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**UTILISING
ONLINE SHOPPING ENVIRONMENT ATTRIBUTES HOLISTICALLY
TO CREATE COMPETITIVE ADVANTAGE**

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Doctor of Philosophy

ASTON UNIVERSITY
October 2007

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As more consumers shop online, to purchase goods or search for information before an offline purchase, it becomes crucial for marketers to know how online shopping environments (OSEs) can be used to gain competitive advantage. OSEs are often the main source of cues consumers have, to 'manage' their experience online or form an opinion of the firm. This dissertation aims to explain theoretically how OSE attributes work together holistically to produce desirable consumer responses, applying and extending a theory from the environmental psychology literature to the online context.

The research is structured around three main objectives. Firstly, the study conceptualises OSEs as virtual environments which may be perceived and experienced both cognitively and affectively through a technology-mediated interaction with a computer screen. A multi-disciplinary approach identifies key characteristics of OSEs: they involve consumers; they are more complex than their offline counterparts; they are likely first apprehended holistically; and they can elicit high levels of emotions and cognition.

Secondly, the research uses a gestalt approach and extends Kaplan and Kaplan's (1982) Preference Framework, taking account of the specific characteristics of OSEs, which one visits specifically to obtain product information. The results support the proposition that OSEs are perceived in terms of their Sense-making and Exploratory attributes.

Thirdly, the research explains how OSE attributes work together to produce desirable consumer responses. As hypothesised, Exploratory potential produces both Hedonic and Utilitarian value, and both kinds of value contribute to Site commitment. An unexpected result is that Sense-making potential does not produce Utilitarian value directly, but only through the mediation of Exploratory potential. In essence therefore, Sense-making potential is an antecedent of Exploratory potential, and Exploratory potential is the main source of shopping value.

The research contributes to marketing theory by: (1) identifying the main ways in which the internet has changed the nature of the shopping experience; (2) extending Kaplan and Kaplan's (1982) Preference Framework to explain how consumers perceive OSEs holistically; (3) identifying the distinction between page-level and site-level perceptions, and (4) distinguishing between different sources of information (marketer vs. non-marketer).

Managerially, the research provides a model for marketers to conceive and design retail websites whose attributes work together to create competitive advantage. It isolates the key role played, in the creation of value for the consumer, by the desire to explore both the virtual environment and product-related information.

Keywords: online consumer behaviour, online shopping, internet, retail websites, shopping environments.

To Lucie Pillorget Demangeot and Julien Demangeot Reed

...évidemment

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... and *here we are*.

Dubai, October 2007

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CHAPTER 1: INTRODUCTION

1.0 INTRODUCTION

Retailers are investing vast sums of money to develop their online presence and acquire the latest technology to boost interactivity, and some are clearly leveraging the consumer data they collect to continuously enhance the consumer experience on their website, harnessing technological and broadband advances. Yet, while the likes of Amazon mine their proprietary data and become increasingly more adept at obtaining desirable consumer responses, there remains a paucity of theoretical explanations as to what makes consumers prefer and want to revisit one retail website over another. This thesis contributes to the knowledge of how, holistically, the attributes of online shopping environments (OSEs) can be combined to create competitive advantage by creating shopping value and influencing customer preferences.

This chapter (1) presents the research aims and objectives; (2) develops the rationale of the research initiative, and (3) outlines the structure of the thesis. The first section, below, outlines the research initiative and presents the main research aim. Section 1.2 (page 4), introduces the concept of shopping environments, while Section 1.3 (page 4) outlines the particularities of online shopping environments. Section 1.4 (page 8) presents the research aim and objectives. Section 1.5 (page 8) outlines the structure of the thesis, and provides a tabular summary of the chapters, and for each, their objectives and main contributions. An overview of the research approach is presented in Section 1.6 (page 9). The research parameters are presented in Section 1.7 (page 13).

1.1 RESEARCH INITIATIVE

The internet contributes greatly to retail sales, in two respects. According to market researchers Forrester, not only does it account for about 5% of all retail sales, but it was also

expected to be used during the information search phase for more than 16% of total traditional retail sales in the US by the end of 2007 (Mendelsohn, Johnson and Brian 2007). Another report by JupiterResearch predicts that the internet will play a role in close to 50% of all retail sales in 2010 (Muse 2006). It is crucial, therefore, for marketers to understand how they can develop and design their websites for maximum results. Traditional, offline shopping environments are known to influence consumer shopping and purchasing (Bitner 1992; Kotler 1973; Turley and Milliman 2000). In the absence of sales assistants, other shoppers and the products themselves, the virtual environments which shoppers call up on their computer screens, are a major source of cues available to them, as they form impressions and make decisions about the future of their online relationship with a firm. OSEs can even be the only source of cues when consumers visit the site of pure play retailers (those retailers who do not have any presence except online). They can act as what Bitner (1992, p. 67) calls a “visual metaphor for an organisation’s total offering”. Yet, OSEs are very different from their traditional counterparts, especially in terms of ‘realness’, size, availability of information, opportunity to search, intuitiveness, social elements, presence of the products, and way-finding around the store. It is unlikely, therefore, that the models and theories of consumer behaviour developed for offline environments are immediately applicable to online environments. While several disciplines (e.g. Information Systems, Economics) are concerning themselves with issues related to the effectiveness of websites and have provided a number of valuable insights, it is important for marketers to remain focused on *how consumers perceive and react to shopping environments*. Content managers may want to provide a wealth of information, designers may want to design sites which have the latest bells and whistles, and IT professionals may want to make maximum use of the latest technology and the highest bandwidth, but none of these potentially desirable attributes are valuable unless they positively influence consumer behaviour. Such an understanding of how OSEs can help secure consumers’ commitment to an online store is perhaps even more crucial online than offline, because in cyberspace it is a lot less likely that consumers will just navigate past a store than it is for consumers to walk or drive past a shop again.

The aim of this research is to explain theoretically how OSE attributes work together holistically to produce desirable consumer responses, ‘borrowing’ and extending a theory from environmental psychology, Kaplan and Kaplan’s (1982) Preference Framework, to the context of OSEs. ‘Attributes’ is a term marketers use to describe the characteristics comprising features, functions, benefits etc. which identify and differentiate products

(American Marketing Association). It is used here to describe the characteristics of OSEs comprising features, cues and functions, which are perceived by consumers when they use a retail website – which is, in itself, a product. It differs from ‘cues’ which apply to individual objects or elements which prompt action, since the focus of the research is to apprehend how elements of the environment are perceived *overall* and work *together*.

In their review of empirical studies on offline environments, Turley and Milliman characterised much of the research in the field as “a-theoretical descriptions of effects”. Similar criticism has been levelled at internet-related research. For example, Robert Lusch, editor of the *Journal of Marketing*, stated at the 1999 Summer AMA Educators’ Conference that internet-related research did not use theoretical underpinnings to address practical issues, to explain why the *Journal* had not published any such research. Since this statement, the *Journal of Marketing* has only published, out of 478 articles in the period from January 1999 to September 2007, 13 papers (i.e. 2.7%) on internet phenomena, besides seven which only used the internet as an example (of new technology, innovation, evolving market structure), or as a context.

Turley and Milliman also called for “a more ‘macro’ level theory”, which would explain how consumers perceive and evaluate the environment as a whole, rather than isolating individual cues. While there is no denying the theoretical value in understanding the possible influence of individual cues on consumer behaviour, a growing body of research (e.g. Babin, Hardesty and Suter 2003; Mattila and Wirtz 2001; Spangenberg, Crowley and Henderson 1996) shows the importance of congruence among the cues of an environment in creating an overall impact, while Morin et al’s (2007) results support the idea, also argued by Bitner (1992), that consumer responses to service or retail environments are driven by the holistic environment rather than individual cues or dimensions.

This research addresses both issues of theoretical grounding and macro perspective, by adopting a multi-disciplinary approach and using theoretical constructs (environmental preference, involvement, information complexity, virtual experiences) present across several literatures to explain how, holistically, consumers perceive OSEs, and how they react to them.

1.2 SHOPPING ENVIRONMENTS AND CONSUMPTION BEHAVIOUR

Shopping environments consist of the elements, or cues, which together make up the place in which consumers shop and purchase products and services. In effect, each of these cues is a stimulus, perceived by consumers through their senses. Shopping environments have been called 'atmospheres'. 'Atmospherics', a term coined by Kotler in his seminal article (1973) on the subject, describes the deliberate design of atmospheres to produce desired consumer responses. Environments can influence behaviour by catching attention (Kotler 1973), conveying messages, for example about a shop's intended audience or its product or service quality (Baker 1998; Bitner 1992), and eliciting emotional reactions (Mehrabian and Russell 1974). Empirical research has established that approach behaviours such as time spent in the store, purchases, recommendations, quality perceptions or favourable store evaluations are influenced by such environmental elements as: pleasurable music (Hui, Dube and Chebat 1997), scents (Spangenberg et al. 1996), or ambient and social levels (Baker, Levy and Grewal 1992), while the relationship between the environment and behaviour can be moderated by shopping motivation (Kaltcheva and Weitz 2006) or shopping involvement (Obermiller and Bitner 1989). Besides these studies considering individual cues, Baker et al. (2002) were the first authors to develop and experimentally test a comprehensive store patronage model. They found that store design perceptions had more influence on patronage intentions than store employee and store music perceptions.

