Online Search and Buying Behaviour in Consumer Markets

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Abstract

Online search behaviour is analysed using a novel methodology based on an international panel of two million users. Consumer search is measured by the size and distribution of online consideration sets and the use of price comparison engines in a range of US and UK consumer markets. It is shown that most online researchers who are considering competing suppliers only view two or three competitor websites, which results in an average online consideration set of between 2.1 and 2.8, regardless of the use of price comparison websites. Consumer perceived risk is negatively correlated with the size of online consideration sets and online price competition intensity. Using international data from fifteen countries it is shown that online research and online purchasing are negatively correlated with shop density. The implications for managers are outlined, in particular the importance of branding and advertising to improve the likelihood of inclusion in online consideration sets.

1. Introduction

Internet research and purchasing by consumers is now a significant part of the way that consumer markets function and operate as reflected by the high levels of Internet usage in the US, Europe and Japan. In the US alone over $23 billion dollars was spent on Internet advertising in 2008 comprising paid search, display banners, classified, database marketing and rich media such as online videos and advertisements.

Online consumer markets in the US are estimated to be worth $230 billion [9], which means that online sales are approximately 4% of total US retail sales. The US growth in online markets is driven by several factors, notably a high level of Internet penetration and growing consumer experience and knowledge of using the Internet for a range of activities and the increased emphasis placed on the online channel by retailing organizations.

In addition to online sales, the Internet also plays an important role in the customer journey from conducting online research and price comparison, through to discussion on social networks and then making a purchase either online or in a store. The levels of online product research in the US and Western Europe for those customers with Internet access are shown in Table 1.

Table 1. Online research in the US and Europe

<table>
<thead>
<tr>
<th>Country</th>
<th>Research Products Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>81%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>80%</td>
</tr>
<tr>
<td>Sweden</td>
<td>78%</td>
</tr>
<tr>
<td>Germany</td>
<td>70%</td>
</tr>
<tr>
<td>Spain</td>
<td>48%</td>
</tr>
<tr>
<td>Italy</td>
<td>32%</td>
</tr>
</tbody>
</table>

The scale of online consumer research demonstrates the strategic importance of the Internet for marketing purposes. It also raises important questions about online consumer behaviour. When a customer is considering making a purchase, how many competing suppliers do they research, i.e. what is the size of the online consideration set? The size of the consideration set is a critically important marketing variable because it is an indication of the breadth of consumer research. How important are intermediaries such as price comparison websites compared to the websites of the actual suppliers?

2. The Internet and the consumer search process

The most important and obvious effect of the Internet on consumer behaviour is on the nature of the search process, i.e. what are consumers researching and how are they carrying out their research? Stigler (1961) was one of the first economists to apply economic theories to information and in particular the nature of search by individual consumers [40]. Stigler’s key findings were that it is possible to
calculate the optimal amount of effort to place into the search process by examining the expected level of benefits and costs in a market with a given price dispersion. Benefits are a function of price dispersion, i.e. the higher the price dispersion the higher the benefits from investing more time researching a larger number of suppliers. But the benefits need to be balanced against the cost of collecting, analysing and evaluating the market information.

Seminal research into electronic markets and e-commerce [28,33,2] has identified that the Internet reduces consumer search costs, which increases market transparency and information availability in areas such as price, quality and availability. It also results in increased price competition. This is especially true in commodity markets and the widespread use of price and product comparison engines reduce the search cost even further. In a global study on the impact of Internet search technology, Bughin et al. (2011) identified the main consumer benefits as better matching of the supply of information, products and services with consumer needs, time saved, price transparency and the ability to search out long-tail offerings that would otherwise be too difficult and costly to find [6].

One of the most important ways of analysing and understanding consumer behaviour is to use the concept of the consideration set [39]. The consideration set is the group of suppliers that a buyer actively considers in their decision-making before purchasing a product or service. The logic of the formation of the consideration set is important in order to be able to understand and theorize on the possible effects of the Internet. There is a universal set composed of all suppliers. The consumer will be aware of a sub-set of the universal set, and this is termed the awareness set. From the awareness set, the consumer will make certain trade-offs in terms of expected gains and costs, together with prior knowledge about competing brands and influenced by recent advertising, to refine the awareness set into a consideration set.

