

Exploring Impact of Consumer and Product Characteristics on E-Commerce Adoption: A Study of Consumers in India

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Abstract

The paper aims at examining the impact of various consumer and product characteristics on adoption of e-commerce among consumers in India. The study is based on primary data collected through survey of consumers residing in and around Delhi. A structured-non-disguised questionnaire has been employed for collecting the information from the respondents about their demographics, shopping orientations, security and privacy concerns, technological familiarity, past online shopping experiences and intentions to buy various types of products through internet in future. Past online shopping satisfaction, recreational shopping orientation, education and income emerge as significant factors affecting consumer past online purchases. In respect of future online shopping intentions, only three consumer related factors viz., past online shopping satisfaction, past online shopping frequency and education, are found as significant predictors. Amongst product characteristics, product expensiveness is found to be negatively related to consumer future online purchase intentions. While consumers appear quite willing to buy services online that are high in their intangible value proposition, they appear somewhat ambivalent in their intentions to buy online the 'frequently purchased products'. Some of the consumer and product characteristics do influence consumer adoption of e-commerce. Study findings entail interesting implications for the marketers. They need to give adequate attention to consumer and product characteristics while designing their e-marketing strategies. As compared to goods, the surveyed respondents have expressed greater willingness to buy services online in future. Services thus appear to be more promising product category for sale through internet channel in future.

INTRODUCTION

Marketing as a business function has witnessed several changes during the last three decades. One key change relates to adoption of internet technology for carrying out marketing and business functions. With more and more customers opting for online transactions, traditional brick and mortar retail formats have started giving way to emergence of virtual stores that exist in the cyberspace and offer merchandise and services through an electronic channel to their customers with a fraction of the overhead required in a brick-and mortar retail store (Chen

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et al., 2004). India is no exception to the phenomenal growth of e-commerce. Business firms have started increasingly embracing e-commerce technologies and the internet in the country. Even though internet usage is not that wide spread in India as is the case with many other countries, e-commerce sites have fast come up everywhere to sell everything from groceries to bakery products, books and computers (Asia Today, 1999).

Growing popularity of e-commerce as a means of marketing goods and services to the consumers has drawn considerable attention of researchers in the past few years. A wide array of issues relating to e-commerce adoption among the business firms (e.g., Premkumar et al., 1994; Iacovou et al., 1995; Igarria et al., 1997; Min and Galle, 1999; Grewal et al., 2001; Chong, 2004; Joo and Kim, 2004; Kaynak et al., 2005; Alam et al., 2007; Bakker et al., 2008) and consumers (Jarvenpaa and Todd, 1996; Alba et al., 1997; Li et al., 1999; Swaminathan et al., 1999; Tan and Teo, 2000; Lee et al., 2001; Lynch and Beck, 2001; Li and Zhang, 2002; Cheung et al., 2003; Heijden, 2003; Koyuncu and Lien, 2003; Lim, 2003; Park and Jun, 2003; Su, 2003; Yoh et al., 2003; Chen et al. 2004; Constantinides, 2004; Dillon and Reif, 2004; Monsuwé et al., 2004; Yang, 2005; Ghazali et al., 2006; Lee, 2006; Liao et al., 2006; Lopes and Dennis, 2006; Richards and Shen, 2006) have been examined in the past.

Identification of consumer and product related characteristics that affect e-commerce adoption among consumers has been a thrust area of past researches (Jarvenpaa and Todd, 1996; Alba et al., 1997; Peterson et al., 1997; Li et al., 1999; Swaminathan et al., 1999; Phau & Sui, 2000; Lynch and Beck, 2001; Li and Zhang, 2002; Cheung et al., 2003; Koyuncu and Lien, 2003; Lim, 2003; Park and Jun, 2003; Su, 2003; Yoh et al., 2003; Dillon and Reif, 2004; Monsuwé et al., 2004; Yang, 2005; Ghazali et al., 2006; Richards and Shen, 2006). Despite growing popularity of e-commerce in the country, it is disconcerting that not much empirical work has been done in the field in India. In the absence of such studies and authentic information about the characteristics and behaviour of e-shoppers, it is difficult for the e-marketers to correctly identify the target customers and design appropriate marketing mix strategies. The present study aims at filling this gap. More specifically, the study aims at an empirical examination of the impact of consumer and product characteristics on e-commerce adoption among consumers in India. The paper is organised around five

sections. With a brief discussion of rise of e-commerce in India in the next section, the subsequent two sections are devoted to delineation of conceptual framework and research methodology used in the study. Survey results are reported in the succeeding section. A discussion of the study findings and their managerial and research implications is made in the penultimate section. The final section examines study limitations and directions for future research.

E-COMMERCE ADOPTION: INDIAN CONTEXT

The last three decades have witnessed a phenomenal growth of world wide web (www). A wide acceptance of internet technology and world wide web in the business world has paved way to the rise of a new business model, referred to as e-commerce. Broadly defined, electronic commerce (e-commerce) is "any form of economic activity conducted via electronic connections". According to Internet and Mobile Association of India (IAMAI) and Indian Marketing Research Bureau (IMRB), electronic commerce can be defined as buying and selling of products and services on the internet or any other application that relies on the internet (IAMAI and IMRB Report 2007). In other words, it comprises of transactions for which internet acts as a medium for contracting or making payment or for consuming the service/product by the end user. Three alternate combinations of these activities include: paying online and consuming online, paying offline but consuming online, and contracting and paying online but consuming offline.

Business-to-consumer (B2C) is one of the forms of e-commerce that has created immense opportunities virtually for all the types of firms, ranging from small start-ups to big Fortune 100 companies, for expanding their business across different customer segments. India is no exception to the phenomenal growth of B2C e-commerce. Recent years have seen a quantum jump in the number of companies embracing e-commerce technologies and internet in India. In spite of low Internet usage, e-commerce sites are popping up everywhere to sell everything from bakery and grocery items to books, computers, soft ware music and movies (Asia Today, 1999). India Plaza, India bookshop, Future Bazaar, India mart and BPB Publications are some of the prominent examples of e-commerce sites offering products and services for online sale in India. Indian banks too have not lagged far behind and have adopted e-commerce and EDI technolo-

gies to provide customers with real time account status, transfer of funds between accounts, stop payment facilities, etc. Virtually all commercial banks today provide internet based 'anywhere banking' facilities in the country.

