# E-Commerce Adoption Among Chinese Consumers: An Exploratory Study

Joseph Richards
Dong Shen

**ABSTRACT.** The widespread adoption of the Internet in China has made more researchers and business practitioners wonder about the factors involved in e-commerce development at the final consumer level in China. We explore and analyze the factors that are related to the Internet adoption as a medium for purchasing goods and services among Chinese consumers. Noting that these factors are likely to be different from countries like the United States, we proceed by surveying existing literature on consumer behavior from both the Chinese and United States market studies. We then examined the potential causal factors of shopping behavior in an exploratory framework. A set of data drawn from a broad spectrum of users was analyzed and the results were examined for implications in the Chinese context. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <http://www.HaworthPress.com> © 2006 by The Haworth Press, Inc. All rights reserved.]*

Joseph Richards is Assistant Professor of Marketing, Department of Management, California State University, 6000 J St., Sacramento, CA 95819-6088 (E-mail: richardsj@csus.edu). Dong Shen is Assistant Professor of Family and Consumer Sciences, Department of Family and Consumer Sciences, California State University, 6000 J St., Sacramento, CA 95819-6053 (E-mail: dshen@csus.edu).

The authors would like to thank two anonymous reviewers for their comments on an earlier draft of this research.

Journal of International Consumer Marketing, Vol. 18(3) 2006
Available online at http://www.haworthpress.com/web/JICM

doi:10.1300/J046v18n03_03

**KEYWORDS.** Consumer behavior, e-commerce, Internet shopping, China, Internet

## *INTRODUCTION*

China, a country of more than 1.3 billion people, has about 68 million Internet users–the world's second largest number of Internet users after the United States (Batson 2003). IDC, a research group, estimates that this number of Internet users is worth around $12 billion in e-commerce (Chang 2003). Being the world's fastest growing economy of the past decade, Chinese e-commerce market is expected to explode in the coming years. Radical developments, such as the accession to the WTO and an increasing embrace of a market-economy and technology by the political leadership, have placed Chinese e-commerce on a path of considerable potential. When many American online portals were struggling in recent years, Chinese portals like Sina.com, Sohu.com and Netease.com have seen their revenues and stock prices soar. By adopting innovative business models such as delivering content over cell phones, and creatively combining online and offline strategies, these portals have created a platform for e-commerce that reaches a market of over 200 million people (Einhorn and Ihlwan 2003). Such a dramatic increase of Internet usage at the individual user-level in China has raised numerous questions about the potential problems and opportunities for marketers. More fundamentally, from a marketing perspective, one might want to know the factors that lead final consumers in China to adopt the Internet as a viable transaction medium.

More than 22 million users are connected to broadband or fast Internet connections in China (CNNIC 2003). While the estimated number of broadband users in the United States are around the same figures (Paul 2003), the demographics and usage trends in China differ from those of the United States. Internet users in China are dominated by young and single males (CNNIC 2003). People aged 18-24 form the largest age group, 39% of the total users. Women account for 40% of users and 60% of all users are unmarried (CNNIC 2003). In contrast to that of China, the demographics of Internet users in the United States increasingly look like the demographics of the entire nation (Zinkhan 2002). Therefore, the underlying principles driving the adoption and behavior of Internet usage in China are likely to be different from those of the United States. It is even more likely to be different because of the substantial differences between these two countries in their legal, politi-

cal and economic institutions. However, the main purpose of this study is not to compare and contrast the Chinese e-commerce market with respect to that of the United States, but rather to explore characteristics that influence Internet shopping behavior in China.

In this article, we explore and analyze the factors related to adoption of the Internet as a medium for purchasing goods and services by final consumers in China. We first examined a theoretical framework developed from studies focusing on the United States. This was followed by identification of variables and development of constructs, from a mixture of US and Asian market studies. The identified variables were then incorporated to the theoretical framework. Data were collected and analyzed to evaluate the evidence in support of the framework.

This article is organized as follows. The next section discusses the theoretical basis of our investigation. After that, we discuss the research methodology and the data used for our study. Data analysis and hypothesis testing is followed by a discussion of the results. The last section discusses the managerial implications and limitations of our study.

## *THEORETICAL FRAMEWORK*

According to Keeney (1999), there are two basic types of objectives related to consumer behavior in general: Fundamental Objectives (hereinafter referred to as FO) and Means Objectives (hereinafter referred to as MO). FO concerns the *ends* or *aims* that a decision maker may value in a given context. MO concerns the *means* used to achieve those ends or viewed as capable of achieving those ends. To illustrate this, say, if a consumer's FO is to purchase a computer with appropriate features, then that consumer's MO, if s/he plans to buy it on the Internet, is to find a trustworthy seller who provides unbiased information such as product information, experiences of past buyers of the product, and comments and feedbacks from current users and so on.

Different shopping channels such as Internet shopping, brick-and-mortar shopping, catalog shopping and TV shopping, offer consumers different means to attain their desired ends (fundamental objectives). When a consumer is planning to buy a book, whether s/he goes to a traditional bookstore or alternatively to an online bookseller, both these are different approaches or means to attain the goal of reading that book. What makes a channel different from others are the channel's characteristics. For example, an important characteristic of Internet shopping is that it enables one to have access to shopping 24 hours a day and 7 days

a week. By contrast, brick-and-mortar shopping channel provides an immediate sense of ownership of the products bought. Therefore the preference for one channel over others is a function of how the consumer evaluates the relevant characteristic of the channel in attaining the desired fundamental objectives. In essence, one pertinent question always asked by the consumer is: Do the means enable the desired ends? When consumers have different fundamental objectives, they tend to look for the shopping channels which provide the corresponding means to meet the fundamental objectives. As a result, the following hypothesis is proposed:

> *Hypothesis 1:* The differences in consumers' fundamental objectives (FO) will lead to differences in their means objectives (MO).