1.3 SHOPPING ENVIRONMENTS IN AN ONLINE CONTEXT

These important findings about traditional, offline shopping environments, provide a starting point to consider how OSEs might impact on consumer behaviour. However, the differences between online environments and their traditional, offline counterparts are significant. Furthermore, there are also major differences in the way people shop online and offline, and these differences may in turn affect the relationship between the environment and the shopper. A systematic comparison of offline and online contexts carried out in Table 1-1 (page 5) reveals several major differences, outlined on page 7.

Table 1-1: A comparison between shopping offline and shopping online

CRITERIA	OFFLINE		ONLINE	
	Environment		Product evidence	
Nature of the environment	Real, 3-d environment, made up of walls, products, etc.		Physically absent, digital representation present (photos, videos)	
Span of the environment	360°, large size, all-enveloping		Represented by information in various forms (photos, words, video, sound) – or by the opportunity to trial (music, software) ¹	
Social elements	Social elements (sales persons, other shoppers)		Digital experience/representation of physical products	
Difference between product and environment	Product and environment separate entities		Intangible products sometimes easier to trial (music)	
			Unable to touch	
			Perception through 1 or 2 senses – screen image, sound	
			Mediated examination using 2 senses	
			(continued on next page)	

¹ Some products may metamorphose from tangible to intangible online: when buying music offline, one leaves the store with a box featuring a cover, information about the music, and a CD. When buying music online, one can leave the online shop having downloaded and stored the music one purchased on a computer system.

CRITERIA		OFFLINE	ONLINE
<i>(continued from previous page)</i>			
Way-finding in store	Orientation in store through walking around		Shopping process
Activities involved in information/product search	Finding products or information through walking around or asking		Orientation in store through clicking/using search engine
Level of control	Little control (lighting, temperature, store design, noise)		Finding products or information through browsing (mouse clicks) or searching (type in). Limited opportunity to 'ask someone'
Familiarity with the process	A well-practised process (everyone shops since a child)		Some control (can turn music off, personalise, leave in one click)
Nature of effort required	Shopping a physical effort		A fairly new or brand new process
Purchase to consumption time (tangible products)	Opportunity to purchase/consume tangible products immediately		Shopping a technological effort
Purchase to consumption time (electronic products)	Delayed use of the products until consumer gets home and can load software or play the music.		Delayed consumption of tangible products
Information availability			
Information quantity	Some product information		Opportunity for wide range of product information
Differences between product and information	Product and information separate entities		Product representation part of information on the screen
Nature of product information	Information about product mostly as facts and figures (POS material, brochure, salesperson)		Information about product in variety of media (video, audio, interactive graphics etc.)
Product, price comparisons	Hard work		Easier
Sources of information	Information mostly from marketer		Information may be from different sources (marketer, critics, other users, opinion leaders)
Service dimensions			
Main producer of the service	Sales assistant		Consumer, using self-service technologies

The main differences between offline and online contexts are as follows:

- The offline environment is real, large and involves interaction with other shoppers and sales staff, while the online environment is a series of dots and perhaps some music on a small, two-dimensional screen.
- It is usually possible to touch, try or experience products offline, when online products can only be represented and manipulated digitally. However some intangible products such as computer software or music may be easier to trial online than offline.
- The shopping process offline is familiar and intuitive since it takes place in a real environment and everyone has shopped since childhood. The process online is mediated by technology, which when mastered gives more control, or when overwhelming leads to frustration.
- There is little information regarding products or transactional elements immediately available offline, and salespersons may have limited knowledge. Information online is potentially limitless. It is searchable, and may originate from a number of sources other than the marketer.
- Service is mostly performed by shop assistants offline, while online consumers use self-service technology to 'produce' their own service.

Such an important set of differences highlights the necessity to re-assess the role which shopping environments play in an online context, before attempting to consider their influence on consumer behaviour. The fact that OSEs are not 'real' environments begs the question of whether retail websites can be considered as environments at all. Furthermore, existing categorisations of offline shopping environments (e.g. Baker 1987; Bitner 1992) are inadequate to consider online environments, since some of their categories are absent online. For example, retail websites do not have social factors, 'shop windows', or shop exteriors.

Additionally, the rise of multi-channel behaviour (Muse 2006) suggests that some consumers use online environments not to buy, but to search for information before they purchase a product in the shop nearest to them. While shopping motives have always been more varied than just purchasing (Bloch, Ridgway and Sherrell 1989; Tauber 1972), information gathering is evidently an important motivation to shop online, and it is essential that the environment be designed to meet these needs too.

An understanding of how consumers perceive and react to OSEs is important therefore, not only insofar as it can drive online sales, but also because a successful online information search experience can drive offline sales.

1.4 RESEARCH AIM AND OBJECTIVES

The aim of this research is to explain, theoretically, how OSE attributes work together holistically to produce desirable consumer responses.

The research endeavour was broken down into three main objectives in the form of research questions:

1. What are OSEs and what role(s) do they play during an online shopping navigation?
2. How can consumer perceptions of the OSE attributes be categorised?
3. How do these attributes work together to produce desirable consumer responses?

1.5 THESIS STRUCTURE

To achieve these objectives, each chapter of this thesis is structured around a set of questions which build upon each other to meet the research objectives. Table 1-2 shows the structure of the thesis. In summary, **Chapter 1** has set the context for the research, highlighting its relevance, importance, and place in the literature. **Chapter 2** aims to conceptualise OSEs, using six different conceptual lenses with which to consider the phenomenon. **Chapter 3** presents a set of propositions about how consumers perceive

OSEs, after which, using the literature reviewed in the previous chapter, hypotheses are developed as to how OSE attributes work together holistically to produce desirable consumer behaviours. In **Chapter 4**, the research design and methodology are presented. The development and validation of measures are reported in **Chapter 5**. The findings are reported in two stages. First, **Chapter 6** presents and interprets the findings regarding the structure of OSE attributes. Then, **Chapter 7** presents the results and interpretation relating to the testing of the hypothesised relationships between constructs. **Chapter 8** outlines the theoretical and managerial implications of the findings. **Chapter 9** concludes the thesis, reflecting on its limitations, outlining avenues for further research, and stating its main contributions.

1.6 RESEARCH APPROACH

Upon defining OSEs and clarifying the role(s) they play during an online shopping navigation, a realist perspective was adopted. With the help of a multi-disciplinary review of the literature and an exploratory qualitative study (19 informants, Study 1), propositions and hypotheses were developed and tested, using a three-stage quantitative design. Following the use of nine expert judges during the measure development phase (Study 2) and a pretest (39 respondents – Study 3), a further 301 volunteer respondents were recruited for the main study (Study 4), navigated a specific retail website for eight minutes, before answering a questionnaire on that particular experience. Structural equation modelling was used to (1) validate measures, (2) test a categorisation of OSE attributes organised into a second-order structure, and (3) test the impact of OSE attributes on behaviour.