The consideration set is a vital stage in the choice process but there is relatively little empirical data on the formation and use of online consumer consideration sets in the academic and business literature. The economic theory implies that as search costs fall then the size of the consideration set will increase because consumers should reasonably be expected to continue searching if the marginal cost of further research is less than the expected benefits yielded from the research activity [40]. This idea is also supported in the marketing literature [37, 38]. However there are differing views on the theoretical impact of the Internet. For example Peterson and Merino (2003) propose that the Internet will not appreciably increase the amount of information that consumers evaluate and also propose that the use of recommendation agents will reduce the size of online consideration sets [32]. The impact of search tools on the size of online consideration sets has been explored in a laboratory setting [17, 30].

Online consumer search behaviour modelled through online consideration sets and the use of price comparison engines is an important marketing topic given the extent of Internet usage globally for the explicit purpose of consumer research. Although there is extensive theoretical debate and discussion in the literature there is a paucity of empirical evidence. The majority of previous work is wholly theoretic or based on controlled experiments which have significant limitations arising from the artificial conditions which are an inherent weakness of this research methodology. In addition previous research does not address adequately international and market sector differences.

3. The influence of market variables on online search and buying behaviour

Roberts (1989) and Hauser and Wernerfelt (1990) identified a range of market variables and consumer characteristics that influence the formation of consideration sets, based on a synthesis of eleven separate studies [36, 18]. The focus of this research is on the role of market variables on an extensive international data set rather than the characteristics of individuals within a specific national sector – the evaluation of consumer characteristics is therefore beyond the scope of this paper. Consumer perceived risk and the use of price comparison engines have both been identified as strategically important market variables that influence the formation of consideration sets [41, 38, 6]. In addition, the strength of the retail distribution network is considered based on our empirical research experiences. ‘Network effects’ is also an important variable but this has already been covered extensively in the strategy literature [12].

3.1 Consumer Perceived Risk

Perceived risk is an important and well-documented factor in the marketing literature [41] and there is also evidence that risk is an important factor in determining online behaviour [31, 20]. Consumer behaviour will vary between markets where there is little or no perceived risk, e.g. books and small value items, and markets where the consequences of failure are much more severe, e.g. retail banking. One would expect consumers to be much more cautious in changing their online banking relationships because of the costs of possible failure in terms of time spent sorting out the switch from one bank to another one, and also in terms

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of possible economic loss arising from the failure of a bank. If consumer perceived risk reduces the online consideration set then this has important managerial implications because it would be more difficult for new entrants to establish a position in high-risk markets than in low-risk markets because of the difficulty of being included in the consideration set of consumers who are considering switching suppliers or buying into the market for the first time [13].

3.2 Retail Distribution Network

Previous research has identified the importance of the logistical capabilities of e-commerce companies [4, 14] and the high costs of online distribution in certain sectors such as grocery [24, 35]. However, the impact of the existing retail distribution network on Internet research and sales has not been considered. The strength of the retail distribution network measured by shop density varies considerably between countries in terms of the number and type of retail outlets. Within Europe the general position is that Northern Europe has a more concentrated retail distribution network and Southern European countries such as Greece, Italy, Portugal and Spain have more fragmented retail distribution [19]. The primary research question is whether the existing retail distribution network in a particular market affects whether consumers choose to research/purchase an item online or in a physical store. The extent of the retail distribution network has a significant role in the development of online markets because in those countries with a high number of shops per head of population, consumers may not experience significant advantages by using the online channel and could even disadvantage themselves by doing so.

3.3 Other salient market characteristics

In specific markets there may be further factors that have a significant effect on consumer behaviour. For example in the Italian mobile phone services market the legislation concerned with anti-terrorism, ‘Pisanu’s Law’, requires that all mobile phone purchases are corroborated with formal identification such as an identity card or passport, which inhibits online sales. Other factors such as regulation and firm strategy may increase the use of the Internet for consumer research and sales. For example in the UK energy market, gas and electricity suppliers must provide pricing data in a standard and comparable format and follow established procedures to enable customers to switch between competing suppliers – this makes it possible for price comparison websites to evaluate market data from competing suppliers and set up online systems that enable consumers to switch their energy suppliers.