According to the survey conducted jointly by the Internet and Mobile Association of India (IAMAI) and Indian Marketing Research Bureau (IMRB) in 2007, the number of internet users in India in the 'ever user' (one who has used internet at any point in time) or the 'claimed user' categories had touched 46 million in September 2007 from 32.2 million in September 2006. During the same period, the number of 'active users' was estimated to have reached a staggering figure of 32 million. As per this survey report, consumer internet market was estimated to be around INR 7080 crores in 2006-07 which has been estimated to have risen to a level of INR 9,210 crores by the end of the financial year 2007-08, representing a growth about 30 per cent. Non-metros (2-10 lakh population cities) have accounted for 39 per cent of the online sales in the year 2006 (IAMAI, 2007a; 2007b). Due to increasing computer literacy and awareness and good word of mouth of this medium, the sales from non-metros increased to 49 per cent by September 2007 (IAMAI and IMRB, 2007). Report findings suggest that Generation Y (those born after 1981) is the second largest group with a lifestyle that personifies e-generation.

CONCEPTUAL FRAMEWORK AND RESEARCH HYPOTHESES

Online shopping refers to the process of purchasing products or services via internet. The process consists of essentially the same five steps that are associated with traditional shopping behavior (Liang and Lai 2002). In a typical online shopping process, when potential consumers recognise need for some merchandise or service, they go to internet and search for the need-related information. They then evaluate alternatives and choose the one that best fits their criteria for meeting the felt need. Finally, a transaction is conducted and post-sales services are provided by the vendor to the customers.

Like acceptance of a new product, adoption of online shopping among the consumer has been slow and is not yet widespread. A number of factors related to consumer, product, internet media, vendor and online shopping environment have been identified in the past researches that influence consumer adoption of e-commerce (e.g., Jarvenpaa and Todd, 1996;

Alba et al., 1997; Li et al., 1999; Swaminathan et al., 1999; Tan and Teo, 2000; Lee et al., 2001; Lynch and Beck, 2001; Li and Zhang, 2002; Cheung et al., 2003; Heijden, 2003; Koyuncu and Lien, 2003; Lim, 2003; Park and Jun, 2003; Su, 2003; Yoh et al., 2003; Chen et al., 2004; Constantinides, 2004; Dillon and Reif, 2004; Monsuwé et al., 2004; Yang, 2005; Ghazali et al., 2006; Lee, 2006; Liao et al., 2006; Lopes and Galletta, 2006; Richards and Shen, 2006).

Identification of consumer and product related factors that affect e-commerce adoption among the consumers has been a thrust area of past researches (Jarvenpaa and Todd, 1996; Alba et al., 1997; Peterson et al., 1997; Li et al., 1999; Swaminathan et al., 1999; Phau and Sui, 2000; Lynch and Beck, 2001; Li and Zhang, 2002; Cheung et al., 2003; Koyuncu and Lien, 2003; Lim, 2003; Park and Jun, 2003; Su, 2003; Yoh et al., 2003; Dillon and Reif, 2004; Monsuwé et al., 2004; Yang, 2005; Ghazali et al., 2006; Richards and Shen, 2006). There is a conspicuous dearth of empirical studies examining influence of consumer and product related factors in India. The present study aims at examining significance and relative importance of select consumer and product characteristics on e-commerce adoption among consumers in India. A schematic presentation of the consumer and product characteristics under investigation in the present study is provided in Figure 1. The following sections briefly discuss these antecedents and their relationship to e-commerce adoption.

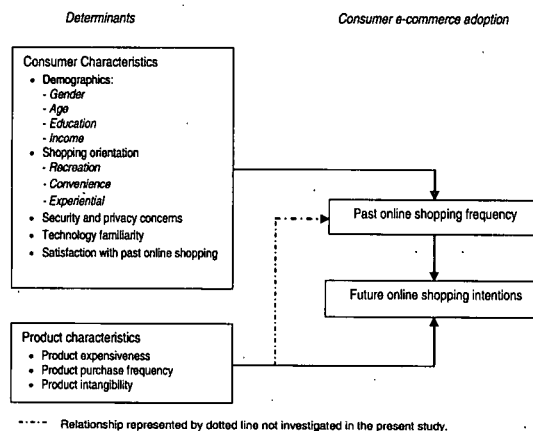


Figure 1: Consumer and Product Related Antecedents of Consumer Adoption of E-Commerce

CONSUMER CHARACTERISTICS

Consumer characteristics have been amongst the most popular group of factors with e-commerce researchers, with almost every researcher having studied some or the other demographic and psychological characteristics. A brief discussion of the influence of some of the consumer characteristics on e-commerce adoption is as follows:

Demographics

Most of the past research on demographic factors has focused on examination of the impact of education, age, gender and income variables on e-commerce adoption (Moschis et al., 1985; Jarvenpaa and Todd, 1996; Li et al., 1999; Lynch and Beck, 2001; Li and Zhang, 2002; Ramayah and Jantan, 2003; Park and Jun, 2003; Dillon and Reif, 2004; Yang, 2005; Slyke et al., 2005; Richards and Shen, 2006; Rotem-Mindali and Salomon, 2007). These researches reveal that education, gender and age are robust predictors of online buying status (frequent online buyer, occasional online buyer, or non-online buyer). In general, it has been found that online shoppers tend to be young, better educated, innovators and heavy users of technology. It has also been observed that males exhibit higher usage of messaging, browsing and downloading activities, and as such also tend to make more online purchases than females (Li et al., 1999; Stafford et al., 2004). The past studies, furthermore, indicate that as the education level progresses, the use of browsing, downloading and online purchase activities increase. Age in contrast has been found to be negatively related to messaging and online shopping activities. Though income is expected to be positively related to online shopping, the findings of the past studies are somewhat mixed. In view of the findings of the majority of past studies, it is being proposed that:

H₁: As compared to females, males are more likely to engage in online shopping.

H₂: Age is negatively related to online buying.

H₃: Education is positively related to online shopping.

H₄: Income is positively related with online shopping.

Shopping Orientation

The literature on e-commerce distinguishes among four major consumer

orientations: recreation/fun (Richards and Shen 2006), social (Swaminathan et al., 1999), convenience and experiential (Li et al., 1999). Consumers with different shopping orientations have been found to be differing in their attitudes towards internet shopping. Recreational shoppers, for instance, view shopping as a fun and leisure activity and are heavy information-seekers. Convenience shoppers, on the other hand, are on look out for such shopping options that enable them to save time and shop at any hour of the day. Experiential aspects of brick and mortar shopping such as touching, feeling, smelling and trying are in contrast with the major shopping considerations for the experientially-oriented shoppers. Socially oriented shoppers are those who seek social interactions through shopping.

