
EQ LX(1,14,4) LX (14,4)
EQ LX(1,15,4) LX(15,4)
PD
OU
```

$$
\chi^{2}=484.49, \mathrm{df}=178, \mathrm{RMSEA}=0.059, \mathrm{CFI}=0.98, \quad \mathrm{GFI}=0.95
$$

## APPENDIX E: MEASUREMENT INVARIANCE ACROSS LOW

## AND HIGH TRANSACTION CUSTOMER GROUPS

For comparing invariance related to a single measurement invariance, we follow the procedure detailed by Byrne (1998, Chapter 9), which is essentially the same as the procedure for multi-group comparison (Chapter 8). The detailed procedure is given in Appendix D. Also, since we need to establish only invariance of factor structure, we will establish only configural invariance, and factor loading invariance.

### 8.1.1.7. Baseline models

Prior to testing for invariance between the high and low transaction experience groups, we establish baseline models separately for each group under study. The baseline models (Model 1) for low and high transaction experience customer groups reported excellent fit indices. Overall fit (Table A4-A) for low and high transaction customer groups was $\chi^{2}{ }_{(142)}=362.27, \mathrm{CFI}=0.98$, GFI $=0.93$ and $\chi^{2}{ }_{(142)}=300.40$, CFI $=0.98$, GFI $=0.91$ respectively. Having established the baseline models, we will proceed further for testing measurement invariance.

### 8.1.1.8. Configural invariance

For establishing configural invariance, we include the specifications for both potential customers and repeat customers in the same file (Model 2) according to the procedure detailed by Byrne (1998). The models are given at the end of this section. It is the model against which the all further models will be compared. The fit of the configural variance was satisfactory (Table A4-A). Although the $\chi^{2}$ was significant ( $\chi_{(284)}^{2}=$ $662.68, \mathrm{p}<0.000$ ), the RMSEA of 0.057 indicated an acceptable fit, and the two other practical fit indices were also above the commonly recommended 0.9 level (CFI $=$ 0.98 , GFI $=0.91$ ). All factor loadings were highly significant for both the groups and 28 out of 30 standardized factor loadings exceeded 0.6 (the minimum loading was 0.54) (Steenkamp and Baumgartner 1998). Thus, it can be concluded that the measurement instrument exhibited configural invariance across potential and repeat customer groups.

### 8.1.1.9. Metric (factor loading) invariance

For establishing full metric invariance, we constrained the matrix of factor loading to be invariant across groups (Model 3). From Table A4-A it can be seen that the $\chi^{2}$ difference between the model of configural invariance (Model 2) and the model of metric invariance (Model 3) was insignificant $\left(\Delta \chi_{(14)}^{2}=23.42, p\right.$-value $\left.>0.05\right)$. Thus the full metric invariance is established.

Table A4-A: Measurement Invariance Tests between Low and High Transaction Experience Customer Groups

| No. | Models | $\chi^{\mathbf{2}} / \mathbf{d f}$ | RMSEA | CFI | GFI | NOTES |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Baseline Models |  |  |  |  |  |
| 1A | LTE Customers | $362.27 / 142$ | 0.056 | 0.99 | 0.93 | Excellent |
| 1B | HTE Customers | $300.40 / 142$ | 0.060 | 0.98 | 0.91 | Excellent |
| 2 | Configural Invariance | $662.68 / 284$ | 0.057 | 0.98 | 0.91 | Excellent |
| 3 | Full Metric Invariance | $686.10 / 298$ | 0.057 | 0.98 | 0.90 | $\Delta \chi^{2}(14)=23.42$, <br> p-value $=0.054$ |

## MODEL 1: BASELINE MODELS FOR LOW AND HIGH TRANSACTOIN EXPERIENCE CUSTOMER GROUPS

```
A: LOW TRANSACTION EXPERIENCE CUSTOMER GROUP
TI: LOwTE
DA NI=42 NO=496 NG=1 MA=CM
SY='D:\...\Factor invariance\LOWTE.PSF'
SE
2 3 4 4 5 5 6 7 8 8 9 11 14 15 21 22 23 25 26 28 29
30/
MO NX=19 NK=5 LX=FU,FI PH=SY,FR TD=DI,FR
LK
PINT PVAL PRCE CONV PLEA
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2)
LX(10,3) LX(11,3) LX(13,4)
FR LX(14,4) LX(15,4) LX(17,5) LX(18,5) LX(19,5)
VA 1.00 LX(1,1) LX (5,2) LX(9,3) LX(12,4) LX(16,5)
PD
OU
```