4. Research Hypotheses

The research hypotheses are shown schematically in Figure 1.

**Figure 1. Factors influencing consumer behaviour and online measurement framework**

**Hypothesis 1** The average size of online consideration sets is larger than the 3-6 range reported in the literature before the widespread use of the Internet for consumer research purposes. The theoretical logic for this hypothesis is based on the economic theory of electronic markets [28] and search behaviour [40, 37, 33, 2]. The empirical support for the hypothesis is based on the results from Hauser and Wernerfelt (1990) which demonstrated that most consideration sets were in the range of 3-6 (before the widespread use of the Internet) [18] and the benefits to consumers of increased search reported by McKinsey & Company’s high technology practice [6].

**Hypothesis 2** The size of the online consideration set is negatively correlated with consumer perceived risk. The theoretical logic is based on marketing theory [41], which demonstrates that consumer perceived risk is an important influencing variable on consumer decision-making. In this context, perceived risk is posited to reduce the size of the online consideration set because consumers will limit their exposure to risk from making the wrong decision by limiting their choice to their existing supplier and well-known brands. The likelihood of considering a wide range of possible new suppliers is therefore reduced, which will result in a smaller average online consideration set.
Hypothesis 3 The intensity of online price competition is negatively correlated with consumer perceived risk. Taylor (1974) observed that consumers’ willingness to consider new suppliers is inversely related to their perceived risk [41]. One would therefore expect the use of price comparison sites to be inversely proportional to market risk.

Hypothesis 4 Consumer use of the online channel for (a) research and (b) purchasing is negatively correlated with the extent of the retail distribution network, measured by shop density per thousand head of population. Shop density is an important variable in retailing theory and there are significant international differences [19]. Whilst there has been extensive research into the importance of physical distribution services and operational capability of the e-commerce companies to the success of retail e-commerce [1, 25] there has been no research that addresses the limiting effects of the strength of the physical retail distribution network. This is a major omission in the literature and an area that is of considerable interest to marketers in the context of multi-channel retailing strategies.

5. RESEARCH METHODOLOGY

To measure the size and distribution of the online consideration set with sufficient accuracy to identify significant differences between markets, it is necessary to use a technique that measures actual behaviour with a large sample of online users rather than employ traditional market research methods that typically rely on historical accounts of behaviour or stated intentions. The definition of each variable and the data collection technique used is given below.

5.1 Online Consideration Set

One of the difficulties of conducting research into this area is the cost of collecting consumer data and this is typically only available to large organizations. Panel data has been used for a long time in market research, e.g. see Goodhardt and Ehrenberg (1967) for an early example of retail panel data to examine consumer purchasing behaviour of a household product based on data from a panel of 1,000 households [16]. In the online world, the concepts are equally valid and are arguably even more powerful because the scale of the online panel data is at least two to three orders of magnitude larger than traditional retail panels. Online panel data makes it possible to analyse and examine the actual behaviour of online consumers rather than reports of historical actions and statements concerning future intent [26, 21, 29].

A research alliance with ComScore has been used to measure online research and use of price comparison engines in a range of international consumer markets in the US and UK. ComScore tracks the behaviour of an extensive online panel over time and can therefore be used to generate insights into how users move between websites as well as providing statistical data on the overall usage of individual websites [8]. Based on an analysis of unique visitors and cross-visiting patterns across competitors in a served market the size and distribution of the online consideration set is calculated. Note that online users who visit one website only are most likely to be conducting account management. The online consideration set is therefore calculated from online users who visit two or more websites because it is these users who are actively researching two or more suppliers. This approach is different to earlier research [21] that did not explicitly take into account the distinction between research and account management.

5.2 Consumer Perceived Risk

Consumer perceived risk is estimated based on an adaptation of a range of models [10, 11, 41]. It is an ordinal measure of what Bettman (1973) termed inherent risk, defined as “the latent risk a product class holds for a consumer” [3]. An ordinal measurement scale of low, medium and high is used to judgmentally classify each of the sectors. Two principal components are used: (1) the financial scale of the consequences of failure measured by the price of the product and the switching costs; and (2) the uncertainty about the outcome and consequences.