As a relatively new medium for commerce, the Internet has to compete with traditional channels for business. The factors or characteristics of the Internet channel may determine whether consumers adopt the Internet as their preferred shopping medium over other competing channels. For example, when a consumer desires to have greater reliability in product delivery times (which is then a fundamental objective), then s/he would prefer a shopping channel, which provides the best means to achieve that fundamental objective. If the Internet has a distinct advantage over other competing channels in this respect, then that consumer is more likely to become an Internet shopper. In other words, when such reliability is fundamentally desired by a consumer, the reliability of Internet delivery time will be one of the predictors of that consumer's status as an Internet shopper. Consequently, the characteristics of the means will become important for consumers and they will seek out those characteristics which do a better job in realizing their fundamental goals. Their channel choices are therefore affected by the extent to which their means objectives differ across competing channels. As a result, the following hypothesis is proposed:

> *Hypothesis 2:* Differences in means objectives (MO) with respect to the Internet would correlate with a consumer's shopping status (whether a shopper or a browser).

Besides the objectives of the Internet channel, there might also be other factors which influence Chinese consumers' online shopping status. One obvious group of factors are demographic variables such as age, gender and income (CNNIC 2003). Additionally, an individual

consumer's familiarity with technology and high-tech products could also influence shopping status. If a consumer's adoption of the Internet for shopping is a direct consequence of becoming familiar with technology, it is also natural to expect that the ownership and the use of technology products, such as computers, video games, electronic gadgets, and other gizmos would also correlate with the consumer's online shopping status. Therefore, the following two hypotheses are developed:

> *Hypothesis 3:* Chinese consumers' demographic variables correlate with their shopping status.
>
> *Hypothesis 4:* Chinese consumers' technology familiarity correlates with their shopping status.

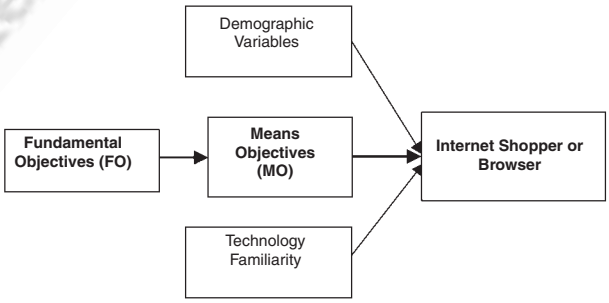
Figure 1 shows the theoretical framework of this study based on the above hypotheses.

## *METHOD*

### *Study Context and Sample Selection*

An online survey was conducted to collect data in this study. The sampling frame consisted of e-mail accounts maintained by users from three major Internet service providers in China. Thirty thousand e-mail account owners from this sampling frame were randomly selected for inclusion in the sample, which represented people from thirty major provinces in China.

FIGURE 1. Proposed Theoretical Model of the Chinese Internet Shopper/ Browser



After developing and pre-testing the questionnaire (including translation and back-translation to ensure semantic consistency between Chinese and English versions), the questionnaire in Chinese was administered from January 5 to January 15, 2001. One thousand four hundred and eighty-four useful questionnaires were returned representing a response rate of 4.9%. Typical online surveys have low response rates (Bachmann and Elfrink 1996), and considering that online surveys were still quite new in China at the beginning of 2001, this low response rate was expected. We did not do any non-response analysis, for want of additional data, and hence there could be a non-response bias in our results. The sample size of our study is n = 1,484. The median age group of the respondents was 18-24 years. Eighty-four percent of the respondents in the sample were between 18 and 29 years of age. Eighty percent of the respondents were unmarried. The gender distribution was heavily leaned towards males (almost 79% of the respondents were males). Majority of the respondents had either a college degree (48.2%) or an associate degree (32%). Forty percent of the respondents were current students. Fifty-five percent of the respondents' average monthly income was in the range of 1,000-3,000 Yuan (about $125-$375), an approximately average income level in China.

The above descriptive statistics of our sample do not perfectly match with the demographic patterns reflected in the 12th Statistical Survey on the Internet Development, a Chinese government sponsored study (CNNIC 2003). Our sample respondents were heavily weighted towards males and unmarried people. Since our survey was administered in 2001, our sample respondents would have been early adopters of Internet in China and therefore would be different from a typical random sample drawn in 2003, the year of CNNIC survey. While the CNNIC survey is a combination of both self-selected online respondents and offline respondents, which therefore may be more representative than just online respondents of our study, our sample is probably more representative of the leading edge users of the Internet in China, and therefore may hold more information about the factors that influence the adoption and use of the Internet in China.

### *Questionnaire Development and Measures*

Since this study is an exploratory study, we first reviewed relevant literature published in the Chinese context. Most of the studies were descriptive in nature, and were not grounded solidly on established theoretical frameworks. Therefore, the questionnaire development was

based on inputs from a mixture of studies some of which were done on the United States market and the rest were based on descriptive studies in the Chinese context. A large pool of items was generated to measure each of the theoretical constructs included in our model (see Figure 1). Usual validation procedures like face validity check and experts' evaluation of the items were applied before employing more robust statistical methods, and a final list of items was generated to measure the constructs.

### *Fundamental Objectives (FO)*

#### *Item Development for Fundamental Objectives (FO)*

As we discussed earlier, FO represents the fundamental aims of prospective consumers. We surveyed relevant literature on characteristics of shopping behavior, and in particular on in-home or Internet shopping. Six constructs were identified: *recreational/fun shopping*, *brand consciousness*, *perceived risk*, *deal proneness*, *planned purchases*, and *convenience*. We discuss each of these constructs below.