Table 1-2: Thesis structure

Chapter number	Title (page number)	Chapter's objectives	Chapter summary
1	Introduction (page 1)	<ol style="list-style-type: none"> 1. to present the research aim and objectives 2. to argue the importance of the research 3. to present the structure of the thesis 	The chapter introduces the research, presenting the rationale for a theoretically-grounded, holistic approach to understanding how consumers perceive and consumer OSEs. It provides an overview of the research approach and its main parameters.
2	Theoretical framework: approaches to conceptualising online shopping environments (page 17)	<ol style="list-style-type: none"> 1. to clarify how the internet has changed shopping experiences 2. to define OSEs 3. to elucidate how consumers interact with an OSE during a navigation 	<p>Six unique aspects of online shopping are identified.</p> <p>OSEs are defined as virtual environments which may be perceived and experienced both cognitively and affectively by consumers through a technology-mediated interaction with their computer screen.</p> <p>A multi-disciplinary approach reveals that the more successful OSEs are likely those which:</p> <ol style="list-style-type: none"> 1. alleviate the burden technology places on the consumer by being easy to navigate and serve oneself 2. provide consumers with a range of product information through a variety of sources 3. offer involving and successful shopping experiences.
3	Conceptual model and hypothesis development: Consumer perceptions and consumption of online shopping environments (page 115)	<ol style="list-style-type: none"> 1. to conceptualise how consumers perceive OSEs 2. to conceptualise how consumers react to OSEs 	<p>Extending Kaplan and Kaplan's (1982) Preference Framework, propositions are developed as to how two higher-order constructs (Sense-making potential and Exploratory potential) explain an OSE's key attributes</p> <p>Five hypotheses are developed, which link these two higher-order constructs with consumer responses (hedonic and utilitarian value) and site commitment.</p>

(continued on next page)

Chapter number	Title (page number)	Chapter's objectives	Chapter summary
<i>(continued from previous page)</i>			
4	Methodology (page 144)	<ol style="list-style-type: none"> 1. to provide an overview of the four studies undertaken and outline the research design rationale 2. to outline the data collection strategy 3. to present and justify the data analysis strategy 4. to consider limitations 	<p>The choice of a realist approach is justified. Details of the research's four studies (exploratory, study, expert judging, pilot and main study) are presented.</p> <p>The four main steps of the analysis (new measure development and validation, existing measure assessment, assessment of the existence of a higher-order structure among OSE attributes, assessment of the structural equation model) are presented and justified, including the reasons for using exploratory factor analysis and structural equation modelling.</p> <p>Potential sources of bias and error at each stage of the research are reviewed, together with the strategies used to minimise these.</p>
5	Measure development and validation (page 208)	<ol style="list-style-type: none"> 1. to present the development and validation of the measures developed for this study 2. to report the validation steps of two previously-published measures 3. to demonstrate the strength of the measures' psychometric properties. 	<p>Six scales characterising OSE attributes (independent variables) are developed and validated on two different samples.</p> <p>Two scales developed in previous research, Utilitarian value and Hedonic value (mediating variables) are validated.</p> <p>A scale measuring Site commitment (dependent variable) is developed and validated on two different samples.</p> <p>All scales display strong psychometric properties.</p>
6	Findings I: Test of propositions – A gestalt approach to perceptions of online shopping environments (page 235)	<ol style="list-style-type: none"> to test the existence of a second-order structure among OSE attributes 	<p>The proposed model of a gestalt of consumer perceptions of OSE attributes was tested against four competing models.</p> <p>The results support the proposition that consumers perceive OSEs in terms of their Sense-making and Exploratory potentials.</p>
<i>(continued on next page)</i>			

Chapter number	Title (page number)	Chapter's objectives	Chapter summary
<i>(continued from previous page)</i>			
7	Findings II: Test of hypotheses – The impact of perceptions of online shopping environment attributes on consumer responses (page 251)	<ol style="list-style-type: none"> 1. to present model testing results 2. to review each hypothesis in light of the results. 	<p>The structural path is tested and evaluated. It produces strong fit.</p> <p>Four out of the five original hypotheses are supported.</p> <p>The lack of support for one of the hypotheses reveals the central importance of Exploratory potential in generating Value and Site commitment.</p>
8	Discussion (page 264)	to consider the theoretical and managerial implications of the research results	<p>OSEs are perceived holistically as environments replete with information.</p> <p>The ability to explore product-related information is a source of shopping value.</p> <p>Site commitment results from both Hedonic and Utilitarian value.</p> <p>Exploratory potential is the main origin of Shopping value.</p> <p>Exploratory and Sense-making potential are a basis for customer segmentation</p>
9	Conclusion (page 275)	<ol style="list-style-type: none"> 1. to identify the work's main contributions 2. to reflect on its limitations and identify further research needs and avenues 	<p>Six theoretical contributions and one methodological contribution are identified and presented.</p> <p>Eight limitations are reviewed, and lead to the identification of a number of avenues for future research.</p> <p>The importance of further research on the Exploratory potential of OSEs holds great promise as the evolving technology will provide marketers with even more opportunities and ways to increase the exploratory potential of retail websites.</p> <p>This study is a first step in this direction.</p>

1.7 RESEARCH PARAMETERS

1.7.1 Shopping experiences on retail websites

It is important, in view of the many facets of the internet and its many roles (as a distribution channel, as an advertising medium, as an information vehicle, as a transaction venue, etc.), to clearly delineate the boundaries of this study. The study concerns retail websites (such as an online bookstore, an online apparel store, an online grocery store, an online holiday package store) – not information or marketing sites which do not enable the full spectrum of a retail transaction to take place online. The study focuses on the shopping experience during the course of one specific visit – not the ongoing relationship consumers may have with online retailers over time, nor on any specific web page. It is concerned not with the purchasing or decision-making processes, but with the shopping navigation itself, as defined by the succession of pages consumers call up and view, and characterised by a series of thoughts, attitudes, reactions and emotions which occur during the time they spend navigating the website. Consumers may have entered the site to just browse, or with a specific task (for product purchase or for product information) in mind. All shoppers, browsers and buyers alike, have one common need: they are seekers of information, be it with a view to making a purchase online now or offline shortly afterwards, to compare between different products to make a purchase at a later stage, or as an end in itself, for entertainment the hedonic value of shopping (Holbrook and Hirschman 1982) or because of their enduring involvement with a product category (Bloch et al. 1989).

In this thesis, an **online shopping experience** is defined² as:

the interaction with a virtual environment, which comprises of environmental, informational, interactive and technology-mastering factors.

²: Definitions of the main concepts covered in this research are reproduced in the Glossary (page 402).

Online shopping environments are defined as:

virtual environments which may be perceived and experienced both cognitively (information, orientation, understanding of tools, sense-making etc.) and affectively (sensory, experiential, interactive, playful) by consumers through a technology-mediated interaction with their computer screen.

Throughout the thesis the terms online shopping navigation and online shopping experience are used interchangeably. It is the same with the terms online shopping environments and retail websites, and with the terms shoppers and consumers. The term 'offline shopping' refers to the traditional forms of shopping, in the high street or at the mall. It is used interchangeably with 'traditional shopping'.

1.7.2 Online shopping environments and the environment of online shopping

When consumers shop online, it can be argued that they are in two different environments: they are involved with the virtual shop which they are navigating and in which, through telepresence, they can feel present (Sheridan 1992); besides, they are within a real environment, which can be the computer room in their house, their office or an internet café. It can also be argued that both environments can affect their perceptions and responses as consumers. For example, if they are in a noisy and pressurised open-plan office, they probably wish to reduce the time they spend on retail websites they visit for their personal use to the minimum. If they are at home, their shopping experience will likely differ whether they are in a warm, quiet and well-lit room, or they are in the corner of the living room and there is a crucial Premiership game on the TV.

While the importance of the real environment in which consumers and their computer are located when they are shopping online is acknowledged, this thesis focuses on consumer perceptions of, and reactions to, the virtual environment represented on the computer screen, which consumers can manipulate and navigate around through the use of a mouse or mousepad. While this environment is only virtual, it can allow for vivid

and intense experiences (Childers et al. 2001; Wolfinbarger and Gilly 2001), and requires a minimum level of attention to be navigated successfully (Gammack and Hodgkinson 2003). Its stimuli therefore influence consumer processes. The stimuli which are in the environment to which consumers have turned their attention (the virtual environment) rather than the environment in which consumers just *are* (their physical environment) can be assumed to have a significant influence on online consumer behaviour. Hence, throughout this thesis, the online shopping environments considered are the virtual retail environments which appear on consumers' computer screens.

1.7.3 Theories and frameworks

It was stated earlier (see page 2) that the research fulfils its aim of explaining how OSE attributes work holistically to produce desirable consumer responses, by 'borrowing' and extending a theory from environmental psychology which is commonly known as Kaplan and Kaplan's (1982) Preference Framework. In view of the potential for confusion between the terms 'theory' and 'framework', it is important to clarify the manner in which they have been used here.

In this thesis, the term *theory* is used as defined by Kerlinger (1970): "a set of interrelated constructs, definitions and propositions that presents a systematic view of phenomena by specifying relations among variables, with a purpose of explaining and predicting phenomena" (p. 9). A theory is distinct from a framework in that a framework hypothetically *describes* a process or phenomenon, but it does not *explain* it. However, while there is a clear conceptual distinction between theory and framework, the two terms have often been used interchangeably in the literature. In particular, the main theory which this thesis draws from, which *explains and predicts* how consumers perceive environments and why they prefer some to others, is commonly known as the Preference Framework (Kaplan and Kaplan, 1982).

With this in mind, the terms theory and framework have been used in accordance with the definitions mentioned above, unless common usage and the authors themselves have

attached the word framework to a theory (e.g. Kaplan and Kaplan's Preference Framework).

