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Product Categories**

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## Abstract

The product that a consumer intends to buy influences his/her preference for a shopping channel. Using sample survey data, we analyse the impact of (1) *the consumer's satisfaction derived from using the Internet* and (2) *the consumer's previous experience of buying products on the Internet* on the preference to shop either online or off-line across five product categories. Each of these five product categories has a different level of product specific risk which influences the consumer's preference to shop on the Internet rather than "going to the shops". This research demonstrates that consumers who have previously shopped online display stronger preferences to buy products on the Internet **irrespective of the product specific risk of online shopping**. This strong preference for online shopping across product categories is explained by the consumer's positive perception of the Internet as a shopping channel. The results would also suggest that, for those consumers who accept the Internet as a shopping channel, the difference between "search" and "experience" goods is smaller than it is for other consumers when they decide whether to use the Internet for shopping.

Keywords: Internet Usage, Online Shopping, Product Specific Risk and Shopping Channel Preferences.

## 1. Introduction

The rapid global adoption and use of the Internet as an interactive communication tool and as a marketing and shopping medium continues to interest both academics and practitioners alike (Hoffman et al (1995), Barwise et al (2002)). Hoffman (2000) noted that *“There is revolution happening—a startling and amazing revolution that is altering everything from our traditional views of how advertising and communication media work to how people can and should communicate with each other”*. The Internet and online marketing also remains a topic of interest for marketers because of the heterogeneous behavioural effects across product categories, consumers, retailers and manufacturers that prevail within this medium. Some have questioned whether these changes are of “form” rather than of “substance”; therefore, a fundamental question is whether the Internet is a revolution or an evolution of the way in which people communicate and conduct business (Dholakia et al (2002)). However, what is undeniable is the fact that the Internet has changed the buyer’s monetary and non-monetary costs of product information search (Bakos (1997)) and the growing availability of interactive decision tools on the net, such as shop bots, that enable consumers to make better decisions whilst purchasing products (Haubl et Trifts (2000)). In spite of all this, shopping on the Internet remains popular for certain products and this would indicate that the Internet has only changed in “form” rather than in “substance” our shopping behaviour.

From a utility maximisation perspective (Reardon and McCorkle (2002)), for any product category purchase intention, the consumer shops online if the utility of doing so is greater than the utility of using another shopping medium. The utility of any shopping channel for any product category is a function of increasing as well as decreasing (or disutility) arguments. An example of a utility increasing argument of online shopping is “convenience” or the benefit of having a larger choice of retailers. An example of a utility decreasing argument is the risk attached with the misuse of personal information on the Internet. Similarly, from a transaction cost approach perspective, consumers choose the shopping channel which they perceive to be least costly, that involve both monetary and non-monetary factors, to carry out their

transactions (Liang and Huang (1998)). Product attributes influence the utility as well as the transaction cost of using any retailing channel (Klein (1998), Shim et al (2001) and Chiang et al (2003)). For search products, such as CDs and books, the consumer does not need to physically examine the products before purchase. On the other hand, for experience products, such as personal effects, consumers need to physically examine the products before purchase. We would therefore anticipate that consumers' preferences to shop online to be greater for search than for experience products (Klein (1998), Chiang et al (2003)). For some consumers, shopping and the choice of the shopping channel add satisfaction to the products they buy (Keeney (1999), Peterson et al (1997)). That is, while some of us are quite satisfied if we buy a CD on the Internet, others find that the shopping trip to the music store adds to the satisfaction of purchasing the product. Therefore, the intention to shop online or offline is likely to be jointly influenced by the product category purchase intention and by the consumer's shopping channel preferences.

In this paper we investigate the heterogeneity of choice between shopping channels described above by segmenting consumers on the basis of (1) their levels of satisfaction derived from using the Internet and (2) their previous online shopping experience. We test the concept of heterogeneity in the choice of shopping channels by using these stated factors that explain the differential intentions to switch from off-line to online shopping channels for five distinct product categories; these are listed as: Groceries, CD's, DVD's & Videos, Personal Effects such as clothing, Computer Hardware and Software and Financial and Insurance Services. Each of these five product categories differs in the level of the product-specific risks that the consumer considers before taking the decision to shop online. This differentiation allows us to analyse shopping channel preferences across a wide range of product attributes. Our objective in employing a segmentation approach is to study whether consumers who have previously shopped online have stronger preferences to shop online irrespective of the product specific risks and the utility that they derive from using the Internet. In the process, we also explore if the relative preference to shop online is explained by the consumer's perception and attitude towards the Internet as a shopping channel.

This paper is organised as follows. Section 2 discusses the conceptual framework that is employed to test our underlying hypotheses and in section 3 we explain the methodology and the data that is used in the empirical analysis that follows. In section 4 a discussion of the empirical results is presented and our conclusions and limitations of this study are placed in section 5.