*Recreational/Fun Shopping:* Recreational shoppers are defined in literature as people who enjoy shopping as a leisure activity, and prior empirical research has demonstrated that recreational shopping has a rich relationship with consumption behavior (Ohanian and Tashchian 1992). Recreational shoppers are known to be information-seekers, to engage in a high number of non-planned purchases or impulsive buying, and to place importance on quality and variety of their purchases (Bellenger and Korgaonkar 1980). If information seeking is facilitated by the Internet, and if that becomes one of the purposes of using the Internet, then consumers who shop for recreation or fun are more likely to adopt the Internet as their preferred shopping channel. Additionally, the Internet as a channel may satisfy hedonic needs like recreation and fun during the shopping experience. Studies in the Unites States context showed that many consumers were looking for fun in their online buying experience (Wolfinbarger and Gilly 2001). Therefore, if consumers value recreation or fun in an offline environment, they are also drawn to the Internet as the Internet provides a means to satisfy their hedonic needs directly.

*Brand Consciousness:* Brand consciousness is one of the fundamental consumer decision-making characteristics (Sproles and Kendall 1986). It measures the consumer's orientation for buying well-known, or expensive national brands (Sproles and Kendall 1986). Chinese con-

sumers, probably because of their limited experience with modern marketing, tend to be very conscious of reputable brands (Gong 2003). A study showed that women in mainland China are more brand-conscious compared with women from Taiwan and Hong Kong (Tai and Tam 1997). Young Chinese consumers, a study showed, are interested in purchasing brand-name products that are highly advertised and well-known (Fan and Xiao 1998).

*Perceived Risk:* Consumer behavior and perceptions of risk are intertwined. Perceived risk means that any action a consumer produces may be associated with some amount of uncertainty (Bauer 1960). Perceived risk is an overall evaluation of the consumer's prior knowledge of the rational and emotional consequences of using a product or service (Chaudhuri 2002). When consumers purchase items in non-store venues, they tend to have higher perceived risk (Spence, Engel and Blackwell 1970). In addition, there is also evidence showing that perceived risk and branding goes hand in hand. Branding is, among other things, a means of reducing risk in consumer's perception of a product (Donthu and Gilliland 1996). For Chinese consumers, brand names are also used to reduce perceived risk involved in products or service purchasing (Gong 2003).

*Deal Proneness:* Deal proneness is a well-established concept in marketing literature (Webster 1965). Several studies in the United States context have shown that people who are brand loyal are also less susceptible to using coupons and hence less deal prone (Bawa and Shoemaker 1987; Ailawadi, Neslin and Gedenk 2001). There is also some evidence in the literature showing that use of coupons and looking for sales are related to hedonistic or recreational needs of the consumer (Ohanian and Tashchian 1992). The relationship between brand consciousness and recreational shopping is another reason to focus on deal proneness. We have included items that measure aspects of deal-prone behavior as a fundamental objective of consumers in the Chinese context because of the possible inter-relationship among deal proneness, recreational shopping and brand consciousness.

*Planned Purchases:* Another related construct that we were interested was "Planned Purchase" or its opposite "Impulsiveness." Recreational shoppers are known to engage in a high number of non-planned and impulse purchases (Bellenger and Korgaonkar 1980; Ohanian and Tashchian 1992). Recreational aspects, such as experiential browsing behavior is also said to be associated with increased impulse purchases (Wolfinbarger and Gilly 2001). Additionally there is evidence that some online shoppers shop for fun, which tends to make them more im-

pulsive in their purchases (Wolfinbarger and Gilly 2001). Therefore, planned purchase was also included as one of the feasible FO constructs in our study.

*Convenience:* Convenience is an important factor associated with consumer behavior. Consumers can value various dimensions of convenience (Alba et al. 1997), such as access convenience, which represents the ease by which one can reach products, or search convenience, which represents products that are easy to find and to compare (Seiders, Berry and Gresham 2000). We expect that these aspects of convenience would also hold for potential shoppers in China.

*Fundamental Objectives Construct Measurement*

Based on the above six constructs, a set of items to measure FO was aggregated. An initial set of items was adopted from previous studies such as Sproles and Kendall (1986) and Donthu and Garcia (1999), and a few ad hoc items were also included based on expert judgments. Two faculty experts evaluated these items, and based on their inputs, a set of items were used to measure FO. In the second step of item refinement, we examined item inter-correlations and did not observe any value indicating very high or very low correlations. The items were also tested significant for Bartlett's test of sphericity (p-value < 0.0001) and the measure of sampling adequacy (MSA), all of which indicated a meritorious data set-up for factor analytic procedure (Hair 1998). The final set included 18 separate items (see Table 1).

Principal Component Analysis with an Equamax rotation was used to further examine the 18 items of FO. With Eigen values greater than 1, six factors were generated, as shown in Table 1. Interpretation of the factor structure was made in the light of constructs discussed above. Factor 1 included three items, all which were related to shopping for fun or recreation. This factor was labeled as "Fun Shopping." Factor 2 also had three items and was labeled "Brand Consciousness" because all items were associated with preference or caring for well-known brand names. All the three items under factor 3 were related to risk-taking behavior while shopping, and so it was labeled "Perceived Risk." The next factor, factor 4, was labeled "Deal Proneness" because all the three items were related to finding a good deal while shopping. Factor 5 had three items, which were associated with the degree of planning and preparation involved for purchase decisions and hence was labeled "Planning Purchase." The last three items weighed heavily on factor 6, and they indicated the convenience element desired in shopping, and