5.3 Intensity of Online Price Competition

The most direct measurement of online price competition intensity is the proportion of the use of relevant price comparison websites as a percentage of the use of suppliers’ websites and price comparison websites in a given market. For example in the car insurance market this would correspond to the sum of unique visitors to the main online price comparison websites for car insurance expressed as a percentage of the total sum of unique visitors to the car insurance company websites and price comparison websites.

6. Results

6.1 Hypothesis 1: Online Consideration Sets

The average size of the online consideration sets and use of price comparison websites for car insurance, airlines, mobile phones, automotive, banking and grocery markets in the United Kingdom and the United States are shown in Table 2.
Table 2. The average size of online consideration sets and use of price comparison across a range of UK and US consumer markets. Source: ComScore 2011

<table>
<thead>
<tr>
<th>Market</th>
<th>Average Size of Online Consideration Set</th>
<th>Price Comparison as % of Total Online Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UK</td>
<td>US</td>
</tr>
<tr>
<td>Car insurance</td>
<td>2.77</td>
<td>2.41</td>
</tr>
<tr>
<td>Airlines</td>
<td>2.57</td>
<td>2.60</td>
</tr>
<tr>
<td>Mobile Phones</td>
<td>2.56</td>
<td>2.42</td>
</tr>
<tr>
<td>Automotive</td>
<td>2.44</td>
<td>2.22</td>
</tr>
<tr>
<td>Banking</td>
<td>2.43</td>
<td>2.38</td>
</tr>
<tr>
<td>Grocery</td>
<td>2.40</td>
<td>2.13</td>
</tr>
</tbody>
</table>

* N/A Not available, no reliable data

The size of the online consideration sets in all market sectors are significantly smaller than expected and fall within a very narrow range of between 2.1 and 2.8, regardless of the level of price comparison websites. The use of price comparison engines varies widely from just 3% in UK banking and 4% in UK grocery to 45% in the US airline industry and 57% in the UK insurance market. In the car insurance and airline markets it could be argued that price comparison engines are being used to effectively increase the size of the online consideration set through the use of a sophisticated online filter, which is then either augmented or further refined by direct research with individual supplier websites. However this is not true in mobile phones, banking and grocery, and whilst the use of price comparison in the automotive market is reasonably large, it is not as widely used as it is in car insurance and airlines. On balance, hypothesis 1 is therefore rejected.

Some further analysis of the distribution of the size of the online consideration set for the major US airlines and UK grocery firms are shown in Table 3. The distribution of online consideration sets has been estimated based on the known average size of the online consideration set and by combining the partial data from ComScore describing the number of online users who visit two or more websites. The best-fit distribution is an exponential function that reflects the skewed nature of the data, that is, a high proportion of visitors visit just one or two websites and only a small proportion visit four or more.

Table 3. Distribution of Online Consideration Set in the US Airline Industry. Source: ComScore 2011

<table>
<thead>
<tr>
<th>Size of Online Consideration Set</th>
<th>Percentage Distribution of Online Researchers Visiting Two or More Websites</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>US Airlines</td>
</tr>
<tr>
<td>2</td>
<td>58%</td>
</tr>
<tr>
<td>3</td>
<td>29%</td>
</tr>
<tr>
<td>4</td>
<td>9%</td>
</tr>
<tr>
<td>5</td>
<td>3%</td>
</tr>
<tr>
<td>6</td>
<td>1%</td>
</tr>
</tbody>
</table>

The competitive set of US Airlines was composed of the leading airlines: Southwest Airlines, Delta Airlines, American Airlines, United Airlines, Continental Airlines and US Airways Group. It can be seen that 58% of researchers only look at two airline companies and a further 29% only visit three airline websites, which means that almost 90% of online researchers consider just two or three airlines. Consumer research in the UK grocery market is even more limited and is accompanied by very low use of price comparison engines at 4%.

6.2 Hypothesis 2. Consumer Perceived Risk and Online Consideration Sets

The calculation of consumer perceived risk is shown in Table 4.