## **2. Conceptual Framework**

We study the “intention” or “preference” rather than the “act” to switch from the off-line to the online shopping channel. Our theoretical framework is based on the work of Keeney (1999), Klein (1998) and Torkzadeh and Dhillion (2002). The degree of shopping channel substitution from off-line to online retailing varies across products and consumer preferences respectively as is discussed in the introduction. Since it is likely that some consumers will have stronger preferences to shop on the Internet, this should be revealed through their intentions to use the Internet to buy products which other consumers would prefer to purchase using the traditional off-line retailing channel. We propose a framework where the relative preference to shop online is influenced by the utility of Internet use and previous online shopping experience. This research investigates the strength of each of these two effects in predicting the consumer’s preference to shop online across five product categories

Barwise et al (2002) suggested that *“the use of the Internet as a marketing channel depends both on the growth in general Internet penetration and usage and on how the Internet then influences the adoption and diffusion of other products and services”*. In the context of this paper, utility and general skills acquired from the Internet experience and its related technologies would positively influence the consumer’s preference to shop online. That is, consumers who regularly access and use the Internet and derive high levels of satisfaction would have stronger intentions to shop online than those who do not derive much satisfaction from using the Internet. As an example, consumers who regularly surf the Internet for general information search (regular surfing of news websites or accessing personal email using generic portals such as Yahoo!) would acquire general Internet skills. This, in turn, may increase the consumer’s preference to shop online or, at the very least, to engage in product

information search on the Internet. It is thus possible that this strong relative preference to shop online, induced by the level of utility and skills acquired from using the Internet, will carry through all product categories. The utility of Internet use would also be initially influenced by the utility that the consumer derives from the use of computers, the basic infrastructure to access the online experience.<sup>1</sup> Shim et al (2001) noted that “*Internet Shopping requires computer skills and resources such as personal computer ownership and accessibility*”. This discussion on the general acceptance of the Internet as a shopping channel by consumers is related to the theory of planned behaviour (Ajzen (1991)) and the technology acceptance model-TAM (Davis (1989)) where the consumer needs to feel confident about his/her level of general skills and knowledge before performing an action, the latter in this context being purchasing products on the Internet.

The level of utility derived from the Internet experience may not necessarily be positively correlated with the propensity or preference to shop online since individuals use the Internet for other purposes. Also, the general disutility (or the risk) attached to shopping on the Internet or the product specific disutility of online shopping may dominate the positive impact of the utility derived from the Internet usage. The consumer’s experience and utility derived from using the Internet could reduce the general perceived risk associated with Internet shopping but may not necessarily decrease the product specific risks of online shopping that are inherent to the specific products<sup>2</sup>. Consumers who have purchased products on the Internet have already experienced general but not necessarily the product specific risks of online shopping. In fact, for consumers who have purchased products on the Internet, their perceived general benefit of online shopping has outweighed their perceived general risk of shopping on the Internet. But it could well be the case that consumers who have previous experience of online shopping chose this medium because purchasing certain categories of products on the Internet was perceived as “less risky” compared to purchasing other products online. However, it is also possible that for consumers who have shopped online, their experience of online shopping may also decrease the specific risk attached to purchasing certain products on the Internet compared to other

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<sup>1</sup> We acknowledge that there are various other technologies, such as the third generation of mobile phones, which can be used to access the Internet.

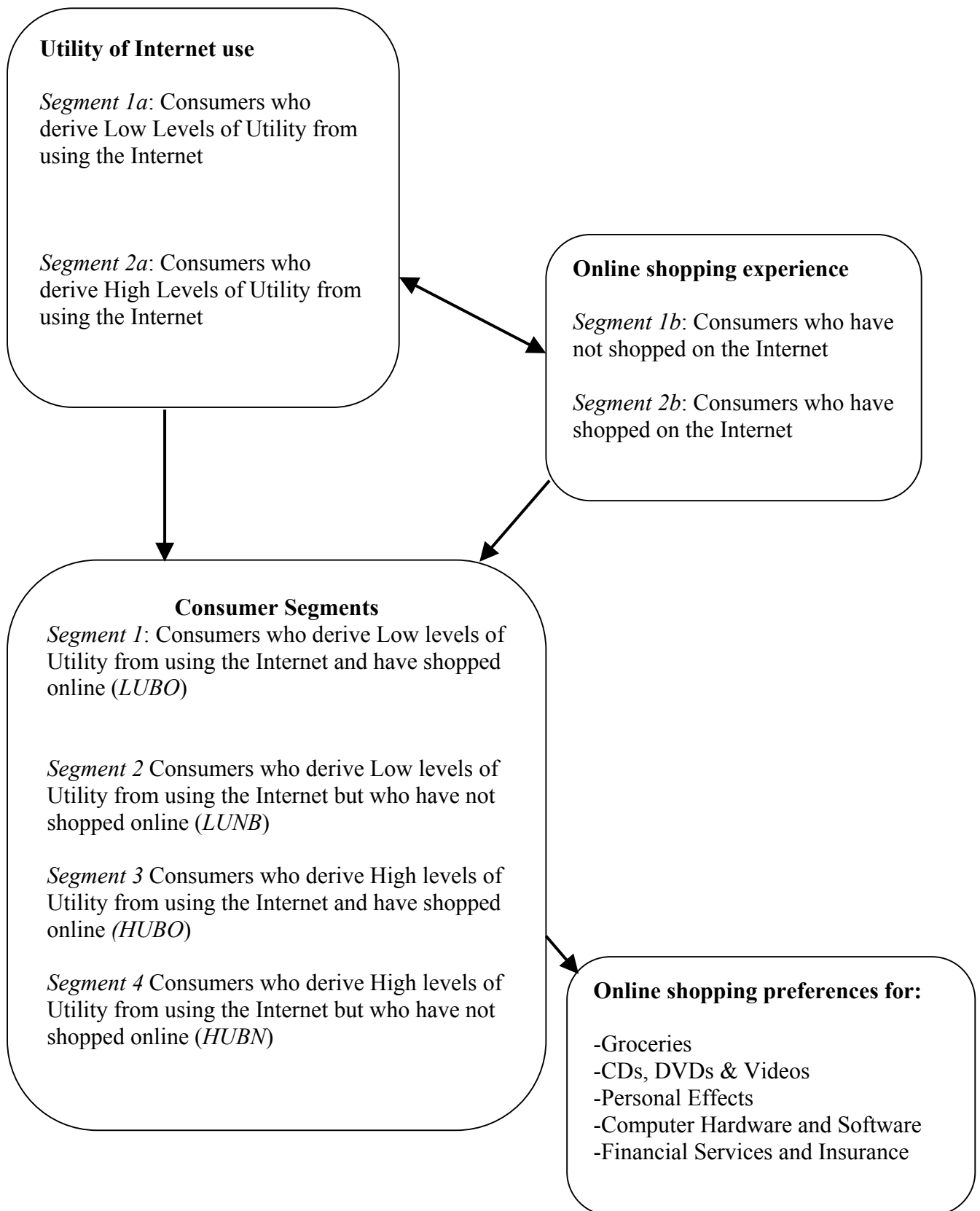
<sup>2</sup> For example clothing where the attributes of colour, shape and feel may not disseminate well across the Internet medium