TABLE 1. Factors and Loadings for Underlying Items of Fundamental Objectives

| | Factor Loading | | | | | |
|---|---|---|---|---|---|---|
| | F1 | F2 | F3 | F4 | F5 | F6 |
| Going shopping and making purchase are an enjoyment and recreation for me. | 0.820 | | | | | |
| I like to go shopping with friends or family members when I am free. | 0.769 | | | | | |
| Going shopping in brick and mortar stores is a kind of enjoyment. | 0.745 | | | | | |
| I like to purchase the merchandise with well-known brands. | | 0.838 | | | | |
| I would like to spend more money on some well-known brands. | | 0.808 | | | | |
| When I compare and choose merchandise, I care for the brand most. | | 0.780 | | | | |
| I am in the group of people who adopt new tech earliest and most quickly. | | | 0.792 | | | |
| I am very interested in the merchandise with new technology. | | | 0.751 | | | |
| Whenever I see anything I like, I always buy it right away without hesitation. | | | 0.604 | | | |
| Promotion, such as discount, is often the main reason for me to make purchase. | | | | 0.772 | | |
| I always wait for “big sale” to purchase unnecessary merchandise. | | | | 0.712 | | |
| Big promotions or “big sales” often attract me to purchase something I don't need. | | | | 0.606 | | |
| I like to browse at multiple stores to compare the merchandise before I make the final decision. | | | | | 0.683 | |
| I always only purchase the merchandise according to the plan I made before I go shopping. | | | | | 0.681 | |
| I am often attracted to some merchandise that I was not planning to purchase, and buy at the end. | | | | | 0.517 | |
| I often purchase everything in one single store (one-stop store). | | | | | | 0.752 |
| I often only shop at the stores which are close to where I live or where I work. | | | | | | 0.704 |
| I don't have enough time to go to stores to buy merchandise. | | | | | | 0.449 |
| Eigen values | 3.39 | 2.09 | 1.67 | 1.47 | 1.19 | 1.06 |
| Cronbach Alpha | 0.7523 | 0.7861 | 0.5964 | 0.5351 | 0.5166 | 0.4286 |

Extraction Method: Principal Component Analysis.
Rotation Method: Equamax with Kaiser Normalization.
F1-Fun Shopping, F2-Brand Consciousness, F3-Perceived Risk, F4-Deal Proneness, F5-Planned Purchase, F6-Convenience.

accordingly factor 6 was labeled "Convenience." All the six factors together explained 60.38% of variance in the data. Cronbach alpha values were computed for all factors and they are also shown in Table 1.

We computed Cronbach alpha values for all factors. Factors 4, 5 and 6 were dropped off from further analysis because of low Cronbach alpha values ($\alpha = 0.43$ to 0.53). The remaining factors had Cronbach alpha values ranging from 0.78 to 0.59. For exploratory study purposes, lower values of Cronbach alpha up to 0.60 is acceptable (Hair 1998). As a result, three factors of FO (fun shopping, brand consciousness, perceived risk) were kept for the remainder of our analysis.

Having established the factorial structure of the FO construct-based on the above analysis, we measured each of the FO factors as a summated scale of all the underlying items in the factor. This was done to seek two benefits. First, it provides a means of overcoming to some extent the measurement error inherent in all measured variables. A second benefit of the summated scales is its ability to represent the multiple aspects of a concept in a single measure (Hair 1998). Instead of using summated scores of the scale items, as we did here, we could have used factor scores to capture construct measures. However, since all items had some degree of loading on each of the factors, the use of factor scores may confound our interpretations in subsequent analysis.

### *Means Objectives (MO)*

#### *Item Development for Means Objectives (MO)*

In order to develop MO, an initial list of items was generated representing marketing mix variables of the Internet, such as product choice, price attractiveness, delivery reliability and promotions (deals, free-delivery, etc.). In addition to these items, we also did a survey of the literature on online shopping, and found another three constructs (Vendor Trust, Website Usability and Information Availability), which are discussed frequently in the literature as characteristics of online channels. We discuss in detail these constructs stated below.

*Vendor Trust:* Consumer trust of the online vendor is a major factor that influences consumers' willingness to engage in online transactions (Doney and Cannon 1997). Vendor's reputation and the consumer's familiarity with the vendor have a role on the consumer's trust (Anderson and Weitz 1989; Ganesan 1994).

*Website Usability:* Some scholars have argued that the elements of computer interface design have a significant influence on consumers' attitudes toward a vendor, and their perceptions of the trustworthiness of a vendor (Nielsen and Norman 2000). Positive evaluation of a vendor's website and the consequent build up of trust are also related to usability of the website (Nielsen and Norman 2000). The perceived importance of this dimension, as established in the literature, suggested the inclusion of a few items that were related to website usability in our initial items list.

*Information Availability:* Information availability and access are important characteristics when consumers search information before purchase. With the development of Internet, more and more information can be easily accessed. Since consumers' perceived risk can be potentially reduced by easy information accessibility (Dowling and Staelin 1994; Srinivasan and Ratchford 1991), information availability is also potentially one important aspect to study about the Internet.

*Means Objectives Construct Measurement*

As shown in Table 2, the MO items consist of 17 items after similar procedures described in FO construct analysis were used to refine the MO items. The final set of items also met all the factor analysis adequacy tests done for FO measurement. Principal Component Analysis was used to analyze these 17 items with Equamax rotation. Initially, three factors were generated with Eigen values greater than 1. However, these three factors could not be interpreted meaningfully from a marketing perspective, and neither from the perspective of all the variables identified in the literature review. We did further analysis by extracting four and then five factors. A five-factor solution gave relatively clear interpretable factors, and this structure was maintained for subsequent analysis.

Factor 1 included five items, which were related to vendor trust perceived by the respondents. As a result, factor 1 was labeled "Vendor Trust." Factor 2 loaded on four items that were associated with the usefulness of the websites and was labeled "Website Usability." There were three items loading on factor 3, two of which were relevant to the information availability from the websites, and hence was labeled "Information Availability." Factor 4 was labeled "Website Promotion" since both items loading on this factor were somewhat related to sales promotions available on websites. Factor 5, on which the last three items loaded, was labeled "Product Choice." As a whole, 69.48% of