1.8 SUMMARY

This chapter has presented the rationale for the research initiative which is the subject of this thesis. It has outlined the main research aim (to explain how OSE attributes work together holistically to produce desirable consumer responses) and the three main objectives around which the research effort and reporting are structured. It has presented a summary of the thesis structure, showing how each chapter contributed to the main objectives. Finally, it has given an overview of the research approach and its main parameters, as well as presenting definitions and clarifications of the key terms used in the thesis (summarised in Table 1-3).

Table 1-3: Key terms defined in this chapter

Term	Definition
Attribute	the characteristic of OSEs comprising features, cues and functions, which is perceived by consumers as they use a retail website.
Online shopping experience (online shopping navigation)	the interaction with a virtual environment, which comprises of environmental, informational, interactive and technology-mastering factors.
Online shopping environment (retail website)	a virtual environment which may be perceived both cognitively (information, orientation, understanding of tools' sense-making, etc.) and affectively (sensory, experiential, interactive, playful) by consumers through a technology-mediated interaction with their computer screen.

The first research objective (to define OSEs and clarify the role(s) they play during an online shopping navigation) provides the impetus for the next chapter, which adopts a multi-disciplinary approach to conceptualise OSEs, and provide the theoretical framework to the research.

CHAPTER 2: THEORETICAL FRAMEWORK – APPROACHES TO CONCEPTUALISING ONLINE SHOPPING ENVIRONMENTS

2.0 INTRODUCTION

This research focuses on consumer experiences within online shopping environments (OSEs). As detailed in Chapter 1 (see Section 1.7, page 13), it is concerned with retail websites such as online bookshops or online grocery stores, and how, during the course of one shopping navigation, the OSE made up of a series of dots and pixels on shoppers' screen, is perceived and influences their future behaviour. More specifically, the research focuses on how OSE attributes work together holistically to produce desirable consumer responses (see Section 1.4, page 8).

The three main objectives of the research endeavour are stated as follows:

1. What are OSEs and what role(s) do they play during an online shopping navigation?
2. How can consumer perceptions of the OSE attributes be categorised?
3. How do these attributes work together to produce desirable consumer responses?

To address research objective 1. above, this chapter is structured to address three research questions:

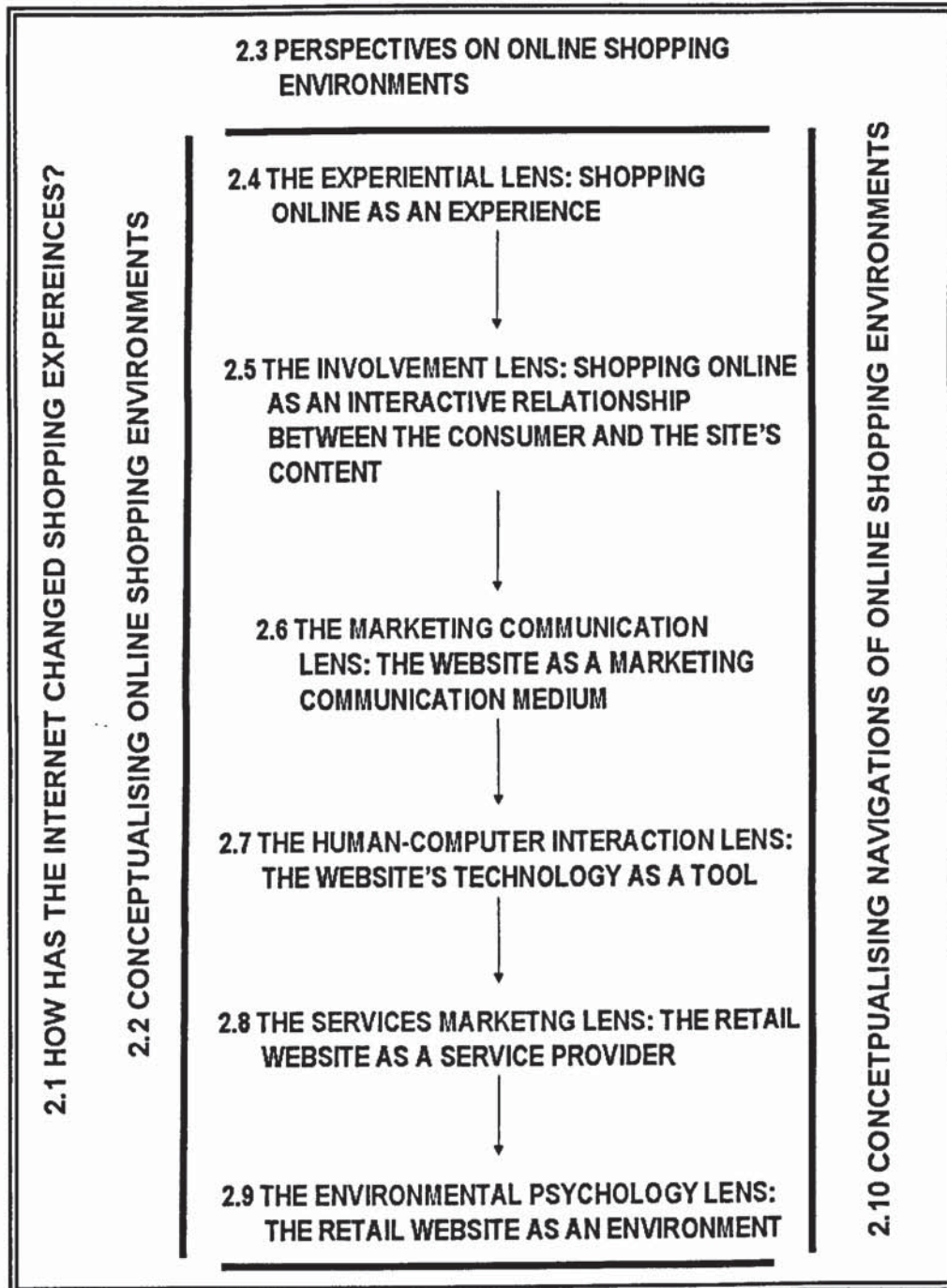
1. To clarify how the internet has changed shopping experiences
2. To define OSEs
3. To elucidate how consumers interact with an OSE during a shopping navigation.

OSEs have been researched through the lens of several paradigms and literatures (e.g. Childers et al. 2001; Eroglu, Machleit and Davis 2003; Huang 2003; Liu et al. 2001; Wolfinbarger and Gilly 2003). However, before relationships between OSEs and consumption behaviour can be envisaged, it is necessary to clarify the ways in which the internet has changed shopping experiences (Section 2.1, page 18). A multi-disciplinary approach is adopted to extricate the characteristics of online shopping experiences. Once this has been achieved, it is possible to conceptualise OSEs (Section 2.2, page 28). Six 'lenses' through which the phenomenon of an online shopping navigation can be considered, are then used, to consider relevant bodies of literature (Sections 2.3 to 2.9). The most relevant and common themes in the different literatures are then brought together to arrive at a definition OSEs (Section 2.10, page 108). Finally, in the last section of this chapter, similarities and distinctions apparent across the different literatures are highlighted, leading to a conceptualisation of navigations within OSEs. An overview of the organisation of this chapter is shown in Figure 2-1 (page 19).

2.1 HOW HAS THE INTERNET CHANGED SHOPPING EXPERIENCES?

Prior to defining OSEs and clarifying their role in the online shopping experience, it is necessary to identify how the internet has changed the actual experience of shopping. The internet is a network which connects computers around the world. Thus, using the appropriate protocol, anyone can make their content available to other computers, and access other authors' content. This has changed the way marketers can interact with consumers, the way consumers can interact with one another, and the way consumers can shop.

Figure 2-1: Organisation of Chapter Two



2.1.1 Telepresence and online shopping experiences

Online shoppers may navigate through dozens of pages on a site created and managed on the other side of the world, yet they never leave the vicinity of their computer screen. They are not even 'in' the environment they are navigating. However, telepresence can create the "illusion" (Sheridan 1992, p. 6) of being there and experiencing what is happening in the computer-mediated environment as if it were real. Telepresence can be defined as the mental state of a user who feels physically present within the a mediated environment (Akin et al. 1983). It is a type of experience (Draper, Kaber and Usher 1998). The intensity of the experience is determined by three factors: the sensory fidelity and richness of the remote environment, the control one has over the environment, and the extent to which one can change or move objects in the remote environment (Sheridan 1992). All three elements are present in an online shopping context: firstly, as the use of broadband and its potential for more vivid and interactive tools spreads, the sensory fidelity and richness of the virtual environment will likely keep increasing (Demangeot and Broderick 2006). Secondly, when shoppers select the pages, products and information they wish to view, they exert a large degree of control over online environments (Jiang and Benbasat 2004; Shih 1998). Thirdly, each click enables them to obtain a new view of the environment in the form of a new page, thus changing the remote environment.