consumers who have not used the Internet for shopping at all. If this is the case, we would observe that the previous online shopping experience will have a positive impact on preferences to shop online for certain products which are generally perceived to be “risky purchases” on the Internet.

Figure 1 summarises the discussion of the conceptual framework. As discussed above, the general utility from the Internet experience increases the likelihood that the customer will shop online but the latter also affects the former. That is, because they shop online, consumers derive a high level of satisfaction from their online experience perhaps driven by non-pecuniary benefits of doing so, such as the time saved by not having to go to the shops. However, because of the general and product-specific risks of online shopping, the level of utility derived from the Internet usage may not necessarily be positively correlated with the consumer’s preference to use the Internet to buy products. We therefore segment consumers according to their utility levels of Internet use (the first box in Figure 1) but also on the basis of their previous online shopping experience (the third box in Figure 1). In the next section, we explain how we empirically form these consumer segments. We are mainly interested for the purposes of this paper in the differential intentions to shop online across five product categories between two groups of consumers: (1) those who derive high levels of utility from using the Internet and have previous online experience and (2) those who derive high levels of utility from using the Internet but who have not bought products using this medium.



**Figure 1. Segmentation and Preference to Shop Online**



### **3.Data and Methodology.**

The data that was used for the empirical analysis was collected using postal surveys that were sent to 5500 households in the area of Lancaster and Morecambe in the northwest of the UK and Brighton which is situated in the south of the UK during the 1<sup>st</sup> and 2<sup>nd</sup> quarter of 2003. The sample frame was selected within each region via Experian income distribution charts that are produced geographically and represent average incomes for the locality. Using this source of information it was hoped that a good income distribution balance would be achieved. Once the geographical locations within regions were selected the electoral register was then used to select households within each location street by street. This had the benefit of giving respondents a personalized covering letter bearing the potential respondents' name which we think encouraged a good response rate given the length of the survey (73 questions in total). Respondents were also encouraged to use an online version of the survey<sup>3</sup> although few were returned via this channel. A combined response rate of 15% was achieved which was assisted by offering potential respondents the chance of being entered into a cash prize draw offering a first prize of £500, a second prize of £200 and a third prize of £100.

The survey was divided into 7 main sections. In sections 1, 2 and 3 we asked respondents questions relating to Internet and Broadband adoption and usage. In sections 4 and 5 we asked respondents to describe their attitudes and perceptions toward computer and Internet use and we also ask questions relating to usage of the Internet both at home and at work. In section 6, we asked respondents questions relating to the adoption of the Internet as a shopping channel and in the final section we asked respondents questions relating to their socio-economic backgrounds. For this empirical analysis, we use a sample of 685 Internet users. The descriptive statistics for the demographic variables are shown in Table A4 in the appendix.

The utility derived from using the Internet is defined in this paper by the following six variables which are guided by the TAM framework (Davis et al (1989)) on individual perceptions of technology: (i) Computer ease of use (ii) Computer usefulness (iii) whether respondents found computers enjoyable to use (iv) Internet ease of use (v)

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<sup>3</sup> The online version of the survey can be seen at <http://www3.mistral.co.uk/arobertson/questionnaire/ictstudent.htm>.

Internet usefulness and finally (vi) whether respondents found the Internet enjoyable to use. Respondents implied their level of utility derived from using computers and the Internet respectively by answering Likert scaled questions (1= Strongly Disagree to 5=Strongly Agree). The exact form of these questions are shown in the Appendix Table A1. Table 2 below shows that the six variables which define the utility derived from using the Internet are highly correlated as we anticipated from the discussion in the previous section. These results also indicate that the utility derived from using the Internet encompasses the utility derived from the using computers along three main dimensions: ease of use, usefulness and enjoyment of use as implied by the technology acceptance model (TAM) framework. We use factor analysis to reduce the dimensionality of this general utility variable of the online experience<sup>4</sup>. Unsurprisingly, given the correlations depicted in Table 2, the factor analysis reveals that one factor efficiently represents the underlying general utility of Internet use. Table 3 below shows the high factor loadings of the six variables and these are now defined by a single extracted factor. This single factor thus represents utility of Internet use.