Shopping orientations in the past studies have been identified as the major predictors of online buying status (frequent online buyer, occasional online buyer and non-online buyer) of internet users (Li et al., 1999; Swaminathan et al., 1999 and Richards and Shen, 2006). Those who value convenience and recreation aspects are more likely to make purchases online. But the consumers for whom social interactions and product experience are more important, they generally tend to be less interested in the use of internet for shopping and thus shop less frequently online and spend less money on e-commerce. Ghazali et al. (2006), for instance, found Malaysian consumers to be having unfavourable attitude towards purchase of fish online. Inability of the consumers to touch, feel and see fish prior to purchase were reported as the key deterrents to their online fish buying behaviour, indicating a tendency among the Malaysians to continue to be bound by 'touch and feel' culture.

H₅: Consumers high in recreation or fun are more likely to engage in online shopping.

H₆: More convenience-oriented customers are more likely to engage in online shopping.

H₇: Customers with high experiential orientations are less likely to engage in online shopping.

Security and privacy concerns

E-commerce is relatively a new mode of engaging in marketing exchanges in which the parties transact business with each other without being in personal contact or physically inspecting the products. Because of these

and other reasons, many consumers perceive online shopping riskier than making purchases through traditional brick and mortar retail stores. Past studies have identified various types of risks such as those related to economic, social, performance, personal and privacy aspects of a purchase decision (Jarvenpaa and Todd, 1996; Dillon and Reif, 2004). Technology, vendor and product have been identified in the past studies as three major sources of risks perceived by the consumers in online transactions (Lim, 2003; Su, 2003; Richards and Shen, 2006). Past studies also point to differences present among consumers in their risk perceptions and aversion tendencies. It, for instance, has been observed that as the consumers report higher computer skill levels, their concerns regarding risks tend to diminish. Consumer perceptions of risks associated with electronic shopping have, moreover, been found to be negatively related to their trust in web vendors. Given the current recognition of privacy as a major issue in electronic commerce (Swaminathan et al., 1999), it is natural to expect that consumers who feel more concerned with privacy issues in internet shopping would tend to engage less intensively in e-transactions.

H₈: The greater the concern for security and privacy issues, the lower is the likelihood of a consumer engaging in online shopping.

Technology familiarity

Consumer familiarity with technology and readiness to adopt high-tech products has been reported as an important factor influencing consumer online shopping status and behaviour (Cheung et al., 2003; Park and Jun, 2003; Yang, 2005; Richards and Shen, 2007). Results indicate that consumers' familiarity with and proclivity to adopt technology products positively and significantly influences their online shopping status (browser or buyer). Moschis et al. (1985), for instance, observed that at-home shoppers tend to be innovators and heavy users of technology. In view of a positive association between the two variables, it is being hypothesised that:

H₉: Consumer familiarity with the technology positively influences their online buying decision.

Satisfaction with past online shopping

Shopping experience includes attributes of time, convenience and

product availability, effort, lifestyle compatibility and playfulness or enjoyment of the shopping process. Jarvenpaa and Todd (1996) and Dillon and Reif (2004) in their studies of the effect shopping experience on the consumer online purchase decision have found that experienced online shoppers find online shopping to be enjoyable and amenable to their lifestyle. Several past studies report nature of previous online shopping experience to be having strongest influence on attitudes toward online shopping and intention to shop online in future (Lynch and Beck, 2001; Li and Zhang, 2002; Cheung et al., 2003; Koyuncu and Lien, 2003; Yoh et al., 2003; Yang, 2005; Park and Jun, 2003; Monsuwé et al., 2004).

H₁₀: More favourable the previous online shopping experience, greater will be the tendency among the consumers to shop online.

Past online purchase frequency

No doubt consumer satisfaction with past online purchases seems to be a better predictor of consumer intentions to shop online in future, past online purchase frequency nonetheless can serve as a major determinant of future consumer online shopping intentions. By virtue of having been more extensively involved with past online purchases, such consumers are more likely to feel confident to engage in e-shopping in future. Moreover, the very fact that these consumers have repeatedly made purchases on internet in the past implies that these consumers might have not been much dissatisfied with their previous online purchases. It is, therefore, being proposed that:

H₁₁: Higher the frequency of online purchases made in the past, more likely such customers would be engaging in online shopping in future.

PRODUCT CHARACTERISTICS

Suitability of internet as a marketing medium to a large extent depends on the characteristics of goods and services being marketed (Peterson et al., 1997; Alba, et al., 1997). For example, if a good is a search good and its features can be objectively assessed using readily available information, then internet can serve significant transaction and communication functions, and hence can affect transaction channel and com-

munication channel intermediaries involved with the marketing of that good. If a good is an experience good, information about the product's features may not be sufficient for a consumer to engage in internet-based transaction. Products (such as audio CDs and art pieces) that make use of the hypermedia advantages of internet can be suitably marketed online (Phau and Sui, 2000). An e-tailing continuum has been proposed to classify various products into different categories depending on their saleability through Internet (see Figure 2).