TABLE 2. Factors and Loadings for Underlying Items of Means Objectives

| Items | Factor Loading | | | | |
|---|---|---|---|---|---|
| | F1 | F2 | F3 | F4 | F5 |
| The website responds to me in a timely matter regarding my questions or concerns. | 0.710 | | | | |
| The website allows the customers to do unconditional returns during a period of time. | 0.673 | | | | |
| The website can keep all the promises, such as delivery time. | 0.664 | | | | |
| The website provides multiple ways for payments. | 0.643 | | | | |
| The website has a good reputation. | 0.530 | | | | |
| The layout of the website is easy and clear. | | 0.755 | | | |
| The website is well-known. | | 0.740 | | | |
| It's easy for me to find the things I want on the website. | | 0.627 | | | |
| It is fast to view different pages on the website. | | 0.549 | | | |
| The website can recommend and suggest the products I am interested in. | | | 0.839 | | |
| The website provides plenty of relevant information on the products I am interested in. | | | 0.659 | | |
| Fast delivery. | | | 0.528 | | |
| The website often has some attractive promotions. | | | | 0.827 | |
| The website provides free delivery. | | | | 0.734 | |
| The online retailer also owns some brick and mortar stores. | | | | | 0.867 |
| The website provides a great variety of products. | | | | | 0.608 |
| The website provides very attractive prices. | | | | | 0.501 |
| Eigen values | 8.073 | 1.103 | 1.002 | 0.845 | 0.788 |
| Cronbach Alpha | 0.8807 | 0.7789 | 0.7385 | 0.7024 | 0.6670 |

Extraction Method: Principal Component Analysis.
Rotation Method: Equamax with Kaiser Normalization.
F1-Vendor Trust, F2-Web Usability, F3-Information Availability, F4-Web Promotion, F5-Product Choice.
Note: The term website above indicates the websites in general as a shopping medium rather than any particular website.

variance was explained by the five combined factors. Similar to what was done for FO factors, we measured each of the MO factors as a summated scale of all the underlying items.

Cronbach alpha values for the MO factors were markedly higher than that of FO factors. Alpha values ranged from 0.88 to 0.66 (Table 2). A

note may be added here about Cronbach alpha values derived for both FO and MO constructs. All the variables included in our analysis have alpha values greater than 0.60 except one ("perceived risk" has a Cronbach alpha value of 0.59). This condition satisfies the suitability of our measures for exploratory analysis purposes (Hair 1998). Additionally, this study is exploring a market that is still evolving and developing, which sets severe limitations on developing stable constructs that are both highly valid and reliable. However, we also discuss the validity of our measures in the following section.

### *Validity Analysis*

To ensure reasonable validity of our measures in this exploratory study, we followed a systematic procedure. The FO and MO measures described above were based on the full sample data. However, to check internal validity of the factorial structure across independent samples, the data were divided into two equal random samples. The factorial structure observed in the first sample was cross validated on the second sample. Further, the observed factor structure across the two independent samples was similar to that of the full sample. Having observed that the factorial structure is not occurring just by chance, and instead, it is consistent across independent samples, further analysis and testing was carried out for the full sample. Convergent and discriminant validity of the measures were then tested with Confirmatory Factory Analysis (CFA) using AMOS version 5.

Convergent validity can be assessed from the measurement model by determining whether each indicator's estimated maximum likelihood loading on the underlying construct is significant (Anderson and Gerbing 1988). In CFA, confirmatory factor loadings were significant (minimum was 0.816 for FO measures and 0.662 for MO measures), and all were significant with p-value less than 0.001. Therefore, we have evidence of convergent validity of our measures.

Discriminant validity involves comparing the variance extracted of each latent construct with the square of correlations between this construct and every other construct (Bearden, Netemeyer, and Teel 1989; Fornell and Larcker 1981; Netemeyer, Johnston, and Burton 1990). If the former number is greater, discriminant validity is supported (Vandenbosch and Higgins 1996). The inter-factor phi correlations among the three FO constructs range from 0.128 to 0.232. Discrimination between the constructs is evident since the variance extracted, ranging from 0.545 to 0.723, exceeds all squared phi correlations, ranging from 0.016 to 0.053. Variance extracted for the MO constructs ranged from 0.766

to 0.460. The squared phi correlations among the MO constructs ranged from 0.131 to 0.08. Variance extracted for each MO construct variable therefore exceeds all the squared phi correlations among constructs. Therefore, discriminant validity for the MO constructs is also supported.

### *Demographics and Technology Familiarity*

Demographic variables included in the analysis are age, gender, education, individual income, family income and marital status. All variables were measured in a 5-point interval scale (except gender and marital status, which were measured by a dichotomous scale).

In addition to the above data, information was also collected about user's ownership of computers, and ownership of other high technology gadgets like cell phones, MP3 players, DVDs, etc.; all of which may indicate the users' familiarity with high technology products. We hypothesized that high technology product familiarity, a construct measured by the number of different high technology items owned by the respondent, may influence Internet shopping behavior apart from other demographic variables. Respondents were asked whether they owned the following high technology items: DVD player, Cell Phone, Computer, Digital Camera, Personal Digital Assistant (PDA), Digital Recorder and MP3 Player. A summated score of the ownership of these items was used as a measure of the high technology familiarity variable. We are not aware of any existing measurement scales for high technology product familiarity, and even if they do, the continued introduction of new products may limit the scope and validity of any established measurement scales. The easiest measure in this situation could be the number of high technology products owned by the individuals. Therefore, we used this measure as an indicator of high technology product familiarity.

Online shopping behavior was measured by a list of items that included whether the respondents had done any online purchases in the past one year. To determine shopping status, all Internet users who have made at least one purchase in the past one year were classified as online shoppers and the rest as online browsers.