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<sup>4</sup> This factor explains 61% of the total variance of the 6 variables

**Table 2 Correlation Matrix of Variables that define The Utility of Internet use**

	<i>Computers are easy to use</i>	<i>Computers are useful</i>	<i>Computers are enjoyable to use</i>	<i>The Internet is easy to use</i>	<i>The Internet is useful</i>	<i>The Internet is enjoyable to use</i>
<i>Computers are easy to use</i>	1					
<i>Computers are useful</i>	0.443	1				
<i>Computers are enjoyable to use</i>	0.509	0.447	1			
<i>The Internet is easy to use</i>	0.536	0.327	0.406	1		
<i>The Internet is useful</i>	0.271	0.515	0.336	0.460	1	
<i>The Internet is enjoyable to use</i>	0.380	0.329	0.650	0.584	0.532	1

*\*\*All the correlation coefficients are significant at the 1% level of significance*

**Table 3 Component Matrix for the Utility of Internet Use Factor**

<b>Variable</b>	<b>Component</b>
Computers are Easy to use	<b>0.707</b>
Computers are Useful	<b>0.678</b>
Computers are Enjoyable to use	<b>0.767</b>
The Internet is Easy to use	<b>0.756</b>
The Internet is Useful	<b>0.699</b>
The Internet is Enjoyable to Use	<b>0.801</b>

Using the factor scores we derived from the factor analysis described above and employing cluster analysis, we first produce two consumer segments based on their levels of utility derived from Internet usage: consumer segment 1a “*Consumers who derive Low Levels of Utility from Using the Internet*” and consumer segment 2a “*Consumers who derive High Levels of Utility from Using the Internet*” . Using information on the previous online shopping experience of consumers, we produce four final consumer segments which are described as:

- (1) Consumers who derive Low Levels of Utility from using the Internet and have shopped online (LUBO).
- (2) Consumers who derive Low Levels of Utility from using the Internet but who have not shopped online (LUNB).
- (3) Consumers who derive High Levels of Utility from using the Internet and have shopped online (HUBO).
- (4) Consumers who derive High Levels of Utility from using the Internet but who have not shopped online (HUNB).

Table 4 below shows the percentage of consumers in our four final consumer segments. A significant proportion of consumers, approximately 16%, are in the high utility of Internet use group but have not shopped online. This would indicate that this group of consumers (HUNB) do not perceive the Internet as a shopping channel but derive significant levels of satisfaction from other uses of the Internet. Therefore, this would provide some initial support that increasing levels of satisfaction derived from the Internet may not necessarily induce consumers' preferences to shop online and that there are other factors that are more directly related to Internet shopping which would affect the propensity to buy products online.

Information on consumer shopping channel preferences was gathered by asking consumers to state how they would prefer to shop for the 5 product categories. The respondents had to choose between the following three alternatives: "Always Internet", "Always Shop" and "Both". Table 5 depicts the shopping channel preferences of consumers for the five product categories.

**Table 4 Cross Tabulation of Consumer Segments (%)**

	<b>Percentage of Respondents Within Segment</b>
Low Utility of Internet Use and Previous Online Shopping Experience <b>LUBO</b>	25.1
Low Utility of Internet Use and No Previous Online Shopping Experience <b>LUNB</b>	14.9
High Utility of Internet Use and Previous Online Shopping Experience <b>HUBO</b>	44.4
High Utility and No Previous Online Shopping Experience <b>HUNB</b>	15.6

**Table 5 Shopping Channel Preferences (%)**

<b>Product Type</b>	<b>“Always Internet”</b>	<b>“Always Shop”</b>	<b>“Both”</b>
<i>Groceries</i>	2.3	77.0	20.7
<i>CD’s DVD’s and Videos</i>	12.9	24.9	62.2
<i>Personal Effects</i>	1.8	69.3	28.9
<i>Computer Hardware and Software</i>	11.2	31.7	57.1
<i>Financial and Insurance Services</i>	17.8	29.4	52.8

These results on shopping channel preferences across product types depicted in Table 5 above are unsurprising. In the case of products where people need to inspect before buying, personal effects for example, consumers prefer to “go to the shops” rather than buying online. On the other hand, for search products, as in the case of CDs and computer software, consumers will use both off-line and online channels to make their purchases. Because of the relatively low preferences to shop online only (“Always Internet”) for some products, such as for Groceries and Personal effects, we compare relative shopping channel preferences between “Always Shop” and “Both” respectively. Therefore, in our empirical analysis, the relative preference for Internet shopping is measured by the consumer’s intention to shop for a product using the Internet as well as the traditional shopping channel (“Both”) compared to the intention to use the off-line shopping medium only (“Always shop”).

We compare the odds of shopping channel preferences for each product between a consumer chosen at random from the population and a consumer chosen at random from each consumer segment to evaluate the differences in shopping channel preferences across consumer segments. The shopping channel preferences of consumers in each of the 4 consumer segments for the five products are shown in

Tables 6 to 10 below. As an example, from Table 6, the odds ratio that a consumer chosen at random from the sample will prefer to shop for groceries using both channels relative to using the traditional shopping channel is 0.268 (From Table 6 in the second row: 20.67% divided by 77.00%). Similarly, for the same product in Table 6, the odds ratio that a consumer chosen at random in segment HUBO will prefer to shop using both channels relative to using the traditional shopping channel is 0.358. Therefore, a consumer chosen at random from the segment HUBO is 1.336 (0.358/0.268) times more likely to prefer to shop for groceries using both shopping channels rather than just using the traditional shopping channel only compared to a consumer chosen at random from the sample. Figure 2 below depicts how likely a consumer chosen randomly from any of the 4 segments will to prefer to shop for each of the five products using both shopping channels rather than choosing “Always shop” compared to a consumer chosen at random from the sample. We discuss the results shown in figure 2 in the next section.