Through telepresence, therefore, the activity of shopping online can be a potentially intense experience, which technological advances will probably render even more intense in future. Evidence shows that the experiential and fun elements of online shopping are important motivations to shop online (Childers et al. 2001; Eighmey and McCord 1998; Wolfinbarger and Gilly 2001).

When considering the activity of shopping, two separate types of experience matter: product experience, because it is more vivid and engaging than information (Hoch 2002), and the shopping experience itself. For marketers, the benefit of designing strong, positive shopping experiences is the value consumers draw from them (Babin, Darden

and Griffin 1994; Holbrook 1999), as well as their potential for building loyalty (Pine and Gilmore 1998; Pullman and Gross 2004). Furthermore, the intensity or the quality of the online navigation experience is important because it may impact significantly on consumers' evaluation of competing sites, especially since consumers cannot easily appreciate the quality of products or services before a full transaction has taken place.

2.1.2 Abundance of product information

Products play a central role in a shopping trip. They are the main reason for shopping, whether customers are engaged in pre-purchase decision-making or in general knowledge-building out of interest for the category (Bloch et al. 1989). A retail website can be the locus of three kinds of highly-prized cues about products: virtual product experiences, search attribute information and third-party information. In other words, it provides a multi-faceted range of product experiences. Thus, the online medium, in spite of its virtualness and the absence of real products, is able to provide consumers with an intense experience of the products and of shopping in general. These three aspects are reviewed next.

2.1.2.1 Unique information storage and retrieval potential

An essential characteristic of the online medium is its capacity to store unlimited amounts of information, and to enable its retrieval in a variety of ways (Alba et al. 1997; Burke 2002; Peterson, Balasubramanian and Bronnenberg 1997). This characteristic is particularly important when considering OSEs since the acquisition of information is a primary motive in all shopping visits, whether for pre-purchase information acquisition or for browsing. For the first time in retailing history, the information warehousing capabilities of the internet are available at low cost to both the retailer and the consumer (Noble, Griffith and Weinberger 2005). Information however can either educate or confuse, and therefore the provision of rich and diverse information in online shopping contexts is a double-edged sword for marketers (Huang 2000). Further, some market segments which have limited information needs may find the large amounts of information intimidating.

2.1.2.2 Product experiences – direct, mediated, virtual

Online environments contain and can convey much more information than offline environments; on the other hand, the technology creates a barrier between consumers and products. Direct, tactile manipulation is not possible. Yet, personal examination is a powerful information source (Smith and Swinyard 1983).

Traditionally, product experience has been dichotomised between direct (personal, lived) and indirect (mediated) experience – through advertising or other forms of mass communication (Li, Daugherty and Biocca 2002; 2003). Direct experience is valued by consumers over and above marketer information, because it is generally viewed as richer, more powerful than indirect experience (Hoch 2002). Information acquired through direct experience is more credible than advertising information because the source of the information is the consumer rather than a self-serving advertiser. Direct experience influences subsequent attitude and behaviour more strongly than advertising and other indirect experiences (Hoch 2002; Stayman and Kardes 1992; Underwood 2003). The emotions resulting from direct experience have a stronger impact on attitude than other sources of information (Smith and Swinyard 1983).

However, mediated experience may provide cues of a kind which direct experience cannot. For example, advertising can provide stronger symbolic associations and images than direct experience (Underwood 2003). Mediated experiences such as watching a movie of James Bond driving a BMW Z8 can be highly involving, and, arguably, more powerful than real life experience. Direct experience cannot always take place in a 'theatrical setting', nor in company as exciting as James Bond.

While experience is highly sought after by consumers, it can be misleading and less educational than other sources of information. Consumers appear to confuse familiarity with a product (brought about by experience), with actual product knowledge, communicated in a more didactic form through communication (Hoch 2002). Conversely, Wright and Lynch (1995) found, when comparing advertising and direct

product experience in their ability to convey product information, that direct experience was usually not better than advertising at communicating product information.

Online product experiences are indirect, mediated experiences. Several authors (Klein 1998; Li, Daugherty and Biocca 2001a) propose to define them as virtual experiences, or “a psychological state that customers undergo while interacting with 3-D products in a computer mediated environment” (Li, Daugherty and Biocca 2001b, p.1), because they enable 3-D, virtual inspections of products. Li et al. (2001a) argue that online, consumers have different “affordances” (Gibson 1966) or expectations of how an object can be manipulated than offline, and therefore they adapt their information processing to the medium. Further, Klein (1998) and Alba et al. (1997) suggest that products may be assessed using different sets of attributes online and offline. For example, while a keen hiker cannot try on a fleece jacket online, she may be able to obtain ample information on the way it is made, the qualities of its fabric and the specific conditions in which it performs best.

While personal, direct experiences are impossible online, virtual experiences enable consumers to ‘get close’ to products. This is important because “Product experience is seductive” (Hoch 2002, p. 448). Thus, virtual experiences enable the effective communication of non-verbal cues: products can be experienced, enjoyed online in a multi-sensory way. According to Li et al. (2001a, p. 27), “virtual experience is closer to direct experience than to indirect experience in terms of effective customer learning”. In fact, it appears that many of the benefits of direct experience in terms of conveying product information can be obtained from other mediated experiences such as infomercials (Singh, Balasubramanian and Chakraborty 2000). Furthermore, a virtual experience of some products may be more informational than direct experience, because of the breadth of information which can be called up on screen and is not available offline, through direct experience (Li et al. 2001a). Even when a virtual experience of the product is not possible, third-party experiences (vicarious experiences) can be reported next to the product in the form of user reviews.

2.1.2.3 *Multiple sources*

Another important and unique characteristic of the new medium is its ability to store and provide information from several sources. For example, Amazon.com provides consumers with the ability to access book information provided by the publisher (cover photograph, table of contents, some inside pages, cover blurb, book size etc.), by experts (reviews published in magazines), and other consumers (reader reviews as well as information about other titles which the purchasers of that book have also purchased). In comparison, shoppers visiting a store in the high street would only be able to access marketer information (via point of sale displays and salespersons). They would then need to identify relevant reviews in magazines, newspapers or on the internet to access expert information, and speak to some of their friends, relatives or colleagues for consumer information. The opportunity costs of carrying out this extensive information search may dissuade them from undertaking it. Thus, the ability of the medium to provide, in one virtual location accessible from one's home or office computer, information from a variety of sources, reduces search costs drastically. It may motivate the same consumers to carry out a more thorough product information search because it is cheaper (Nelson 1974). The presentation of product information which reduces effort, increases information search and usage (Bettman, Johnson and Payne 1991). Furthermore, information from sources other than marketers is acquiring increasing value as consumers are growing more cynical about commercial communication (Godes et al. 2005). Word of mouth is especially important to consumers who lack familiarity with a product category (Solomon 2004). The availability, online, of a plethora of information can be highly attractive to consumers who can choose the information they access. On the other hand, they are faced with more complexity, which demands cognitive resources.

In summary, due to the specific attributes of the online medium, consumers:

- can access a wide range of information;
- can be given options to select the information access;
- feel a sense of presence in the shop;

- can experience products virtually;
- can be given access to a wide range of information sources;
- can access all this information instantly and for free, thus dramatically decreasing their information search costs.

2.1.3 Interactivity and involvement

Interactivity relates to the more active and reactive qualities of the online medium, and concerns the extent of information exchange between a website and its users (Huang 2003). Interactivity can be defined as “the capability of new communications systems (usually containing a computer as one component) to ‘talk back’ to the user, almost like an individual participating in a conversation” (Rogers 1986, p. 4). It requires the consumer to be an active participant in the communication, resulting in a sense of engagement with the computer (Shih 1998), or, as is argued later (see Section 2.5.3, page 56), with the content of the OSE.

Interactivity puts people in control (Downes and McMillan 2000). Control over the information flow helps present consumers with information more in agreement with their preferences, makes them more confident about their judgements, and helps them acquire more knowledge about a domain and remember better (Ariely 2000). Interactivity has an impact on arousal (Fortin and Dholakia 2005), involvement (Gammack and Hodgkinson 2003; Griffith, Krampf and Palmer 2001), interest (Huang 2003), satisfaction (Ballantine 2005) and attitude towards the site (Coyle and Thorson 2001). Also, product image interactivity was found to increase approach responses towards a website (Fiore and Jin 2003).

Interactivity, therefore, suggests that the consumer is the active recipient, and initiator of information. This is important since consumers are often more passive, even reluctant recipients of one-way communication from other media. They often shun TV commercials, preferring to help themselves to another drink during commercial breaks;

they gloss over or ignore print advertisements. In OSEs, consumers cannot be as passive since they need to ‘activate’ the content themselves, by clicking on a hyperlink, a picture or initiating a search to access more material. Therefore, a study of the impact of OSEs on behaviours can assume that consumers are active and involved with the activity. The effort required to get there in the first place, and then to negotiate one’s way round a website and interact with it, suggest a higher level of cognitive engagement with the communication than is often the case in traditional media.