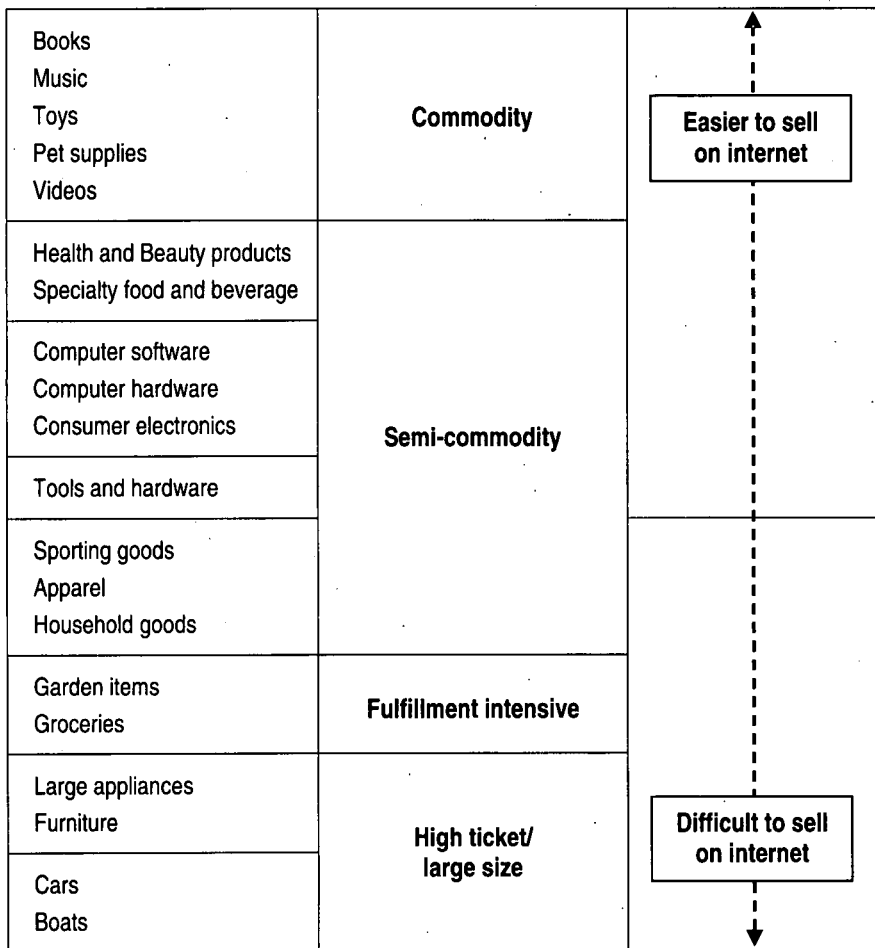


Figure 2: E-tailing Continuum Source: Adapted from Seth (2005)
Internet and Online Association of India carried out a survey of the cat-

egories of products bought over the internet. The survey revealed that books, electronic gadgets, railway tickets, accessories, apparel and gift items have been the most popular product categories that have been bought online (IOAI 2005).

Product price, purchase frequency and intangibility of value proposition are the three product characteristics that have been empirically investigated in the past. A brief description of these product characteristics and their relationship to e-commerce adoption is as follows:

Product expensiveness: Past studies have found that price of a product is a major factor affecting consumer decision to shop online (Jarvenpaa and Todd, 1996; Phau and Sui, 2000). It is, therefore, hypothesized that:

H₁₂: Products that are relatively expensive are less likely to be purchased over internet.

Product purchase frequency: In general, it has been observed that more frequently purchased products are more suitable to online purchases (Phau and Poo, 2000). It is, therefore, hypothesized:

H₁₃: Frequently purchased products have greater likelihood of being purchased online.

Product intangibility: Another key inference from the past studies is that products that are capable of capitalising on multimedia advantages of internet (such as those which allow trial sampling or are high in information content) are more likely to be bought through the internet. Examples of such products include: music and video CDs, stock information and books (Phau and Sui, 2000). In other words, products that are high in their intangible value proposition (i.e., the products which require to be heard, seen, read or analysed only) are more likely to be purchased online (Phau and Sui, 2000). In view of the fact that a variety of frequently purchased and relatively low price services are in general high in intangibility of their value proposition, it is proposed that:

H14: Services that are high in their intangible value proposition are more amenable to be purchased online.

THE STUDY

In order to test the above propositions, a survey of consumers residing in

Delhi and NCR region was carried out with the help of a 'structured non-disguised' questionnaire. The sample was drawn using convenience sampling method. The questionnaire developed for the study was personally administered to 450 respondents in the month of November-February 2009. A total of 431 usable questionnaires were received, indicating a response rate of 95.8 per cent.

Genderwise, the sample has been comprised of almost equal number of males and females (55 per cent and 45 per cent). Agewise, majority of the respondents (71.9 per cent) have been from age group 16-25 years. A higher proportion of respondents from younger age group should be of not much concern as it is relatively the younger people who are the most tech-savvy and hence more amenable to online shopping. In terms of educational background, the sample is more dispersed: higher secondary (19.3 per cent), graduates (44.3 per cent), post graduates (18.1 per cent) and professionally qualified (18.3 per cent). Income-wise, majority of the respondents come from the income groups of Rs.15000-Rs.30000 (35.7 per cent), Rs.30000-Rs.50000 (23.2 per cent) and above Rs.50000 (28.3 per cent). Only 12.8 per cent of the respondents in the sample belong to families having income below Rs.15000.

MEASUREMENT

Multiple choice questions were put to the respondents to gather information about their demographic profile. The information regarding the rest of the psychological factors and product characteristics was sought through the use of scales employed in the previous studies. A brief description of various scales used is as follows:

Three types of shopping orientations were measured with the items adapted from scales employed in the studies by Li et al. (1999) and Richards and Shen (2006). Three statements used for measuring recreational shopping orientation include: 'Going to market for shopping is an enjoyment and recreation for me', 'I like to go shopping with friends and family members when I am free', and 'Window shopping is usually a pleasant experience for me'. Convenience shopping orientation was measured by asking the respondents to respond to three statements: 'I hate to wait in long lines for checking out goods', 'I want to be able to shop at any time of the day' and 'Saving time while shopping is very important for me'. For measuring experiential shopping orientation, three statements included: 'I like to see

and touch the products before I buy them', 'I hate buying things without seeing what I am getting', 'I like to try before I buy a product'. Responses to all these nine statements were obtained on a 5-point Likert scale, ranging from '1= strongly agree' to '5=strongly disagree'.

A single-item scale, anchored on '1 = not at all concerned' to '5 = very much concerned', was adapted from the study of Swaminathan et al. (1999) for measuring consumers' concerns for security and privacy.

Technology familiarity in the past studies has been assessed in terms of extent of ownership of high-tech products by the consumers (Cheung et al., 2003; Park and Jun, 2003; Yang, 2005; Richards and Shen, 2007). The present study too employed a similar approach. Respondents were provided with a list of eight high technology products, viz., computer, credit card, internet connection, iPod, cell phone, DVD player, digital camera and PDA. They were asked to report the products that they possessed. Based on the number of items possessed by them, respondents were rated on a scale of 1 to 8 (with '1' representing customers classified as being extremely low on technology familiarity and '8' characterising customers who owned all the listed products). About 65 per cent of the sample was found to be comprised of customers falling in the middle range, i.e., owning 3 to 6 high tech products.