**Table 6 Shopping Channel Preferences for Groceries across Consumer Segments (%)**

Consumer Segment	“Always Internet”	“Always Shop”	“Both”
LUNB	0.2	12.9	1.9
LUBO	0.4	18.3	5.8
HUBO	1.8	31.8	11.4
HUNB	0.6	13.4	1.6

**Table 7 Shopping Channel Preferences for CDs, DVD’s and Videos across Consumer Segments (%)**

Consumer Segment	“Always Internet”	“Always Shop”	“Both”
LUNB	0.9	9.5	4.5
LUBO	3.2	6.7	15.2
HUBO	6.1	7.7	30.5
HUNB	1.0	7.9	6.7

**Table 8 Shopping Channel Preferences for Personal effects across Consumer Segments (%)**

Consumer Segment	“Always Internet”	“Always Shop”	“Both”
LUNB	0.3	13.6	1.0
LUBO	0.1	16.4	8.6
HUBO	1.2	26.0	17.2
HUNB	0.1	13.4	2.0

**Table 9 Shopping Channel Preferences for Computer Hardware and Software across Consumer Segments (%)**

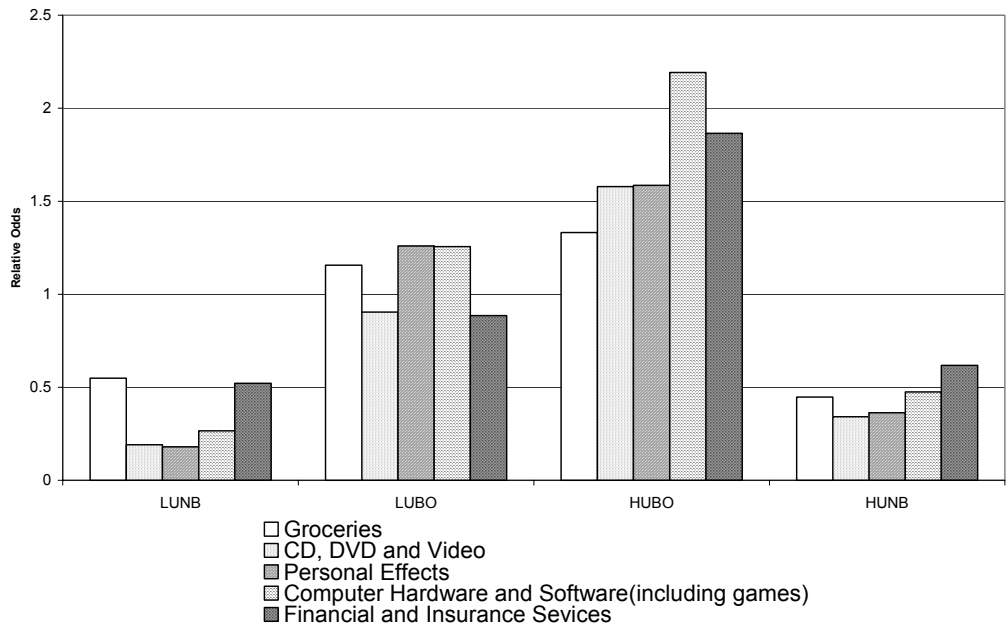
Consumer Segment	“Always Internet”	“Always Shop”	“Both”
LUNB	0.9	9.5	4.5
LUBO	3.2	6.7	15.2
HUBO	6.1	7.7	30.5
HUNB	1.0	7.9	6.7

**Table 10 Shopping Channel Preferences for Financial and Insurance Services across Consumer Segments (%)**

Consumer Segment	“Always Internet”	“Always Shop”	“Both”
LUNB	1.3	7.0	6.6
LUBO	4.7	7.9	12.6
HUBO	10.1	7.9	26.4
HUNB	1.8	6.6	7.3

Note: LUNB: Low Utility of Internet Use and No Previous Online Shopping Experience, LUBO: Low Utility of Internet Use and Previous Online Shopping Experience, HUBO: High Utility of Internet Use and Previous Online Shopping Experience, HUNB: High Utility and No Previous Online Shopping Experience

**Figure 2 Relative Odds of “Both” shopping channels against “Always shop” for each product in the four consumer segments**



Note: LUNB: Low Utility of Internet Use and No Previous Online Shopping Experience, LUBO: Low Utility of Internet Use and Previous Online Shopping Experience, HUBO: High Utility of Internet Use and Previous Online Shopping Experience, HUNB: High Utility and No Previous Online Shopping Experience



If each of the consumer segments have differential propensities to shop online, we expect that they will have significantly different perceptions of the Internet as a shopping channel. We consider four main dimensions of the perception of the Internet as a shopping channel: (1) The impact on the Internet on shopping behaviour, (2) the role of brands, (3) the Internet as a tool for product information search and (4) the risk of conducting transactions on the Internet. To capture the first dimension, consumers were asked if the Internet had changed the way they buy products and these are added to the model dichotomously, taking a value of one if the consumer selected the option, 0 otherwise. This first dimension is defined by the first four dummy variables in Table 11 below. For the remaining dimensions, which are defined by the last 4 continuous variables, we used Likert scale type questions; the exact nature of which can be viewed in the appendix, Tables A2 and A3.