```
\(\chi^{2}=362.27, \mathrm{df}=142, \mathrm{RMSEA}=0.056, \mathrm{RMR}=0.034, \mathrm{NFI}=0.98\),
    NNFI=0.98, \(\mathrm{CFI}=0.99, \mathrm{GFI}=0.93\), \(\mathrm{AGFI}=0.90\)
```


## B: HIGH TRANSACTION EXPERIENCE CUSTOMER GROUP

TI: HighTE
DA NI=42 NO=313 NG=1 MA=CM
SY='D:\...\Factor invariance\HIGHTE.PSF'
SE
$\begin{array}{lllllllllllllllll}2 & 3 & 4 & 5 & 7 & 8 & 11 & 14 & 15 & 21 & 22 & 23 & 25 & 26 & 29\end{array}$
$30 /$
MO NX=19 NK=5 LX=FU,FI PH=SY,FR TD=DI,FR
LK
PINT PVAL PRCE CONV PLEA
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2)
$\operatorname{LX}(10,3) \operatorname{LX}(11,3) \quad \operatorname{LX}(13,4)$
FR LX $(14,4) \operatorname{LX}(15,4) \operatorname{LX}(17,5) \operatorname{LX}(18,5) \operatorname{LX}(19,5)$
VA 1.00 LX $(1,1) \operatorname{LX}(5,2) \operatorname{LX}(9,3) \operatorname{LX}(12,4) \operatorname{LX}(16,5)$
PD
OU
$\chi^{2}=300.40, \mathrm{df}=142, \mathrm{RMSEA}=0.060, \mathrm{RMR}=0.043, \mathrm{NFI}=0.97$,
$\mathrm{NNFI}=0.98, \mathrm{CFI}=0.98, \quad \mathrm{GFI}=0.91, \quad \mathrm{AGFI}=0.88$

MODEL 2: MULTIGROUP MODEL FOR CONFIGURAL INVARIANCE

```
TI: LOwTE
DA NI=42 NO=496 NG=2 MA=CM
RA FI='D:\...\Factor invariance\LOWTE.PSF'
SE
2 3 4 5 6 7 8 9 11 14 15 21 22 23 25 26 28 29
30 /
MO NX=19 NK=5 LX=FU,FI PH=SY,FR TD=DI,FR
LK
PINT PVAL PRCE CONV PLEA
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2)
LX(10,3) LX(11,3) LX(13,4)
FR LX(14,4) LX(15,4) LX(17,5) LX(18,5) LX(19,5)
VA 1.00 LX(1,1) LX(5,2) LX(9,3) LX(12,4) LX(16,5)
PD
OU
TI: HighTE
DA NI=42 NO=313 MA=CM
RA FI='D:\...\Factor invariance\HIGHTE.PSF'
SE
2 3 4 5 6 7 8 9 11 14 15 21 22 23 25 26 28 29
30/
MO NX=19 NK=5 LX=FU,FI PH=SY,FR TD=DI,FR
LK
PINT PVAL PRCE CONV PLEA
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2)
LX(10,3) LX(11,3) LX(13,4)
FR LX(14,4) LX(15,4) LX(17,5) LX (18,5) LX (19,5)
VA 1.00 LX(1,1) LX(5,2) LX (9,3) LX(12,4) LX (16,5)
PD
OU
```

$\chi^{2}=662.68, \mathrm{df}=284, \mathrm{RMSEA}=0.057, \mathrm{CFI}=0.98, \mathrm{GFI}=0.91$

## MODEL 3: MODEL FOR FULL METRIC INVARIANCE

```
TI: LowTE
DA NI=42 NO=496 NG=2 MA=CM
RA FI='D:\...\Factor invariance\LOWTE.PSF'
SE
2 3 4 5 6 7 8 9 11 14 15 21 22 23 25 26 28 29
30/
MO NX=19 NK=5 LX=FU,FI PH=SY,FR TD=DI,FR
LK
PINT PVAL PRCE CONV PLEA
FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2)
LX(10,3) LX(11,3) LX(13,4)
FR LX(14,4) LX(15,4) LX(17,5) LX(18,5) LX(19,5)
VA 1.00 LX(1,1) LX(5,2) LX(9,3) LX(12,4) LX(16,5)
PD
OU
TI: HighTE
DA NI=42 NO=313 MA=CM
RA FI='D:\...\Factor invariance\HIGHTE.PSF'
SE
2 3 4 5 6 7 8 9 11 14 15 21 22 23 25 26 28 29
30 /
MO NX=19 NK=5 LX=IN PH=SY,FR TD=DI,FR
LK
PINT PVAL PRCE CONV PLEA
!FR LX(2,1) LX(3,1) LX(4,1) LX(6,2) LX(7,2) LX(8,2)
LX(10,3) LX(11,3) LX(13,4)
!FR LX(14,4) LX(15,4) LX(17,5) LX(18,5) LX(19,5)
!VA 1.00 LX(1,1) LX(5,2) LX(9,3) LX(12,4) LX (16,5)
PD
OU
```

$\chi 2=686.10, \mathrm{df}=298, \mathrm{RMSEA}=0.057, \mathrm{CFI}=0.98, \mathrm{GFI}=0.90$


[^0]:    ${ }^{1} \mathrm{http}: / /$ unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN007638.pdf
    ${ }^{2}$ http://www.unescap.org/stat/ict/ict2004/6.Country report-Singapore.pdf

[^1]:    ${ }^{3}$ The economic principle of fungibility holds that any amount of money can be freely substituted for an equal amount of the same money.

[^2]:    ${ }^{4}$ Thaler (1985) uses the term utility instead of value. However, the meaning of utility is same as value of prospect theory (Kahneman and Tversky 1979). So, henceforth we will use the term utility and value interchangeably.

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