The construct 'consumer satisfaction with past online shopping' has been operationalised through 5-item scale adapted from Dillon and Reif (2004). Two sample items from the scale are: 'Online experience has been a good experience for me' and 'It has been beneficial to shop online'. The scale items were anchored on '1 = strongly disagree' to '5 = strongly agree'. Scores of negative items were reverse coded before being used for computation of summated mean scale scores.

For purposes of examining influence of three product characteristics (viz., product expensiveness, product purchase frequency and product intangibility), an approach similar to the one used by Phau and Sui, 2000 has been adopted in the present study. First, a global assessment of consumers' willingness to buy each one of the three types of products (viz., expensive products, frequently purchased products and services) was made through use of a 5-point Likert scale (ranging from '1 = strongly disagree' to '5 = strongly agree') adapted from Phau and Sui, 2000. The three statements used for this purpose included: 'I will not shop for expensive products/ services online', 'I will buy frequently

purchased products/services through internet' and 'I will prefer to purchase services rather than products online'. To cross-check the validity of their assertions, consumers were also presented with a list of 17 items (comprising of products from the above mentioned three product categories) and were asked to indicate the likelihood of purchasing each one of them over the internet. A 5-point Likert scale anchored on '1 = very unlikely' to '5 = very likely' was adapted from the study of Phau and Poon (2000). The scores for each of the three categories of the products were summated separately and then a mean score for each of the product category was computed.

Consumer adoption of e-commerce is the dependent variable in the study. It has been operationalised through two scales: consumers' 'past online shopping frequency' and 'future online shopping intentions'. Frequency of past online shopping has been ascertained by asking consumers to report the number of online purchases made by them during the last one year. A single-item 5-point Likert scale was adapted from Swaminathan et al. (1999) that was anchored on '0 = 0 to 5 times online purchases made' to '5 = 'more than 20 times online purchases made' during the last year. For measuring future online shopping intentions, one-item scale from Slyke et al. (2004) has been used. The scale was anchored '1= strongly disagree' and '5 = strongly agree'.

Three major statistical analysis techniques have been employed in the study to analyse the collected data: ANOVA, correlation and regression analyses. ANOVA procedure was used for assessing differences present among the consumers in their adoption of e-commerce across various demographic clusters. Karl Pearson's coefficients were computed to examine the relationship of e-commerce adoption with various non-demographic consumer characteristics. Multiple regression technique was used for assessing relative importance of various consumer related factors studied in juxtaposition.

ANALYSIS

Consumer demographics and e-commerce adoption: ANOVA and correlation results

ANOVA analysis was performed in order to assess the impact of demographic factors on e-commerce adoption. The results are presented in Table 1. When operationalised in terms of past online shopping frequency,

e-commerce adoption can be observed to be significantly ($p \leq 0.01$) differing across all the four types of consumer groups. However, in terms of future online shopping intentions, e-commerce adoption can be seen to be differing significantly only across different age ($p \leq 0.05$) and education ($p \leq 0.01$) groups. Gender and income do not turn out to be significant variables affecting consumer future online intentions.

In overall terms, we find the study results to be providing mixed support to H1 to H4. While the empirical evidence is in favor of all the hypotheses when examined in respect of past online shopping frequency, only two of the hypotheses, viz., H2 to H3, get supported by the study in respect of future online shopping intentions.

Table 1: Past Online Shopping Frequency and Future Online Shopping Intention Analysed across Demographics: ANOVA Results

Variable	Past online shopping frequency			Future online shopping intention		
	Mean	F-value	p-value	Mean	F-value	p-value
<i>Gender</i>						
- Male	0.73			3.22		
- Female	1.07			3.07		
Total	0.92	8.31	.01***	3.11	1.14	0.29
<i>Age (years)</i>						
- 16-25	0.69			3.05		
- 26-35	1.89			3.40		
- 36-45	1.08			2.92		
- 46 and above	0.86			2.67		
Total	0.92	16.22	.00***	3.11	3.31	0.02**
<i>Education</i>						
- Higher secondary	0.47			2.83		
- Graduation	0.74			2.95		
- Post-graduation	1.17			3.36		
- Professionally qualified	1.53			3.32		
Total	0.92	10.51	.00***	3.11	3.92	0.01***
<i>Monthly family income (Rs.)</i>						
- Less than 15,000	0.28			3.00		
- 15,000 – 30,000	0.66			3.16		
- 30,000 – 50,000	1.21			3.00		
- 50,000 & more	1.20			3.21		
Total	0.92	8.37	.00***	3.11	0.70	0.55

Note: 1. Significance level: *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$

Other consumer characteristics, e-commerce adoption and Karl Pearson coefficients of correlations were computed for analyzing the relationship of other consumer characteristics with e-commerce adoption. The results are presented in Tables 2 and Table 3. So far as past online shopping behaviour is concerned, it can be observed to be significantly related to all the other consumer characteristics under investigation, viz., recreational/fun orientation ($p \leq 0.01$), convenience orientation ($p \leq 0.05$), experiential orientation ($p \leq 0.01$), technology familiarity ($p \leq 0.01$), security and privacy concerns and past online shopping satisfaction ($p \leq 0.01$).

Table 2: Past Online Shopping Frequency and Other Consumer Characteristics: Summary Statistics and Correlation Results

Variable	Mean	S.D	Correlation of past online shopping frequency with other consumer characteristics
Past online shopping frequency	0.92	1.31	
Shopping orientations:			
- Recreational/ fun	3.95	0.73	-0.20***
- Convenience	3.70	0.72	0.10**
- Experiential	4.08	0.77	-0.34***
Technological familiarity	4.26	1.85	0.28***
Security and privacy concerns	3.54	0.78	-0.31***
Past online shopping satisfaction	3.80	0.52	0.23***

Note: 1. Significance level (one-tail test): *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$

Results are almost similar in respect of e-commerce adoption operationalised by way of future online shopping intentions. With the sole exception is variable 'security and privacy concerns', the rest of the variables emerge as significant correlates of online shopping intentions: recreational/fun orientation ($p \leq 0.01$), convenience orientation ($p \leq 0.05$), experiential orientation ($p \leq 0.01$), technology familiarity ($p \leq 0.10$), and past online shopping satisfaction ($p \leq 0.01$). Incidentally, even the additional variable 'past online shopping frequency' under consideration in the case of online shopping intentions, is found significantly related ($p \leq 0.01$) to consumers' future online shopping intentions.

We thus find that with the exception of H8 (pertaining to security and

privacy concerns where only partial support is available), all other hypotheses, viz., H5, H6, H7, H9, H10 and H11, stand supported by the survey results.