We use the Logistic regression model to evaluate whether the consumers' perceptions of the Internet as a shopping medium can be used to predict segmental association to the 4 consumer segments (Gupta and Chintagunta (1994)). The consumer segments, in the model depicted below, represent the dependent variable and the variables that measure consumers' perceptions of the Internet as a shopping medium, shown in Table 11 below, define the covariate vector<sup>5</sup>.

$$Pr ob(C_j) = f(NC, PC, DC, WC, IN, CP, BR, SF) + \varepsilon ;$$

$$j=LUNB, LUBO, HUBO, HUNB$$

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<sup>5</sup> The control group for the first four dummy variables is the group of customers who responded that they did not intend to use the Internet to buy products

**Table 11 Independent Variables for the Logistic Model**

<i>The Internet has not changed the way I buy products</i>	<i>NC</i>	<i>Categorical Dummy Variable</i>
<i>The Internet has partly changed the way I buy products</i>	<i>PC</i>	<i>Categorical Dummy Variable</i>
<i>The Internet has definitely changed the way I buy products</i>	<i>DC</i>	<i>Categorical Dummy Variable</i>
<i>The Internet will change the way I buy products</i>	<i>WC</i>	<i>Categorical Dummy Variable</i>
<i>Using the Internet only for product Information</i>	<i>IN</i>	<i>Continuous Variable</i>
<i>Using the Internet only for cheaper products</i>	<i>CP</i>	<i>Continuous Variable</i>
<i>Using the Internet only to buy branded products</i>	<i>BR</i>	<i>Continuous Variable</i>
<i>Paying bills on the Internet is Safe</i>	<i>SF</i>	<i>Continuous Variable</i>

For the logistic model, we assume that the error component  $\varepsilon$  in the above equation follows an extreme value distribution (Greene (2000)).  $C_j$  represents the consumer's destination in either of the 4 consumer segments, *LUNB*, *LUBO*, *HUBO* and *HUNB*. The independent variables are defined in Table 11 above and the results of this logistic model are presented and discussed in the next section.

#### **4. Discussion of Results**

From Figure 2 above, we observe that consumers who have previously used the Internet for shopping (consumers in HUBO and LUBO segments) display stronger preferences to shop online irrespective of the product that they intend to buy compared to those who have not shopped on the Internet (consumers in HUNB and LUNB segments). We also note that increasing levels of utility derived from using the Internet will not necessarily increase the consumer's preference to shop online. This is clearly established by studying the differences in shopping channel preferences for all products between consumers who have and those who have not shopped online but derive a high level of satisfaction from using the Internet (between consumers in HUBO and HUNB). That is, the consumer's previous use and past experience of the Internet as a shopping channel has a bigger positive impact on the general propensity to shop online than the positive effect of the utility that he/she derives from using the Internet for other purposes.

More importantly for this research, the results from Figure 2 also strongly suggest that past experience of online shopping reduces the consumers' perception of product specific risks of buying products on the Internet. For example, in Figure 2, consumers who have shopped online (consumers in HUBO and LUBO segments) are more likely to use the Internet to buy products such as personal effects and groceries which other consumers-who have no experience of online shopping (consumers in HUNB and LUNB segments)- would purchase using the traditional shopping channel. We also note that the propensity to buy products such as personal effects and groceries are least influenced by the difference in overall Internet utility. This is clearly depicted in figure 2 if we compare, for instance, the odds to buy these products online between consumers in LUBO and in HUBO segments respectively. Therefore, these results would strongly suggest that the acceptance of the Internet as a shopping channel reduces the product-specific risk of buying products on the Internet irrespective of the utility attached to using the Internet.

These observed differential relative preferences to shop online across product categories would suggest that consumers associated with different segments would have significantly different perceptions of the Internet as a shopping channel. In this

respect, as we discussed in the previous section, a logistic regression model is employed to explore if and how consumers' general perception of the Internet as shopping channel explain the segmentation of consumers in different groups. The marginal effects for the logistic regression model are shown in Table 12 below.<sup>6</sup>

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<sup>6</sup> We use Limdep 8.0 to run the Logistic model.

**Table 12 Marginal Effects of the Logistic Model of Consumer Segments**

<b>Variable</b>	<b>Consumer Segments</b>			
	<i>Low Utility of Internet Use and No Previous Online Shopping Experience LUNB</i>	<i>Low Utility of Internet Use and Previous Online Shopping Experience LUBO</i>	<i>High Utility of Internet Use and Previous Online Shopping Experience HUBO</i>	<i>High Utility and No Previous Online Shopping Experience HUNB</i>
<b>Constant</b>	0.120 (1.704)**	-0.238 (-1.038)	-0.088 (-0.402)	0.206 (2.198)
<b>The Internet has not changed the way I buy products</b>	-0.099 (-2.100)	0.312 (1.462)	-0.040 (-0.204)	-0.173 (-2.690)
<b>The Internet has partly changed the way I buy products</b>	-0.260 (-3.989)	0.437 (2.143)	0.133 (0.718)	-0.311 (-4.273)
<b>The Internet has definitely changed the way I buy products</b>	-0.394 (-5.682)	0.481 (2.333)	0.404 (2.178)	-0.491 (-5.886)
<b>The Internet will change the way I buy products</b>	-0.131 (-2.204)	0.247 (1.037)	0.045 (0.204)	-0.161 (-2.104)
<b>Using the Internet ONLY FOR PRODUCT INFORMATION</b>	0.038 (3.178)	-0.025 (-1.350)	-0.073 (-3.322)	0.060 (4.225)
<b>Using the Internet TO BUY CHEAPER PRODUCTS</b>	-0.030 (-2.695)	-0.017 (-0.904)	0.082 (3.726)	-0.035 (-2.538)
<b>Using the Internet ONLY TO BUY BRANDED PRODUCTS</b>	0.026 (2.289)	0.021 (1.040)	-0.031 (-1.299)	-0.016 (-1.161)
<b>Paying bills on the Internet is SAFE</b>	-0.027 (-2.182)	-0.027 (-1.151)	0.070 (2.613)	-0.016 (-1.079)
<p><i>Log Likelihood = -718.3397, Restricted Log Likelihood = -881.3588, <math>\chi^2(24) = 326.0382</math></i>  <i>**t-ratios in parenthesis</i></p>				