## *RESULTS*

After establishing a measurement model for fundamental objectives (FO) and means objectives (MO) constructs, the relationship between FO and MO was explored by using structural equation modeling frame-

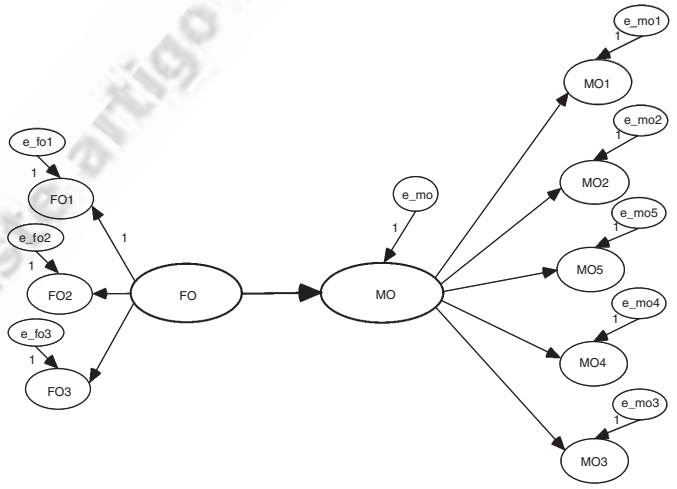
work and regression framework to test Hypothesis 1. *T*-test was used to examine the influence of MO construct in explaining whether an Internet user is a browser or a shopper (Hypothesis 2). And finally, logistic regression was used to test Hypotheses 3 and 4.

### *Relationship Between Fundamental Objectives and Means Objectives (Hypothesis 1)*

The fundamental objectives (FO) and means objectives (MO) constructs identified in the exploratory factor analysis are now used to test Hypothesis 1. As a consequence of our theoretical formulation (see Figure 1), we expect FO constructs to influence MO constructs causally.

Since FO and MO construct variables may be correlated with each other, the relationship between FO and MO constructs were explored by using structural equation modeling framework (see Figure 2). Based on the theoretical formulation, FO should have a causal impact on MO. In order to find statistical evidence to support the hypothesized FO→MO structure, we tested two models–Model 1 (FO→MO) and Model 2 (MO→FO)–with the directional arrow indicating the direction of the causal relationship. In the first model, the estimated regression weight of FO to MO was 0.493 (s.e.: 0.067, $p < 0.001$), whereas in the second

FIGURE 2. Structural Model of FO and MO Constructs



model, the estimated regression weight of MO to FO was only 0.108 (s.e.: 0.018, $p < 0.001$). This evidence strongly supports the fundamental objectives construct (FO) causally determining the means objectives construct (MO).

To further understand the relationship evidenced between FO and MO as shown by the structural equation model, we regressed each of the dependent MO variables with the set of FO variables. Interpretation of the regression results as shown in Table 3 conveys many facets of the relationships between FO and MO. Consumers having higher brand consciousness, perceived risk, and fun shopping, place a premium on vendor trust with regression coefficients indicating positive correlation, and are statistically significant ($p$-value < 0.01). Fun shopping and perceived risk variables show consistent and strong relationship with all the MO variables. Overall MO variables all show more or less significant relationships with all FO variables. The regression results therefore furnish additional evidence confirming the hypothesized structural equation model and explicate the nature of significant relationship between FO and MO variables. As a result, Hypothesis 1 was supported.

### *Relationship Between MO Variables and Shopping Status (Hypothesis 2)*

Table 4 shows the $t$-test results of the difference in means of MO variables between shoppers and browsers in the sample. All the MO variables show significant differences. More importantly, the variables

TABLE 3. Regressions of Means Objectives (Dependent Variables) on Fundamental Objectives (Independent Variables)

| Independent Variables for Each Regression | Standardized Regression Coefficients (Std. Error) | | | | |
|---|---|---|---|---|---|
| | Dependent Variable for Each Regression | | | | |
| | Vendor Trust | Web Usability | Information Availability | Web Promotion | Product Choice |
| Fun shopping | 0.069^ (0.035) | 0.066^ (0.026) | 0.124^ (0.014) | 0.142^ (0.015) | 0.143^ (0.014) |
| Brand consciousness | 0.104^ (0.038) | 0.129* (0.028) | 0.033 (0.015) | 0.042 (0.017) | 0.044 (0.015) |
| Perceived risk | 0.153^ (0.042) | 0.171^ (0.032) | 0.147^ (0.032) | 0.098^ (0.018) | 0.087^ (0.017) |

^ = Significant at 1% level, * = Significant at 5% level, ** = Significant at 10% level.
Standard errors are in parentheses.

TABLE 4. *T*-test for Means Objectives Between Online Browsers and Shoppers

| Mean Objectives Variables | Shopping Status 0 = Browser 1 = Shopper | N | Group Mean | Std. Error Mean | *T*-test for Equality of Means | |
|---|---|---|---|---|---|---|
| | | | | | *t*-value | *p*-value |
| Vendor trust | 0.00 | 763 | 20.4731 | .13049 | 2.491 | .013* |
| | 1.00 | 721 | 20.9348 | .13144 | | |
| Web usability | 0.00 | 763 | 15.8231 | .10237 | 3.568 | .000^ |
| | 1.00 | 721 | 16.3245 | .09576 | | |
| Information availability | 0.00 | 763 | 7.7811 | .05141 | 1.659 | .097** |
| | 1.00 | 721 | 7.9015 | .05115 | | |
| Web promotion | 0.00 | 763 | 7.8414 | .05634 | 2.310 | .021* |
| | 1.00 | 721 | 8.0277 | .05769 | | |
| Product choice | 0.00 | 763 | 7.3919 | .05219 | 1.839 | .066** |
| | 1.00 | 721 | 7.5298 | .05389 | | |

^ = Significant at 1% level, * = Significant at 5% level, ** = Significant at 10% level.

show correct algebraic signs (positive or negative) in the difference between the two groups. It is clear that means objective variables are good differentiators of the shopping status of the Internet users. Particularly, as means objectives of online shopping, vendor trust, web usability, information availability, web promotion and product choice are all good predictors of Chinese consumers' online shopping behavior. In other words, there are significant differences between Chinese online shoppers and browsers in terms of their means objectives related to Internet shopping. Therefore, Hypothesis 2 is also supported.