Table 3: Future Online Shopping intentions and Other Consumer Characteristics: Summary Statistics and Correlation Results

Variable	Mean	S.D	Correlation of future online shopping intention with other consumer characteristics
Future online shopping intention	3.11	0.82	
Shopping orientations:			
- <i>Recreational/ fun</i>	3.95	0.73	-0.17***
- <i>Convenience</i>	3.70	0.72	0.18***
- <i>Experiential</i>	4.08	0.77	-0.11*
Technological familiarity	4.26	1.85	0.12*
Security and privacy concerns	3.54	0.78	-0.02
Past online shopping satisfaction	3.80	0.52	0.58***
Past online shopping frequency	0.92	1.31	0.53***

Note: 1. Significance level (one-tail test): *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$

Regression Results

In order to examine the influence of various consumer characteristics when analysed in juxtaposition and assess their relative importance in explaining variations present among consumers in their adoption of e-commerce, multiple regression analysis technique was employed. Two sets of multiple regressions were carried out with 'past online shopping frequency' and 'future online shopping intentions' as the dependent variables. Various consumer characteristics that were found significantly related to e-commerce adoption in the ANOVA and correlation analyses in Tables 1 through Table 3 were used as the independent variables for the two sets of multiple regressions. The results are summarised in Tables 4 and 5. It may be mentioned here that the multicollinearity among the independent variables was assessed through computations of tolerance and VIF statistics. Both these statistics indicated absence of multicollinearity among the independent variables.

In respect of the dependent variable 'past online purchase frequency', a total of ten variables (four demographic and six other consumer characteristics) constituted the independent variables (see Table 4). Taken together, these variables are able to explain only 20 per cent of variations present among the consumers in their e-commerce adoption. A comparison of results, presented in Table 4 with those presented in Table 1 and Table 2 brings to the fore an interesting inference. The variables age, convenience orientation, experiential orientation, technological familiarity and security and privacy concerns are not found significant explanatory variables. Education ($\beta = 0.30$; $p \leq 0.01$) emerges as the most important predictor, followed by past online shopping satisfaction ($\beta = 0.19$; $p \leq 0.01$), recreation orientation ($\beta = 0.18$; $p \leq 0.05$), income ($\beta = 0.16$; $p \leq 0.05$), and gender ($\beta = 0.12$; $p \leq 0.10$).

Table 4 : Past Online Shopping Frequency and Its Determinants: Regression Results

	β	t-statistic	p-value
Dependent variable: Past online shopping frequency			
Constant			
Independent variables			
Demographic factors			
• Gender	- 0.12*	- 1.70	0.09
• Age	- 0.10	- 1.29	0.20
• Education	0.30**	3.81	0.00
• Income	0.16**	2.01	0.05
Shopping orientations:			
• Recreational/ fun	- 0.18**	- 2.43	0.02
• Convenience	0.00	0.05	0.96
• Experiential	- 0.06	- 0.79	0.43
Technological familiarity	0.05	0.61	0.54
Security and privacy concerns	- 0.09	- 1.23	0.22
Past online shopping satisfaction	0.19**	2.51	0.01
Model statistics	Adjusted R ² = 0.20, F = 5.26, p = 0.00		

Note: 1. Significance level: *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$
In the second set of multiple regression analysis, 'future online shopping intentions' has been used as the dependent variable. It was regressed on a

total of eight variables (two demographic characteristic and six other consumer characteristics) that were found significant in the previous bivariate analyses. From the multiple regression results presented in Table 5, it can be observed that adjusted R² value is 0.50 ($p \leq 0.01$), implying that the eight independent variables taken together are able to explain 50 per cent of the variations in consumer adoption of e-commerce. However, in terms of significance of beta coefficients, only three variables emerge as determinant of future online intentions. Past online shopping satisfaction is the most important explanatory variable ($\beta = 0.47$; $p \leq 0.01$), followed by past online shopping frequency ($\beta = 0.38$; $p \leq 0.01$) and education ($\beta = 0.11$; $p \leq 0.10$), and in that order.

Table 5 : Future Online Shopping Intention and Its Determinants: Regression Results

	β	t-statistic	p-value
Dependent variable: Future online shopping intention			
Constant			
Independent variables			
Demographic factors			
• Age	- 0.10	- 1.61	0.11
• Education	0.11*	1.64	0.10
Shopping orientations:			
• Recreational/ fun	- 0.09	- 1.59	0.11
• Convenience	0.03	0.40	0.69
• Experiential	0.05	0.75	0.45
Technological familiarity	0.03	0.55	0.58
Past online shopping satisfaction	0.47***	7.83	0.00
Past online shopping frequency	0.38***	6.15	0.00
Model statistics	Adjusted R ² = 0.50, F = 21.64, p = 0.00		

Note: 1. Significance level: *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$

IMPACT OF PRODUCT CHARACTERISTICS ON ONLINE SHOPPING BEHAVIOR

The results relating to impact of product characteristics on online shopping behaviour are presented in Tables 6 to 11. Barring the case of 'product purchase frequency', the results are in consonance with those of study by Phau and Sui (2000).

Product expensiveness

With respect to consumer purchase of expensive products online, the results are as per expectations. A high mean score of 3.90 imply a general unwillingness present among the respondents to buy expensive products through internet. In terms of frequency distribution too, more than 70 per cent of the surveyed consumers have expressed unwillingness to buy online the expensive products/ services.

In addition to a general question, the respondents were also presented with a list of four specific expensive products, namely jewellery, automobiles, mobile phones and electronic items. They were asked to state on a 5-point Likert scale (ranging from '1 = very unlikely' to '5 = very likely') their likelihood of buying each one of these items. The scores so provided by the respondents were summed up and then mean scores were computed. Their responses in terms of both the frequency distribution and mean scores for the select durable and expensive items are presented in Table 7. Mean score is 2.29, implying that it is unlikely that the respondents will buy these items on internet. In terms of frequency distribution of their responses too, only around 11 per cent of the respondents can be seen to be in favour of buying such products online. The rest of the respondents appear either unwilling or ambivalent in their response. Results reported in Tables 6 and 7 thus lend support to H_{12} .