We use the results of the logistic regression model to test the following four hypotheses:

- (1) Online shoppers perceive the Internet as a shopping channel significantly differently compared to users of the Internet.
- (2) There is no significant difference in how low utility and high utility Internet users respectively perceive the Internet as a shopping channel
- (3) Previous experience of online shopping has a bigger positive impact than the positive effect of the utility gained from using the Internet on the propensity to buy products on the Internet irrespective of the product category purchase intention.
- (4) Positive perception of the Internet as a shopping channel is negatively correlated with the product specific risks of buying products on the Internet

The impact effects for the first four variables in Table 12 reveal that online shoppers perceive that the Internet has significantly changed their shopping channel behaviour compared to other Internet users. For example, the effect of whether the Internet has changed the way consumers buy products is more strongly negatively associated with consumers who do not use the Internet for shopping (consumers in HUNB and LUNB segments) than it is for other groups of consumers who bought products on the Internet. It is also interesting to note from Table 12 that, for both groups of consumers who have not bought products on the Internet (LUNB & HUNB), the negative marginal effect from “The Internet has partly changed the way I buy products” to “The Internet has definitely changed the way I buy products” increases in magnitude and statistical significance. On the other hand, these two variables have opposite impact effects on the probability that respondents will buy products on the Internet.

Interestingly, we find that differences in general perceptions on Internet shopping between online shoppers and non-online shoppers influence the degree to which consumers accept the Internet as an alternative shopping channel. Evidence of the latter effect can be seen by studying the impact of the variable “Using the Internet only for product information” across consumer segments. For example, consumers who intend to use the Internet solely to find product information are unlikely to become online shoppers compared to those who have used the Internet for shopping. Another interesting result on the impact of this same variable across consumer

segments is that high utility users of the Internet are more likely to find greater benefit in using the Internet as a shopping channel than low utility users.

We also note that high utility users who have not used the Internet for shopping (consumers in HUNB segment) are more likely to become online shoppers if they adopt a more positive attitude towards the use of the Internet as a shopping channel compared to low utility users who have also not shopped on the Internet (consumers in LUNB segment). More importantly in the context of the hypotheses stated above, the marginal effects for the variables that broadly represent the consumers' perceptions and attitudes towards the Internet as a shopping channel are more significantly different between buyers and non-buyers than between high utility and low utility users of the Internet. Overall, therefore, these results support the hypotheses 1, 2, and 3 discussed earlier that differences in shopping behaviour and shopping channel preferences occur for reasons of purchasing habits rather than the utility gained by the use of ICT in general.

Other several key results from the logistic models merit further discussion. Studying the impact of "to buy cheaper products" in Table 12 above, there is evidence that online shoppers compared to users of the Internet may be more price sensitive rather than brand sensitive. We find for example that online shoppers compared to non-online shoppers are more likely to use the Internet to buy cheaper rather than branded products. We note that low utility Internet users who have not purchased online may be comforted into using the Internet for shopping provided that the products are branded in some way. We also find strong evidence towards the desire to have a safer environment to purchase goods on the Internet. For example, we note that the effect of the variable "paying bills on the Internet is safe" has a distinct statically significant effect for low utility Internet users who have not purchased on the Internet (LUNB) and for high utility Internet users who have bought products online (HUBO) respectively- these two cohorts being opposing segments. The impact of security features of Internet shopping is further illustrated by the fact that consumers in the high utility Internet users group who have not shopped online (HUNB) display some concern over the security of shopping on the Internet but are, on the other hand, highly willing to use the Internet for product information search. For other "central" groups of consumers-those in LUBO and HUNB-, the effect of the same variable is

quite insignificant. This is an important finding in that it may imply that safety and security are real concerns, although at different levels across cohorts, for most users of the Internet whether they have or have not shopped online.

The previous sets of results on shopping channel preferences across product categories indicated that some consumers are more likely to purchase search as well as experience products online compared to other consumers who prefer to buy search products only on the Internet. Our results from the logistic regression model suggests that consumers who display strong preferences to shop online for search as well as experience products (consumers in HUBO and LUBO segments) have significantly better positive perceptions of the Internet as a shopping channel compared to other groups of consumers. That is, the behavioural difference between high utility and low utility users is smaller than the online and non-online shopper effect and this in turn would explain the shopping channel preferences across product categories. In other words, the logistic regression model results strongly support the hypothesis that positive perceptions on online shopping and acceptance of the Internet as a shopping channel significantly reduces the product specific risk of purchasing products on the Internet.