Table 4. Modelling of consumer perceived risk

<table>
<thead>
<tr>
<th>Market</th>
<th>Purchase Cost</th>
<th>Switching Costs</th>
<th>Uncertainty about Outcome and Consequences</th>
<th>Consumer Perceived Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car Insurance</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Airlines</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Mobile Phones</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Grocery</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Automotive</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Banking</td>
<td>Medium*</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

*N.B. Many UK bank accounts are free but there are costs to the consumer in terms of interest and transaction charges

Car insurance is an expensive purchase but many households view it as a commodity because consumers are familiar with the product and it is easy to switch suppliers. Similarly airline travel has become a commodity with the advent of discount, no-frills
airlines and consumers are confident about choosing from a range of options for a given route.

Although mobile phones can be bought cheaply on pay as you go deals, the majority of sales revenue is in the contract market and this is a major purchase that typically ties a consumer with a network operator for between one to three years. The purchase of grocery items is judged to be of medium risk because of the cost of switching and the significant amount of time required to gain familiarity with a competitor’s website, ordering system and delivery options. The automotive market is high because of the initial high cost of purchase and the subsequent economic loss if a poor choice was made. Banking is judged to be high because of the high switching costs to transfer from one bank to another one and also the high level of uncertainty about whether a new bank would perform in areas such as direct debit transfers and other types of recurring payments and financial arrangements.

There is a clear negative correlation between the size of the online consideration set and consumer perceived risk. In the UK the correlation is 0.58 and in the US it is 0.31. Hypothesis 2 is therefore accepted.

6.3 Hypothesis 3. Consumer Perceived Risk and use of Price Comparison Websites

The negative correlation between the use of price comparison engines and consumer perceived risk in the UK and the US is shown in Table 5.

Table 5. The correlation of consumer perceived risk and the use of price comparison websites. Source: ComScore 2011.

<table>
<thead>
<tr>
<th>Country</th>
<th>Shop Density per '000 population</th>
<th>Use of the online channel for research (%)</th>
<th>Use of the online channel for purchasing (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria (AU)</td>
<td>3.82</td>
<td>58</td>
<td>41</td>
</tr>
<tr>
<td>Belgium (BE)</td>
<td>11.04</td>
<td>62</td>
<td>36</td>
</tr>
<tr>
<td>Denmark (DK)</td>
<td>7.36</td>
<td>78</td>
<td>64</td>
</tr>
<tr>
<td>Finland (FI)</td>
<td>4.52</td>
<td>74</td>
<td>54</td>
</tr>
<tr>
<td>France (FR)</td>
<td>5.93</td>
<td>65</td>
<td>45</td>
</tr>
<tr>
<td>Germany (DE)</td>
<td>5.01</td>
<td>72</td>
<td>56</td>
</tr>
<tr>
<td>Greece (GR)</td>
<td>17.4</td>
<td>36</td>
<td>10</td>
</tr>
<tr>
<td>Ireland (IE)</td>
<td>8.2</td>
<td>57</td>
<td>37</td>
</tr>
<tr>
<td>Italy (IT)</td>
<td>15.6</td>
<td>35</td>
<td>12</td>
</tr>
<tr>
<td>Luxemburg (LU)</td>
<td>7.14</td>
<td>78</td>
<td>58</td>
</tr>
<tr>
<td>Netherlands (NL)</td>
<td>6.55</td>
<td>82</td>
<td>63</td>
</tr>
<tr>
<td>Portugal (PT)</td>
<td>12.44</td>
<td>44</td>
<td>13</td>
</tr>
<tr>
<td>Spain (ES)</td>
<td>14.18</td>
<td>54</td>
<td>23</td>
</tr>
<tr>
<td>Sweden (SE)</td>
<td>6.21</td>
<td>82</td>
<td>63</td>
</tr>
<tr>
<td>UK</td>
<td>3.36</td>
<td>63</td>
<td>66</td>
</tr>
</tbody>
</table>

The R squared values of 0.37 and 0.42 are significant in a cross-sectional analysis of different consumer markets. Hypothesis 3 is therefore accepted.