### *Influence of Demographic Variables and High Technology Familiarity on Shopping Behavior (Hypothesis 3 and 4)*

Finally, we explored the influence of demographic and technology familiarity variables in determining the shopping status. Since the dependent variable is a binary variable (online shopper or browser), we adopted binary logistic regression for this analysis. The independent variables were age, gender, marital status, education, individual income, family income and high technology familiarity. The regression

results are shown in Table 5. All the variables except age and marital status showed significant parameter estimates with expected algebraic signs (positive or negative). Particularly, male consumers in China showed a significantly higher tendency to be Internet shoppers than female consumers. The Chinese consumers with higher family income, and individual income, showed significantly higher tendency to be online shoppers than those with lower income. In addition, Chinese consumers with higher technology familiarity also showed significantly higher tendency to become Internet shoppers than those with lower technology familiarity.

## *DISCUSSION AND MANAGERIAL IMPLICATIONS*

The above results suggest that Chinese consumers' various FO contribute to their different means objectives as they look to the Internet as a transaction channel. In particular, our data showed three major FO for Chinese consumers: (1) fun shopping, (2) brand consciousness, and (3) perceived risk. These three fundamental objectives affect the following five means objectives related to the Internet shopping: (1) vendor trust, (2) web usability, (3) information availability, (4) web promotion, and (5) product choice. In addition to the effect of means objectives variables, demographics and technology familiarity were also found to influence shopping status.

Our results are consistent in many respects with research reported about off-line shopping behavior of Chinese consumers. For example,

TABLE 5. Logistic Regression of Demographic Variables and High Technology Familiarity with Shopping Status (Online Shopper vs. Online Browser)

| Variable | B | S.E. | *p*-value |
|---|---|---|---|
| Gender | –0.444 | 0.138 | 0.001^ |
| Marital status | 0.018 | 0.199 | 0.927 |
| Age | –0.087 | 0.098 | 0.374 |
| Education | 0.240 | 0.071 | 0.001^ |
| Individual income | 0.078 | 0.040 | 0.051* |
| Family income | 0.325 | 0.054 | 0.000^ |
| Technology familiarity | 0.159 | 0.045 | 0.000^ |

^ = Significant at 1% level, * = Significant at 5% level.

one study showed that shopping is a top pastime for many groups of consumers (Tam and Tai 1997), a result similar to our finding that "fun shopping" is a determinant of shopping behavior. Another study reported that Chinese consumers are highly aware of brands, with long-established brands considered to be more reliable than the new entrants to the market (Melewar et al. 2004). Additionally, Chinese consumers, in general, want more product information with detailed product instructions (Melewar et al. 2004), which might indicate that seeking information and instructions is one way to reduce perceived risk with purchases. These findings in an off-line shopping context all relate well with our finding of similar influences in an online environment. Such findings are potentially useful for marketers for devising online marketing strategies because they can take decisions based on lessons learned from more traditional shopping channels.

Our results also provide valuable insights to academic researchers. We have provided a model which shows the relationship among the fundamental objectives, means objectives and the shopping status. This model provides a better understanding of how Chinese consumers choose different shopping channels based on different objectives, both fundamental to their shopping aims and means by which they seek to attain such aims. Meanwhile, our results also help business practitioners to identify information that drive Chinese consumers' adoption of online shopping.

Although the survey was administered in the year 2001, our exploratory findings can still form a basis for comparison with newer studies with more up-to-date data. In that regard, our study will form an important step for analyzing trends in the e-commerce developments in China. Other drawbacks our study were the sample selection method and the low response rate of our survey. The sampling frame was based on the e-mail accounts maintained by Internet service providers. This list might have systematically excluded certain segments of the Internet user population, such as users who access the Internet from Internet cafes, and from their places of work or study. The low response rate, although not very untypical of online surveys, may also have systematically biased our results. In addition, we did not do any non-response analysis, and hence there could be a non-response bias in our results as well.

Again, we would like to caution that our study was exploratory in nature and hence the results are only to be read with that qualification. The constructs identified above may have to be replicated across multiple

studies, and improved reliability of the scales is also a must to infer more conclusive results.

We introduced a new variable called technology familiarity in this study. This construct was measured by counting the number of high-technology gadgets owned by the user. Surely, it can be argued that one's familiarity with technology is independent from ownership of gadgets. New technology such as computers, satellite television and the Internet provide Chinese consumers with information, and they also help consumers to exchange ideas and experiences with others in different markets (Melewar et al. 2004). Accordingly, there could be many ways by which technology familiarity is impacted. As Chinese customers become more sophisticated, mainly due to advances in technology and education, technology familiarity construct could be a composite metric of many factors other than just the ownership of high technology gadgets.

Our theoretical framework outlined in Figure 1 makes a few strict assumptions. We assume that demographic and technology familiarity variables causally impact the shopping status. And we have found evidence to that effect based on our data analysis. However, these variables could be just moderators of other variables affecting shopping status and not directly affecting shopping status. For example, gender and income could moderate the relationship observed between MO and shopping status. And therefore, there could be interactive effects of gender and income with other MO variables. These kinds of relationships, although perfectly feasible, are not ruled out by our study.

Finally, it is worth mentioning here that the Chinese government controls, censors and monitors all aspects of their Internet system (Rayburn and Craig 2004). Further, tax regulations and numerous restrictions on foreign companies entering e-commerce are other structural factors of the Chinese economy that may influence the evolvement of e-commerce, and in many instances such factors could play a pivotal role.

## REFERENCES

Ailawadi, Kusum L., Scott A. Neslin, and Karen Gedenk. 2001. Pursuing the value-conscious consumer: Store brands versus national brand promotions. *Journal of Marketing* 65 (1):71-82.

Alba, J., J. Lynch, B. Weitz, and C. Janiszewski. 1997. Interactive home shopping: consumer, retailer, and manufacturer incentives to participate in electronic marketplaces. *Journal of Marketing*. 61 (3):38-53.

Anderson, Erin, and Barton Weitz. 1989. Determinants of Continuity in Conventional Industrial Channel Dyads. *Marketing Science* 8 (4):310-23.

Anderson, James C., and David W. Gerbing. 1988. Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach. *Psychological Bulletin* 03 (May):411-23.