Table 6 : Willingness to Purchase Expensive Products Online: Overall Assessment

Statement	Percent of respondents					Mean	SD
	Strongly disagree	Disagree	Indifferent	Agree	Strongly agree		
<i>I will not shop for expensive products/ services online!</i>	4.2	11.4	10.6	37.8	36.1	3.90	1.14

Note: 1. A 5-point Likert scale was used for obtaining responses from the surveyed respondents, ranging from '1 = strongly disagree' to '5 = strongly agree'.

Table 7 : Likelihood of Purchasing Expensive Products Online: Product-specific Assessment

Statement /item	Percent of respondents					Mean	SD
	Very unlikely	Unlikely	Cannot say	Likely	Very likely		
<i>Likelihood of purchase of select expensive products^{1, 2, 3}</i>	21.5	30.1	37.0	9.8	1.6	2.29	0.92

- Note: 1. A 5-point Likert scale was used for obtaining responses from the surveyed respondents, ranging from '1 = very unlikely' to '5 = very likely'.
2. Respondents were presented with a list of five expensive durable products (viz., jewellery, automobiles, mobile phones and electronic items) and were asked to report likelihood of each product being purchased by them on internet.
3. The scores for all the products were summed up and then mean scores were computed. Mean scores of less than 0.5 have been construed as representing 'very unlikely' response. In a similar vein, scores in the range of 1.5-2.5, 2.5-3.5, 3.5-4.5 and 'above 4.5' have been treated as equivalent to 'unlikely', 'cannot say', 'likely', and 'very likely' respectively. In general, higher the score represent, higher is the likelihood of the items being purchased on internet.

Product purchase frequency

Results relating to consumers' general and product-specific willingness to buy online the 'frequently purchased products' are presented in Tables 8 and 9. In overall terms, a mean score of 2.89 as well as frequency distribution of consumer responses point to ambivalence present among the consumers about their willingness to buy 'frequently purchased products' through internet (see Table 8). However, when queried about their willingness to buy four specific 'frequently purchased products' (viz., flowers, fruits and vegetables, groceries and clothes), majority of consumers express low likelihood of making purchases of such products online (see Table 9). Taken together, the above results are thus able to only partly support to H_{13} .

Table 8: Willingness to Purchase 'Frequently Purchased Products' Online: Overall Assessment

Statement	Percent of respondents					Mean	SD
	Strongly disagree	Disagree	Indifferent	Agree	Strongly agree		
<i>I will frequently buy frequently purchased products/services through internet.¹</i>	10.6	32.8	18.8	33.1	4.8	2.89	1.13

Note: 1. A 5-point Likert scale was used for obtaining responses from the surveyed respondents, ranging from '1 = strongly disagree' to '5 = strongly agree'.

Table 9: Likelihood of Purchasing 'Frequently Purchased Products' Online: Product-specific Assessment

Statement /item	Percent of respondents					Mean	SD
	Very unlikely	Unlikely	Cannot say	Likely	Very likely		
<i>Likelihood of purchase of select frequently purchased products.^{1, 2, 3}</i>	43.5	27.2	23.3	5.5	0.5	1.92	0.92

Note: 1. A 5-point Likert scale was used for obtaining responses from the surveyed respondents, ranging from '1 = very unlikely' to '5 = very likely'.

2. Respondents were presented with a list of four frequently purchased products (viz., flowers, fruits and vegetables, groceries and clothes) and were asked to report likelihood of each product being purchased by them on internet.
3. Same as in Table 7.

Product Intangibility

It was hypothesized that that the services high in their intangible value proposition are more likely to be bought online than tangible products. Once again, the respondents were asked to report their general willingness as well as product-specific likelihood of buying services online. For assessing service-specific purchase likelihood, they were presented with a list of eight services, namely loans, entertainment, travel, online music, banking, insurance, financial reports, stock market news, weather information, online newspapers and consultancy services. The results presented in Tables 10 and 11 reveal a high level of willingness among the consumers to buy services online in general as well as specific set of services, confirming the H14 that services due to their intangible nature are more likely to be bought online than tangible products.

Table 10 : Willingness to Purchase Services vis a vis Products Online: Overall Assessment

Statement	Percent of respondents					Mean	SD
	Strongly disagree	Disagree	Indifferent	Agree	Strongly agree		
<i>I will prefer to purchase services rather than products online.¹</i>	3.6	14.8	23.1	42.6	15.9	3.52	1.04

Note: 1. A 5-point Likert scale was used for obtaining responses from the surveyed respondents, ranging from '1 = strongly disagree' to '5 = strongly agree'.

Table 11 : Likelihood of Purchasing Services vis a vis Products Online: Product-specific Assessment

Statement /item	Percent of respondents					Mean	SD
	Very unlikely	Unlikely	Cannot say	Likely	Very likely		
<i>Likelihood of purchase of select services.^{1, 2, 3}</i>	3.3	9.2	42.7	42.1	2.7	3.27	0.75

- Note: 1. A 5-point Likert scale was used for obtaining responses from the surveyed respondents, ranging from '1 = very unlikely' to '5 = very likely'.
2. Respondents were presented with a list eight services (viz., loans, entertainment, travel, online music, banking, insurance, financial reports, stock market news, weather information, online newspapers, and consultancy services) and were asked to report likelihood of each product being purchased by them on internet.
 3. Same as in Table 7.

DISCUSSION AND IMPLICATIONS

The aim of this paper has been to assess the significance and relative importance of various consumer and product related factors that have been reported in the past studies as the key determinants of e-commerce adoption. With a view to capture both the past and future domains, e-commerce adoption in the present study has been operationalised in terms of both the consumer online shopping frequency in the past year as well as their intentions to shop online in future. Based on a review of e-marketing literature, a total of ten consumer related factors and three product related factors were identified and examined in the present study. In respect of future online shopping intentions, one additional factor, i.e., past online shopping frequency, has also been included as an additional consumer-related antecedent. Major findings of the study and their managerial and research implications are as follows.

A total of ten consumer-related antecedents have been examined in

the multiple regression analysis in respect of consumer past online shopping frequency, but these ten variables taken together are able to explain only 20 per cent of variations in the dependent variable. Further, only five of these variables emerge in the final analysis as significant determinants of consumer past online shopping behaviour. The antecedent 'satisfaction with online shopping in past' tops the list. The obvious implication of this finding to the e-vendors is that they need to give utmost importance to providing satisfaction to their e-customers. More the customers are satisfied with their previous online shopping encounters, more they are likely to engage in online shopping.