6.4 Hypothesis 4. Consumer Propensity to use the Online Channel for Research and Purchasing

The data for shop density and online research and buying for European countries is shown in Table 6. Online consumer research and shop density are negatively correlated with an R squared value of 0.58. The correlation between online sales and shop density is 0.75 and a plot showing the relationship between the variables for different countries is shown in Figure 2. Hypotheses 4a and 4b are therefore accepted.

The divide between Northern and Southern European countries is defined by online research levels above 55% for Northern European countries and below for Spain, Portugal, Italy and Greece. In the Southern European countries shop density per ‘000 head of population is considerably higher in a range of 12-18 compared with Northern Europe of 3.4 and 11. The most likely theoretical explanation is that high shop density impedes online research and purchasing because consumers balance out the relative convenience, price, time costs and service levels of physical stores versus the Internet channel.

Table 6. Shop density and use of the online channel for research and purchasing in 15 European countries [27, 19]
7. Discussion of Results and Comparison with Theory

7.1 Economic Model of Search Behaviour

The cost benefit approach to modelling online consumer search behaviour has received widespread attention [40, 18, 37]. Based on the increased capability and reduced search cost offered by the Internet, the clear prediction is that consumers would be expected to increase the size of their consideration sets from the pre-Internet baselines [36, 18]. The pre-Internet norms for the size of consideration sets were in the range of 3-8 based on research from different markets. Our results show that consumers have actually reduced the size of their consideration sets and that the average online consideration sets from all of the market sectors in this study are within a very narrow range of 2.1 – 2.8. These results are similar to what Johnson et al. (2004) reported [21] when one takes into account differences in calculation methods. The distribution of online consideration sets in Table 3 is also similar to the Johnson et al. (2004) results. Ratchford et al. (2003) reported a comparable online consideration set of 3.04 in the US automotive industry based on survey data [34].

7.2 Causal Factors of Online Consideration Sets

Six possible explanations of small online consideration sets are offered. These are likely to act in concert with each other. (1) Increased use of price comparison engines; (2) high market concentration; (3) consumers’ use of preordained consideration sets, i.e. consumers have already gone through an initial consideration of their broad options and choose to research a much smaller range of options from which they are likely to make a purchase; (4) deliberate supplier strategies that make it difficult or very time consuming to make like for like comparison between competing offers; (5) consumer perceived risk limits the size of the consideration set and (6) high shop density impedes the development of the online channel for research and sales.

The most plausible explanation for the relatively small online consideration sets in the insurance, airlines and automotive markets is the high level of use of price comparison engines. This is consistent with

Figure 2. The relationship between online sales and shop density in 15 European countries

![Figure 2](chart.png)

R² = 0.75

0 2 4 6 8 10 12 14 16 18 20

Level of Online Sales (%)

Shop Density per '000 Population

UK, SE, NL, DK, DE, FI, SE, AU, FR, IE, BE, ES, PT, IT, GR, AU, DK, IE, BE, ES, PT, IT, GR

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experimental research [17, 30] where online tools were found to reduce the size of the online consideration set by enabling consumers to screen a larger set of potential suppliers before focusing their efforts on a smaller consideration set.

Brown and Wildt (1992) noted the influence of brand concentration on the size of consideration sets [5] and this is also likely to be true in online markets. In the UK, the mobile phones, banking and grocery markets are all highly concentrated, that is, the top four firms account for a very high proportion of the market. In the US the national markets for mobile phones and banks are also highly concentrated. This is also true for defined segments of the car market.

Consumers’ use of preordained choice sets implies that consumers are using existing knowledge, offline information and online research from other sources to choose small consideration sets, even if they are aware of a larger number of suppliers – note that the concept of a small consideration set immediately prior to purchase is similar to the concept of a ‘choice set’ [39]. A significant implication of small, preordained online consideration sets is the importance of branding and advertising in order to encourage consumers to consider a particular supplier – this idea is supported by empirical research which found that brand strength is an important factor in e-commerce retailing [7] and also by research into the advantage of pioneering brands over newer brands in the formation of consideration sets [23].