Bachmann, D., and J. Elfrink. 1996. Tracking the progress of e-mail versus snail-mail. *Marketing Research* 8 (2): 31-35.

Batson, Andrew. 2003. China's Internet Users Increase to 68 Million–Survey. In *Dow Jones Business News*: Dow Jones Business Newswires.

Bauer, R. A. 1960. Consumer Behavior as Risk Taking. In *Dynamic Marketing for a Changing World*, edited by R. S. Hancock. Chicago, IL: American Marketing Association.

Bawa, K., and R.W. Shoemaker. 1987. The Effects of a direct mail coupon on brand choice behavior. *Journal of Marketing Research* 14:370-376.

Bearden, William O., Richard G. Netemeyer, and Jesse E. Teel. 1989. Measurement of consumer susceptibility to interpersonal influence. *Journal of Consumer Research* 19 (March):473-481.

Bellenger, Danny N., and Pradeep K. Korgaonkar. 1980. Profiling the Recreational Shopper. *Journal of Retailing* 56 (4):77-92.

Chang, Leslie. 2003. EachNet Is China's Answer to eBay. *Wall Street Journal*, Mar 5, 2003, B.4.A.

Chaudhuri, Arjun. 2002. A study of emotion and reason in products and services. *Journal of Consumer Behaviour* 1 (3):267-279.

CNNIC. 2003. 12th Statistical Survey on the Internet Development in China: China Internet Network Information Center.

Doney, Patricia M., and Joseph P. Cannon. 1997. An examination of the nature of trust in buyer-seller relationships. *Journal of Marketing. Chicago* 61 (2):35-52.

Donthu, Naveen, and Adriana Garcia. 1999. The Internet Shopper. *Journal of Advertising Research* 39 (3):52-58.

Donthu, Naveen, and David Gilliland. 1996. The infomercial shopper. *Journal of Advertising Research* 36 (2):69-77.

Dowling, Grahame R., and Richard Staelin. 1994. A model of perceived risk and intended risk-handling activity. *Journal of Consumer Research* 21 (1):119-135.

Einhorn, Bruce, and Moon Ihlwan. 2003. China's Homegrown Stars: Portals thrive on text messaging. *Business Week*, May 12, 2003, 50.

Fan, Jessie X., and Jing J. Xiao. 1998. Consumer decision-making styles of young-adult Chinese. *The Journal of Consumer Affairs* 32 (2):275-297.

Fornell, Claes, and David F. Larcker. 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research* 18 (February):39-50.

Ganesan, Shankar. 1994. Determinants of Long-Term Orientation in Buyer-Seller Relationships. *Journal of Marketing* 58 (April):1-19.

Gong, Wen. 2003. Chinese consumer behavior: A cultural framework and implications. *Journal of American Academy of Business* 3 (1/2):373.

Hair, Joseph F. Jr. et al. 1998. *Multivariate Data Analysis*. Upper Saddle River, New Jersey: Prentice-Hall, Inc.

Keeney, R. L. 1999. The value of Internet commerce to the customer. *Management Science* 45 (4):533-542.

Melewar, T. C., Meadows, Maureen, Zheng, Wenqiang, and Rickards, Richard. 2004. The influence of culture on brand building in the Chinese market: A brief insight. *Journal of Brand Management* 11 (6):449.

Netemeyer, Ricard G., Richard G. Johnston, and Mark W. Burton. 1990. Analysis of role conflict and role ambiguity in structural equations. *Journal of Applied Psychology* 75 (2):148-158.

Nielsen, Jakob, and Donald A Norman. 2000. Usability on the Web isn't a luxury. *InformationWeek*, Feb 14, 65-69.

Ohanian, Roobina, and Armen Tashchian. 1992. Consumers' Shopping Effort and Evaluation of Store Image Attributes: The Roles of Purchasing Involvement and Recreational Shopping Interest. *Journal of Applied Business Research* 8 (4):40-49.

Paul, Pamela. 2003. Hurry up and wait. *American Demographics* 25 (5):20.

Rayburn, J. Mike, and Conrad Craig. 2004. China's Internet Structure: Problems and Control Measures. *International Journal of Management* 21 (4):471.

Seiders, K., L. L. Berry, and L. G. Gresham. 2000. Attention, retailers! How convenient is your convenience strategy? *Sloan Management Review* 41(3):79-89.

Spence, H. E., J. F. Engel, and R. D. Blackwell. 1970. Perceived risk in mail-order and retail store buying. *Journal of Marketing Research* 7 (3):364-369.

Sproles, George B., and Elizabeth L. Kendall. 1986. A Methodology for Profiling Consumers' Decision-Making Styles. *The Journal of Consumer Affairs (1986-1998)* 20 (2):267-280.

Srinivasan, Narasimhan, and Brian T. Ratchford. 1991. An Empirical Test of a Model of External Search for Automobiles. *Journal of Consumer Research* 18 (2):233-242.

Tai, Susan H. C., and Jackie L. M. Tam. 1997. A lifestyle analysis of female consumers in Greater China. *Psychology & Marketing* 14 (3):287-307.

Tam, J., and S. Tai. 1997. The psychographic segmentation of the female market in greater China. *International Marketing Review* 15 (1):61-77.

Vandenbosch, Betty, and Chris Higgins. 1996. Information acquisition and mental models: An investigation into the relationship between behavior and learning. *Information Systems Research* 7 (2):198-214.

Webster, F. 1965. The "deal prone" consumer. *Journal of Marketing Research* 2:86-89.

Wolfinbarger, Mary, and Mary C. Gilly. 2001. Shopping online for freedom, control, and fun. *California Management Review* 43 (2):34-56.

Zinkhan, George M. 2002. Promoting services via the Internet: New opportunities and challenges. *The Journal of Services Marketing* 16 (5):412-422.

SUBMITTED: September 2004
FIRST REVISION: October 2004
SECOND REVISION: April 2005
ACCEPTED: June 2005