## **5.Limitations, Further Research and Conclusions**

It is likely that there is a simultaneous relationship between the propensity to shop online, the utility derived from using the Internet and the perception of the Internet as a shopping channel and that this in turn influences the preference to shop online across product categories. This simultaneous relationship has not been studied explicitly in this paper and constitutes a limitation of this research. Future research will address this issue and will act as an extension of this papers that will involve the use of structural modeling techniques. Another limitation of this study is that we cannot strictly identify whether consumers will use the Internet to search for product information or to actually buy products when stating their relative preference to shop online for the five product categories. However, our empirical results have shown that some consumers only use the Internet to search for product information on products that they will then purchase using traditional channels. This seems to be due to the differences in consumers' perceptions of the Internet as a shopping channel and that this in turn influences the relative shopping channel preferences across product categories. The logistic regression results confirm this as plausible as any consumers that feel that paying bills on the Internet as safe not surprisingly have a greater tendency to shop online than those who possibly have a lesser understanding or the security aspects associated with trading on the Internet. During 2004 we also intend to resurvey respondents that indicated that they would be interested in taking part in future research. It is hoped that this will capture the longitudinal behavioural effects of Internet usage and online shopping experience on consumers' preferences to shop online across product categories, and of course, to analyze the role of broadband services on purchasing behaviour.

Our empirical results strongly demonstrate the importance of heterogeneous behavioural effects among consumers and that this significantly influences shopping channel preferences and the decision to shop online. The Internet has changed the shopping behaviour of some but not of all consumers. Unlike previous research on product attributes and Internet shopping behaviour (Vijayasathy (2002), Rosen et al (2000) and Peterson et al (1997)), our empirical results suggest that product-specific risks of purchasing products on the Internet would not reduce the intention to shop

online for consumers who have previously used the Internet for shopping. That is, for consumers who display strong intentions to shop online, the risk attached to purchasing products on the Internet is not specific to the product category purchase intention. Furthermore, consumers who prefer to shop online, irrespective of the product category purchase intention, have better perceptions of the Internet as a shopping channel than other consumers. We also find convincing evidence that positive attitudes and perceptions of the Internet as a shopping channel are negatively correlated with the product-specific risk of buying certain products online.

The managerial implication of this research is that marketers need to place greater emphasis on enhancing, and more ambitiously, in transforming consumers' attitudes and perceptions towards the Internet as a shopping channel, particularly so for those involved in the online marketing of products which are generally inherently less likely to be purchased electronically. We also feel that it is also important at the national level for policy makers to take a strong role in increasing acceptance of the Internet as a shopping channel via policy regulation that would protect consumers better, increasing their confidence in using the Internet as a shopping medium. Without such a policy increasing adoption and usage of the Internet may not necessarily increase the preference to shop online.

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## Appendix

***Table A1 Survey questions on Utility of Internet Use***

<b>Please tell us how you feel about computers in general by rating the following statements.</b>					
	<i>Strongly</i>	<i>Disagree</i>	<i>Neither</i>	<i>Agree</i>	<i>Strongly</i>

	<i>Disagree</i>		<i>Agree/ Disagree</i>		<i>Agree</i>
<i>I find that computers are easy to use</i>					
<i>I find that computers are useful</i>					
<i>I find that computers are enjoyable to use</i>					
<b>Please tell us how you feel about the Internet in general by rating the following statements.</b>					
	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Agree/ Disagree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>I find that the Internet is easy to use</i>					
<i>I find that the Internet is useful</i>					
<i>I find that the Internet is enjoyable to use</i>					

**Tables A2 & A3 Survey Questions on Attitudes and Perceptions of the Internet as a Shopping Channel**

<b>Table A2: Please tell us how you feel about the Internet in general by rating the following statements.</b>					
<i>Coding in parenthesis</i>	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Agree/ Disagree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>I only use the Internet to look for information on the products I intend to buy (IN)</i>					
<i>I buy products on the Internet only if I can buy at a cheaper price (CP)</i>					
<i>Paying bills on the Internet is safe (SF)</i>					
<i>I would buy products on the Internet only if the products are produced or sold by a famous company (BR)</i>					

<b>Table A3: In your opinion which of the following statements would best describe the way you buy products and the Internet?</b>	
<i>Statement, coding in parenthesis</i>	<i>Select</i>
The Internet has not changed the way I buy products (NC)	
The Internet has partly changed the way I buy products (PC)	
The Internet has definitely changed the way I buy products (DC)	
The Internet will change the way I buy products (WC)	
I do not intend to use the Internet to buy products (NI)	

*Table A4 Descriptive Statistics*

**Descriptive Statistics**

Sample Size N= 685

Internet users who bought products on the Internet N=476

<b>Variable</b>	<b>Percentage Number of Respondents (%)</b>
Age 18-24	14.6
Age 25-29	8.2
Age 30-34	9.9
Age 35-39	9.2
Age 40-44	12.5
Age 45-49	15.4
Age 50-54	15.9
Age >=55	14.4
Income <£7500	14.9
Income £7500-£11249	11.1
Income £11250-14999	16.9
Income £15000-£18749	14.1
Income £18750-22499	10.2
Income £22500-£26249	12.2
Income £26250-£29999	6.0
Income £30000-£33749	4.2
Income £33750-£49999	1.9
Income £37-500-£44999	2.6
Income >=£45000	6.0
Male	58.0
Full-time Employment	69.3
Part-time Employment	15.7
Homemaker	2.0
Between Jobs	1.8
Unemployed	0.9
Retired	5.4
Student	4.8