On the other hand, interactivity applies to the direct relationship between consumers and the website – sales employees are no longer in the picture. They are no longer taking part in the delivery of product information, they cannot help consumers navigate the shop’s aisles, nor recover service failures. The consumer, therefore, is ‘alone’ and must take full responsibility for the shopping activity.

2.1.4 Vividness and environmental representation

Steuer (1992) defines vividness as “the representational richness of a mediated environment as defined by its formal features; that is, the way in which an environment presents information to the senses” (1992:81, p. 81). It relates to the ‘realness’ (Naimark 1990) of the environment as a whole, the degree to which it mimics real life. Vividness provides more sensory information, from which the consumer can make inferences.

With technological advances, OSEs are becoming more vivid, yet they will never be as vivid as real, offline environments. Offline, the environment is 3-dimensional and ‘envelops’ consumers. It has the capability of overpowering the senses. Online, it is 2-dimensional, smaller and can only communicate sensorial information through sight and hearing. However, animation can bring the screen to life. Furthermore, while the OSE is not communicated to consumer senses as powerfully as offline, it is not separate or easily distinguishable from the manifestations of the product (in the form of descriptions, illustrations or photographs). Representations of the product are seamlessly blended with representations of the environment – they are not, in substance, different from the environment: all are but a series of pixels on a screen. Consequently it is justifiable to

envisage that the online environment, if it includes all manifestations of the actual, tangible product, accounts for a far larger part of the total product than the offline environment. Manifestations of the product would become an integral part of the environmental stimuli then, and may therefore induce stronger organismic responses than might be conjectured at first sight. It could also be further argued that OSEs require more cognitive effort to be navigated than their offline equivalents. While consumers have navigated and negotiated shops since their childhood, they are usually less familiar with online shops. Furthermore, OSEs are only revealed to consumers one page at a time. It may be, therefore, that the stimuli of OSEs are used by consumers more as sources of information (about the environment and how to navigate it, and about the products which the shopping environment showcases) than as sources of stimulation. Because in an OSE, environment and product information are blended into one entity, its vividness may result more from its informational richness than of from its atmospheric power.

In summary, the internet has changed the experience of shopping in six major ways:

1. The experience of shopping and of the products is no longer direct, but mediated through technology.
2. Shopping online is less intuitive than offline, but more interactive. It requires more attention and, to request new pages, search for products or information, more cognitive activity than offline shopping. Shopping online therefore presupposes more involvement.
3. There is a potential abundance of information. This information can originate from the marketer, or from other, more trusted sources (other consumers, opinion leaders).
4. There is a computer to contend with – which can lead to frustration or offer more possibilities than offline shopping. It places a ‘glass wall’ between consumers and the shop and its products.
5. In the absence of sales employees, consumers need to mostly ‘help themselves’ and be the producers of their own services.
6. The scope of the environment itself is reduced to a small, two-dimensional screen which is only apprehended through sight and (sometimes) hearing.

Furthermore, there is in essence no distinction between the environment and the representation of the products themselves: all are but a series of pixels.

These key aspects are summarised in Figure 2-3 (page 29), which shows how the characteristics of the online medium have changed the experience of shopping.

Having identified the main ways in which the internet has affected the experience of shopping, it is now possible to identify a number of perspectives from which to extricate the main phenomena at play during online shopping navigations.

2.2 CONCEPTUALISING ONLINE SHOPPING ENVIRONMENTS

The previous section has established the major ways in which the internet has changed the experience of shopping, and it has identified the impact the new medium and technology have on OSEs and how they are perceived by shoppers. This has made it possible to arrive at a conceptualisation of online shopping experiences and environments. The definitions of an online shopping experience and an online shopping environment developed are shown in Figure 2-2.

Figure 2-2: Definitions of key terms

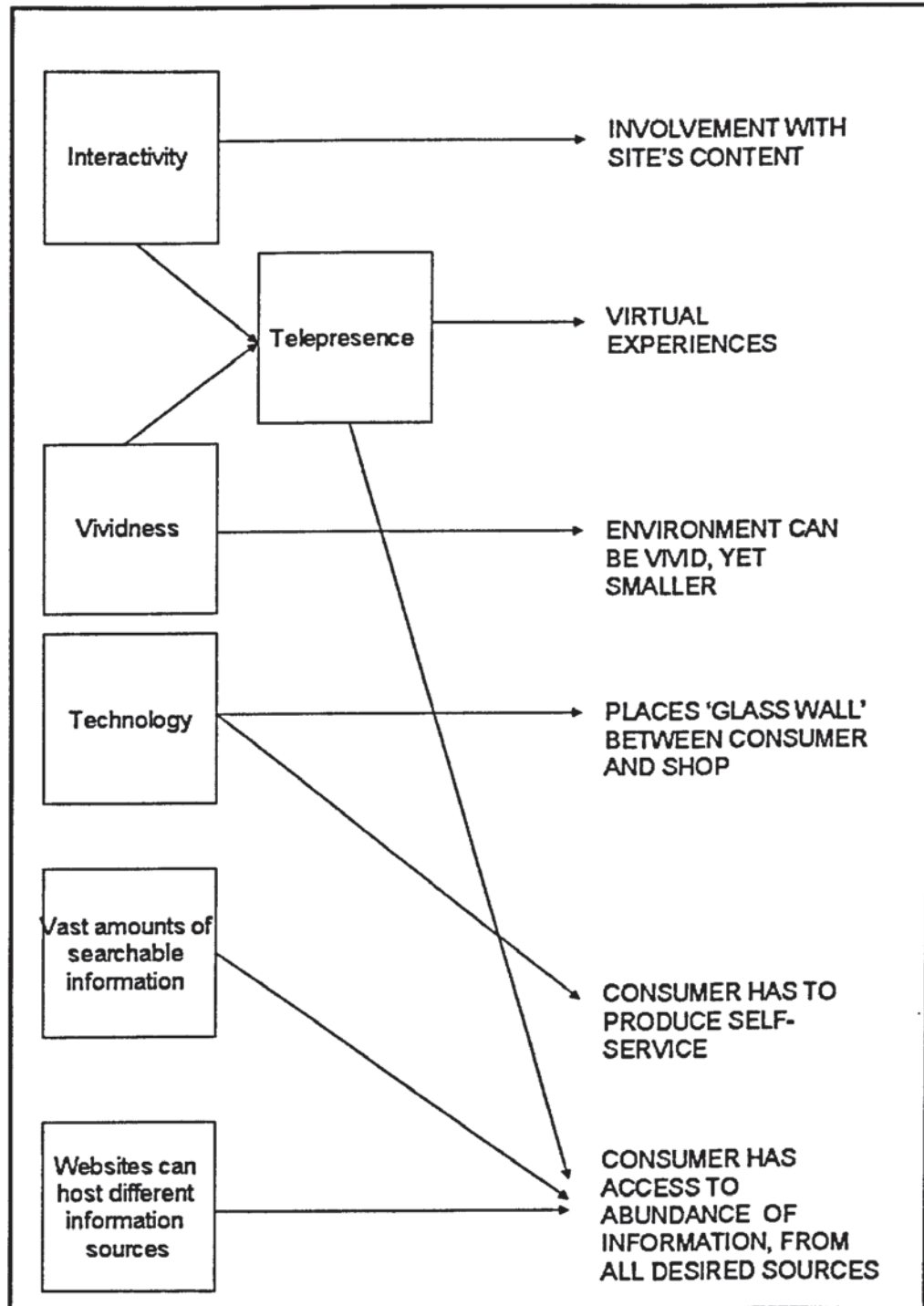
In this research, an **online shopping experience** is defined as:

the interaction with a virtual environment, which comprises of environmental, informational, interactive and technology-mastering factors.

Online shopping environments are defined as:

virtual environments which may be perceived and experienced both cognitively (information, orientation, understanding of tools sense-making etc.) and affectively (sensory, experiential, interactive, playful) by consumers through a technology-mediated interaction with their computer screen.

Figure 2-3: Characteristics of the online medium (boxed) and their transformational impact on the experience of shopping



2.3 PERSPECTIVES ON ONLINE SHOPPING ENVIRONMENTS

Section 2.1 (page 18) has delineated the implications of the main characteristics of the online medium for the experience of shopping online. This section shows how each of these six aspects of online shopping experiences can be studied through a different literature 'lens'. The links between the characteristics of the online medium, the consequent attributes of online shopping navigations and the literature lenses which can be used to consider these (see Table 2-1), are now justified.