Education, gender, recreational shopping orientation and income are the other four variables (and in that order) that the present study finds to have impacted consumer decision to engage in online shopping in the past. As expected, the variables education and income are positively related with the past online shopping behaviour, implying thereby that the higher the education and income levels of people, more they have tended to prefer buying goods and services on internet. In respect of variable 'gender', males were coded '0' and females as '1'. A negative beta value of gender in the regression equation, therefore, indicates a greater proclivity among the males than females to have engaged in online shopping purchases in the past.

Three types of shopping orientations, viz., recreational/fun, convenience and experiential, were examined in the study. It is, however, only the recreational/fun aspect that has emerged as an important determinant of past online shopping behaviour. A negative and significant relationship of this factor with the past online shopping incidence, however, implies that consumers who view shopping as a recreational activity and fun prefer traditional retail outlets to online shopping. It thus appears that Indian consumers by and large still continue to rejoice in moving from one shop to another browsing store aisles and hunting for best bargains instead of using eBay or some such other websites. In order to gain greater acceptance of e-commerce, e-tailers need to lay more emphasis on fun and enjoyment (rather than simply the convenience) aspect of their online shopping medium. Recreation orientation needs to be kept in mind not only at the time of designing the web site but also its promotion to the customers.

Multiple regression analysis results are somewhat different in respect

of the dependent variable 'future online shopping intentions'. A total of eight variables (two demographic characteristic and six other consumer characteristics) that were found significant in the bivariate analyses were used as the independent variables. Taken together, these eight variables are found to be able to explain 50 per cent of variations present in the consumer future online shopping intentions. The explanatory power of regression equation in the present case is much higher as compared to the one (i.e., 20 per cent) observed in respect of past online shopping frequency.

Furthermore in contrast to five independent variables found significant in respect of past online shopping behaviour, only three variables emerge as the significant predictor variables in regard to future online shopping intentions. The three significant variables in order of their importance are: past online shopping satisfaction, past online shopping frequency and education. A positive relationship between past online shopping satisfaction with future online shopping intentions implies that consumers who have been satisfied with their previous online shopping purchases are more likely to engage in online shopping in future. In a similar vein, a positive relationship observed between past online shopping frequency and future online shopping intentions suggests that such customers are likely to continue to make online purchases in future too. Education is also found to be positively related with online shopping intentions, implying more educated the customers are, more likely they would be towards engaging in online shopping in future.

Managerial implications of these findings are once again that the online marketers need to target their products to more educated customers. Educated persons in all probability are likely to be more internet savvy and also having greater internet access and connectivity, thus making it easier for the marketers to bring them into the fold of online shoppers provided they are sufficiently exposed to online shopping outlets and motivated to place orders online. Coupled with measures to ensure higher level of satisfaction to consumers in their first few online transactions, all these initiatives can go a long way in bringing more and more people in the ambit of online shopping in future.

The present study has also attempted an analysis of influence of product characteristics on consumer future online intentions. The results point

to a general unwillingness among the consumers to buy expensive products online. Only about 11 percent of the surveyed customers have shown interest in buying expensive products such as jewellery, automobiles, mobile phones and electronic items. Consumers, furthermore, do not appear much enthusiastic of ordering frequently purchased products such as flowers, fruits, vegetables, groceries and clothes through internet. Services in contrast to goods appear to be the good candidates for online marketing. A great majority of consumers have reported willingness to buy services such as loans, entertainment, travel, online music, banking, insurance, financial reports, stock market news, weather information, online newspapers and consultancy services. Incidentally, these are the services that are quite high in their intangible value proposition.

The study findings thus suggest that marketers need to be selective in marketing their product portfolio to be offered through internet. Not all products appear to be suitable for online marketing. Services that are less expensive and high in their intangible value proposition appear more suitable candidates for online marketing. Consumers will detest buying expensive products online because of higher risks and experiential orientation involved in such products. Even the frequently purchased products such as flowers, fruits and vegetables, groceries and clothing do not appear ripe enough for sale through internet. These might be good candidates for online retailing in the developed countries where there is a high degree of grading and quality standardization present for such products in their markets. In a country like India where these products are characterized by a high degree of variability present in their quality and technical specifications, consumers appear more inclined to make such purchases through traditional retail channels, offering them benefit of experiential based shopping. The most suitable distribution medium for such products in near future, therefore, will continue to be traditional retail outlets.

Though experiential shopping orientation has not emerged as an important determinant of future online shopping intentions in the multiple regression analysis in the present study, there can be no denial to the fact that Indian shoppers even in the present day market era continue to be characterized by a high degree of experiential based shopping. This aspect needs to be adequately attended to in inducing them to make more online purchases in future. A mean score of 4.02 observed in Table 2

amply bears a testimony to the presence of a high level of experiential shopping orientation still present among the Indian consumers. Indian consumers value touch, feel and smell aspects of traditional shopping which are missing in the case of online shopping. Such an experiential orientation is not unique to the Indian consumers alone. Customers in other countries too, have been found to be engaging in experiential shopping. Ghazali et al. (2006), for instance, found Malaysian consumers to be high in their experiential shopping orientation, and thus not preferring to buy fish online. The online marketers can exploit this characteristic feature of Indian consumers to their advantage by enhancing experiential nature of the presence of these products on their websites. Especially in the case of services, multimedia features of internet, such as providing the opportunity to the consumer to sample online the music and movies, being sold through internet, can go a long way in inducting greater online shopping orientation among customers in future.

STUDY LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

No study is perfect in itself. Every study proceeds with certain assumptions which limit the scope of that study. Our research also suffers from a few limitations. First, this study is restricted in generalisability of its findings. This is so because while selecting the sample, respondents residing only in Delhi and national capital region have constituted the sample on the assumption that they adequately represent the typical Indian consumers. It will be worthwhile if studies are conducted in future using more representative and larger samples selected from various parts of the country.

Furthermore, this research has endeavoured to examine only consumer and product related antecedents to consumer online shopping adoption. A number of other factors such as those related to internet medium, vendor and online shopping environment have also been found important determinants of consumer online shopping behaviour in the past studies. These variables too need to be examined in future studies in order to gain an in-depth knowledge of consumer online shopping behaviour.

Variables such as shopping convenience, technological familiarity and security and privacy concerns have not been found in the present study as significant variables affecting consumer adoption of e-commerce. It might

be that these variables affect e-commerce adoption indirectly rather than directly. Use of some of these variables in future studies as moderating and mediating variables might help us in understanding their indirect influences on consumer adoption of e-commerce.

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