The use of preordained, small consideration sets is contrary to the notion that consumers approach product research in a clear, methodical and rational manner to optimise their economic gain. A more likely model is that consumers choose to switch in response to any one of a number of possible stimuli. This could be a poor customer experience with their current supplier, an increase in the price of their existing supplier, response to an advertisement, recommendation from a friend, poor availability of stock or delivery options, or through an article in a newspaper or magazine. The point here is that most online consumers only consider two to three suppliers which suggests that consumers must attach value to factors other than just economic gain, notably convenience and lower search and evaluation costs through simplification and use of price comparison engines to screen possible suppliers.

The size of the online consideration set and the extent of the use of price comparison engines is inversely related to consumer perceived risk and this result is consistent with the analysis by Gemunden (1985) [15].

The shop density and online search hypothesis is not reported in the literature. The evidence to support the hypothetical link is compelling and further research into the causal nature of the relationship is required.

8. Conclusions

The variables online consideration set and online price competition intensity are new theoretical constructs to measure online behaviour. The concept of the consideration set pre-dates the advent of the Internet but its role in online markets has not been empirically defined and tested on a significant scale in a range of international consumer markets. The definition of the variable online price competition intensity in a served market is an innovative concept that creates new research opportunities to investigate online behaviour.

The research methodology of using an extensive online panel to measure online consideration sets is a powerful technique and one that can be applied to make market sector and international comparisons. Whilst some online marketers may be familiar with the concept of cross-visiting the idea has not been related to the marketing concept of the consideration set. It has proven to be an effective and reliable methodology for measuring the size and distribution of online consideration sets.

The validity of the individual variables has been demonstrated through empirical testing based on large-scale online panel data – this is different to previous academic research which has tended to be theoretic in nature or has focused on a single company or relatively small survey data samples within a particular sector. The empirical contribution of this paper is to apply common measurement frameworks to a wide range of sectors in an international context – this type of data analysis is not feasible using traditional research methodologies. The techniques to measure and interpret online consumer behaviour represent some new approaches to the analysis and interpretation of online consumer behaviour and market dynamics.

In the UK the smallest online consideration set is in the grocery market at 2.4 and the largest is car insurance at 2.77. In the US, the smallest online consideration set is grocery at 2.13 and the largest is airlines at 2.6. These figures are much lower than the 3-8 range reported by various studies in the marketing literature [18]. Perhaps more importantly they are also much lower than predictions from the economic theory regarding the use of the Internet for consumer search. In addition to measuring the average size of the online consideration set, it has also been demonstrated that the distribution of the online consideration set for a particular market is an exponential distribution. In the US airline industry 87% of consumers only consider two or three airlines.

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The use of small average online consideration sets by consumers is contrary to almost all of the recent economic and marketing theory concerning online behaviour of consumers and a range of possible explanations are offered which require further research, one of which is the use of price comparison engines in place of direct research with individual suppliers.

It could be argued that price comparison engines compensate for relatively small online consideration sets. This is true for UK car insurance, airlines and automotive and also true in the US for airlines and automotive. However there is relatively low usage of price comparison engines in the UK for mobile phones, banking and grocery and in the US for car insurance, mobile phones and banking. The major difference between the US and the UK in terms of price comparison is in car insurance where it is much lower in the US. One possible explanation is the strength of the leading individual car insurance brands in the US is higher than in the UK but this requires further research. Even taking into account the use of price comparison engines, the results do indicate that online consumer research is not as extensive as one might expect given the apparent ease of data collection and comparison in the online channel.

Consumer perceived risk is a significant variable to explain differences in the size of the online consideration set in both the UK and the US. The correlations of 0.58 and 0.31 are significant for a cross-sectional analysis of different markets. This implies that consumers are less inclined to use the online channel for research in markets where there is higher perceived risk. The predictive power of consumer perceived risk for the level of usage of online price comparison engines is strong in both the UK and the US at 0.37 and 0.42 respectively.

The international comparison of online markets related online consumer research and buying behaviour to shop density. The analysis demonstrated very strong negative correlations between online consumer research and buying, and shop density. The very high statistical correlations of 0.58 and 0.75 for online research and buying respectively with shop density demonstrate that shop density is a strategically important market variable that managers should consider in the development of online marketing strategies.

Future research will focus on developing the online measurement constructs and creating more sophisticated models and theories of online consumer behaviour related to different market and international contexts, and also to take into account differences in individual consumer characteristics.

8. References