Table 2-1: Links between characteristics of the online medium, attributes of online shopping navigations and the possible literature 'lenses' to study consumption behaviour in OSEs

Characteristic of the online medium	Implication for online shopping	Possible literature 'lens' to consider consumption behaviour in OSEs
Ability to convey a sense of presence	Possibility of intense experiences	Experiential literature
Interactivity	Shopper is mentally engaged and involved with the activity of shopping	Involvement literature
Storage of unlimited information Extraordinary search capabilities Able to provide different information sources	Availability of so far unheard of amounts of product information, as well as virtual product experiences	Marketing communication literature
Technology mediation	Shopping is less intuitive, more difficult because technology gets in the way	Information systems, human-computer interaction literature
Absence of service staff	Consumer has to self-produce service	Services marketing literature
Vividness	The OSE is vivid, yet virtual (just pixels) and does not surround the shopper	Environmental psychology literature

(1) Shopping online is an *experience*: *The experiential lens*. Shopping online can be viewed as an *experience*, where the shopper is the consumer of an experience: a shopping experience. The experiential literature (e.g. Babin et al. 1994; Holbrook and Hirschman 1982; Richins

1997) demonstrates the need to deal with both cognitive and affective constructs to explain shopping behaviour, and suggests a number of emotions and responses of possible relevance. It demonstrates the important role of value as an outcome of experiences, and an antecedent to further behaviour. It also shows the importance of considering both utilitarian and hedonic outcomes (e.g. Babin et al. 1994; Jones, Reynolds and Arnold 2006; Sweeney and Soutar 2001). The concept of flow (Csikszentmihalyi 1975) has been imported to the online arena (Hoffman and Novak 1996) to describe those experiences which are most engaging and capture the consumers' total attention. Its relevance to the context of the research needs to be evaluated (Mathwick and Rigdon 2004).

(2) *Online shoppers are involved consumers: The involvement lens.* When shopping online, the consumer is interacting with the content of the website, and *an involving person-object relationship* develops between the consumer and the site and its content, as the consumer calls up more pages and receives more 'responses' in the form of new screens. The involvement literature (e.g. Laurent and Kapferer 1985; Mitchell 1979; Mittal 1987; Mittal and Lee 1989; Zaichkowsky 1994) is of relevance to OSEs. It shows how the degree of involvement with a communication or a situation impacts on the cognitive and affective energy people are prepared to devote to an activity and on their eventual appreciation of the activity. Key similarities with the usual focus of the involvement lens are that online like offline, the consumer is interacting with products and communication. However, online the relationship is mediated by technology.

(3) For the first time, consumers have access to *extraordinary amounts of information, from all desirable sources: The marketing communication lens.* When shopping online, consumers are essentially exposing themselves to marketing communication about the site's product offerings. The field of marketing communication has traditionally focused on how consumers process advertisements. However, while advertisements usually convey a single message, an online webfront (even a single page) has to carry a multitude of messages. For example, it needs to 'pave' the way to other parts of the website, provide access to help, product photographs and information, information on the payment and delivery process, give information about what consumers have placed in a basket or on a wish list etc. Furthermore, once consumers 'respond' to a message by clicking on a hyperlink or an image, or pressing a button, they obtain a response in the form of a new

page, which again carries a wide range of messages. These may answer the consumers' questions, or 'lose' them. The literature on how people deal with information load and with complex information (e.g. Hoch, Bradlow and Wansink 1999; Huang 2000) is of relevance.

Differences between traditional forms of marketing communication and online website communication are the higher level of control online consumers have in producing the information they desire (through search facilities, personalisation etc.), and the potential availability of non-marketer information (in the form of product reviews or suggestions, consumer know-how or information about what other consumers have purchased). The marketing communication lens is relevant to consider the implications of consumers being able to easily access information from a variety of sources (Senecal and Nantel 2004; Varlander 2007). Finally, consumers navigating a retail website are likely more willing receivers of the communication, since accessing a website and navigating it presupposes some intention of being there and of receiving information – something which may be absent when consumers listen to radio ads, watch TV ads or are exposed to outdoor advertising while driving to work.

(4) Technology can both *expand the potential of shopping and 'get in the way' of the intuitive process of shopping*: *The Information systems and Human-Computer Interaction lens*. The hardware and software on which the retail website is run act as tools the consumer uses to shop. If well-designed and user-friendly, the tools can be tremendous enablers by enhancing the productivity, enjoyment and results of the activity. If they confuse the consumer, they become inhibitors. With this lens, shoppers are technology users. The Technology Acceptance Model (Davis, Bagozzi and Warshaw) and the Unified Theory of Acceptance and Use of Technology (Venkatesh et al.) show how perceptions of usefulness and ease of use affect the intention to use a technology. Human Computer Interaction studies (Flavian, Guinaliu and Gurrea 2006; Palmer 2002) have focused on usability and its components or antecedents. Key similarities with the usual focus of the human-computer interaction lens are that in both cases the environment within which the activity is taking place is mediated. However, a major difference is that human-computer interaction research is primarily concerned with work settings, whereas shopping is far removed from a 'work' activity (Holbrook and Hirschman 1982; Tauber 1972).

(5) An online shopping navigation can be seen as *a service encounter, or 'moment of truth'* (Carlzon 1987) *between the consumer and the website: The services marketing lens*. From this perspective, the retail website is a servicescape, within which consumers self-produce their own service. Relevant literature (e.g. Bitner 1990, 1992; Gabbott and Hogg 1998) has considered the different roles servicescapes play during the service encounter. Recent literature has also concerned itself with the impact of technology (Meuter et al. 2000; Parasuraman 1996) on the delivery, or rather co-creation, of service. It has led to new services marketing paradigms (Lovelock and Gummesson 2004; Vargo and Lusch 2004), which emphasise the central role of the consumer in the creation of value and the accrual of customer satisfaction. This is especially critical in the case of self-service technologies such as retail websites, since service staff are totally absent from them, and consumers can only rely on themselves as their skills are pitted against the website's processes and technologies.

(6) *The OSE is vivid, yet it is just a series of dots on a screen: The environmental psychology lens*. The computer screen presenting the retail website to a consumer can be viewed as *an environment*, albeit a two-dimensional, mediated one. From this perspective, the consumer is the visitor of a physical environment. Relevant literature relating to the environment such as environment psychology (e.g. Kaplan and Kaplan 1982; Mehrabian and Russell 1974), behaviourist psychology (e.g. Foxall 1990; Skinner 1969) and atmospherics (e.g. Baker 1998; Donovan and Rossiter 1982; Kotler 1973) have provided a number of models to explain the impact of environments on humans and consumers. In particular, Mehrabian and Russell's (1974) Stimulus – Organism – Response model has been the prevalent model used by consumer behaviourists to consider the impact of environmental stimuli on consumers' internal reactions and behavioural responses, both offline (Donovan and Rossiter 1982; Menon and Kahn 2002; Russell and Pratt 1980) and online (Childers et al. 2001; Eroglu et al. 2003). Kaplan and Kaplan's (1982) Preference Framework offers a more cognitive interpretation of how consumers might form preferences of some environments over others. It has been considered in the context of the more intangible environments of servicescapes (Bitner 1992) and, later, online environments (Rosen and Purinton 2004; Singh, Dalal and Spears 2005). A key similarity with the usual focus of the environmental psychology literature is that both offline and

online, environments consist of a variety of stimuli which are perceived by the senses. Major differences concern the interference, online, of technology, which physically separates the environment and the products from the consumer, and the reverse proportion between sensorial intensity and product information intensity: sensorial intensity online is limited by the small perimeter of the screen and the number of senses which can be used to perceive cues, whereas product information intensity online has increased exponentially (Peterson et al. 1997).

Table 2-2 (page 35) summarises, for the six lenses considered, the similarities and differences between the online and other contexts, together with an indication of the literatures and streams which have concerned themselves with these phenomena.

Table 2-2: The different 'lenses' relevant to studying online shopping experiences and environments

	Experience lens	Involvement lens	Human-Computer Interaction lens	Marketing communication lens	Services marketing lens	Environmental psychology lens
Shopper's identity	The consumer of an experience.	The active participant in an interaction.	A technology user.	The 'reader' of a communication.	The producer of a service and the creator of value.	The visitor of an environment.
Traditional study focus	A situation unfolding over time, with both utilitarian and hedonic potential.	Relationship between consumers and products or communication, enduring or situational.	Work, organisational settings.	Print advertisements. TV, radio commercials.	Service contexts. Customer – employee interaction.	'Real' environments. Offline shopping environments.
Differences with online shopping contexts	Consumption is mediated by technology.	The relationship is mediated by technology.	Most HCI settings are work settings. Online B2C shopping is not a 'work' activity.	The consumer navigating a retail site is a willing consumer of communication. The abundance of communication possible online is unseen offline. Online, not all communication originates from the marketer.	Traditional service contexts involve human interactions between consumers and employees. The online context is not 'real' and is mediated by technology.	Technology separates consumer from environment and product. Fewer senses are used online to gather information. More potential for information online. Online, product and environment are the same in essence. Sense of presence via telepresence.

(continued next page)

	Experience	Involvement	Human-Computer Interaction	Marketing communication	Services marketing	Environmental psychology
<i>(continued from previous page)</i>						
Similarities to the online shopping context	Consumer is experiencing an environment and an activity. Time (its quality and quantity) as a resource.	Consumer is interacting with product, communication and the firm behind the interface.	The environment in which the activity is taking place is mediated.	Both are about products and/or services. Must communicate about products which are not present.	The customer participates in the creation of the service. The customer creates value during the consumption of the service.	Both are shopping environments.
Literatures concerned and main concepts	Experiential literature. Emotions, Flow Value.	Involvement (cognitive, affective).	HCI (usability) Information Systems (technology acceptance).	Marketing communication. Information load. Processing of complex information. Non-marketer sources.	Services marketing	Environmental psychology. Behaviourist psychology. Atmospherics. Perceptions.

2.4 THE EXPERIENTIAL LENS: SHOPPING ONLINE AS AN EXPERIENCE

When shopping online, consumers click on links to new pages, to products, to suggestions. They search for information on a product or a category. They may purchase products or commit some information to memory. They part with a precious resource: time. Shopping online, therefore, may be considered from an experiential perspective. The experience consists of what happens during the interaction the consumer has with the retail website. The retail website is the object of the consumption experience. Most experiences discussed in the experiential literature however are direct: when one shops in a high street, one is able to walk around, touch or even try products. Online, the experience is mediated, yet it can still be very intense (see Section 2.1.1, page 20).

The experiential lens is used:

1. to consider the nature of experiences, and their relevance to the activity of shopping;
2. to consider what kind of experiences can lead to the creation of most value;
3. to consider whether the concept of flow can be used to describe online shopping experiences.

2.4.1 Shopping as an experience

Several definitions of experience exist (e.g. Dewey 1963; Gupta and Vajic 1999; Mathur 1971), which all centre around the potential to produce an emotional involvement with the object of the experience. For example, Mathur (1971) characterises it as the result of an ongoing transaction that gains in quality, intensity, meaning, and value integrating both psychological and emotional conditions. In this definition, several outcomes of experience are considered: quality, intensity, meaning and value.

If early consumer behaviour research was focused on the act of purchasing, many subsequent researchers have adopted an “enlarged view” (Holbrook and Hirschman

1982) which focuses on the whole process and experience of consumption. It views the consumer as both a rational information processing decision-maker (Bettman 1979) and a seeker and enjoyer of sensations and emotions (Hirschman and Holbrook 1982). Experiential aspects deal with subjective states of consciousness and involve emotional responses, sensory pleasures and other forms of enjoyment (Holbrook and Hirschman 1982). Experiential pursuits exist in juxtaposition with utilitarian ones, and reflect man's permanent search for pleasure and gratification (Holbrook and Hirschman 1982) – the consumer is simultaneously *homo economicus* and *homo ludens* (Sherry 1990).

While money is the primary input currency in the information processing models influenced by economics, the experiential view has highlighted the importance of time as a consumer resource. Time can be both a scarce, precious resource one seeks to spend with parsimony ("I've wasted my time looking for this product"), or a resource from which one may get great returns in the form of pleasurable emotions or exciting sensations ("I had a great afternoon in this shop"). Pleasure during a consumption activity such as listening to music has been shown to lead to additional investment in time (Holbrook and Gardner 1998).

The wider perspective afforded by an experiential lens is deemed necessary to encompass the many different consumption motives and practices (Holt 1995; Tauber 1972). Some shoppers set out to go shopping without any intention of purchasing, but purely for recreational purposes, or they are simply engaged in a continual search for information about certain products (Bloch et al. 1989). Moe and Fader (2001) produced a taxonomy of shopping strategies (see Further, while some authors associate information search with 'work' as a utilitarian activity (Huang 2000), it can also happen for more experiential purposes. For example, information search for hedonic products is a form of enjoyable, vicarious experience (Bloch et al. 1989). Similarly, information search in one's favourite product category can be carried out for purely hedonic ends. Further, some of the information available online such as consumer reviews is not about product descriptions and hard facts but is more subjective and has an emotive and social quality (Varlander 2007).

Table 2-3, page 39) and all four of these strategies (directed-purchase visit, search/deliberation visit, hedonic browsing visit and knowledge-building visit) apply to online shopping navigations.

Further, while some authors associate information search with 'work' as a utilitarian activity (Huang 2000), it can also happen for more experiential purposes. For example, information search for hedonic products is a form of enjoyable, vicarious experience (Bloch et al. 1989). Similarly, information search in one's favourite product category can be carried out for purely hedonic ends. Further, some of the information available online such as consumer reviews is not about product descriptions and hard facts but is more subjective and has an emotive and social quality (Varlander 2007).

Table 2-3: A taxonomy of shopping strategies

		Motivation	
		Functional	Non-functional
Timing	Immediate purchase	Directed-purchase visit	Hedonic browsing visit
	Future purchase	Search/deliberation visit	Knowledge-building visit

(Source: Moe and Fader 2001)

The ability to create memorable experiences of goods or services is important to marketers because it can be a source of competitive advantage, as organisations fight against their commodisation (Grove, Fisk and Dorsch 1998; Mathwick, Rigdon and Malhotra 2001; Pine and Gilmore 1998). Experiences matter to consumers because they produce an emotional involvement with the object of the experience (Dewey 1963; Gupta and Vajic 1999; Mathur 1971), and result in the production of value. These aspects are discussed in Section 2.4.3 (page 43), after the relevance of flow to the context of this research has been assessed.

2.4.2 Flow, the 'optimal experience'

The concept of flow has been used frequently to characterise the intensity of experiences, initially with a view to understanding how life could be made more enjoyable.

Csikszentmihalyi (1975, p. 36) defined flow as “the holistic experience that people feel when they act with total involvement” and studied the occurrence of flow in everyday life. He initially associated flow with four components: control, attention, curiosity and intrinsic interest. He later (Csikszentmihalyi 1993) proposed eight dimensions: clear goals and immediate feedback; equilibrium between the level of challenge and personal skill; merging of action and awareness; focused concentration; sense of potential control; loss of self-consciousness; altered sense of time; and experience becoming autotelic or self-rewarding.

The concept was later considered for the study of synthetic environments, and was likened by some researchers to telepresence (Draper et al. 1998; Fontaine 1992). Both concepts share the idea of deep involvement with a task or activity. Flow was imported into the consumer research arena by Hoffman and Novak (1996), who in their seminal paper characterised it in a computer-mediated environment as: “the ‘glue’ holding the consumer in the hypermedia computer-mediated environment” (p. 58).

Table 2-4 (page 41) highlights the commonalities between the dimensions by various authors, with Csikszentmihalyi's (1993) work encompassing most of the dimensions discussed in the online context. Core to the concept of flow are the ideas of interaction, balance between skills and challenge, attention, control, a distorted sense of time, and enjoyment. While they do not specify dimensions, Hoffman and Novak's (1996) list of antecedents and consequences mirrors – with one exception – Csikszentmihalyi's (1993) eight dimensions. A related concept, cognitive absorption, defined as “a state of deep involvement with software” (Agarwal and Karahanna 2000, p. 665), was posited to influence perceived usefulness and perceived ease of use, ultimately increasing intention to return. Its five dimensions (temporal dissociation, focused immersion, heightened enjoyment, control and curiosity) can be linked to Csikszentmihalyi's (1993) eight dimensions of flow.

Table 2-4: Flow: a comparison between several conceptualisations

Flow's four components (Csikszentmihalyi 1975)	Flow's eight dimensions (Csikszentmihalyi 1993)	Antecedents to flow (Hoffman and Novak 1996)	Consequences of flow (Hoffman and Novak 1996)	Cognitive Absorption's five dimensions (Agarwal and Karahanna 2000)
	Clear goals and immediate feedback	Interactivity		
	Equilibrium between the level of challenge and personal skill	Skills/challenge		
	Merging of action and awareness	Telepresence		
Attention	Focused concentration	Focused attention		Focused immersion
Control	Sense of potential control		Perceived behavioural control	Control
	Loss of self-consciousness			
	Altered sense of time		Distortion in time perception	Temporal dissociation
	Experience becoming autotelic or self-rewarding		Positive subjective experience	Enjoyment
			Learning	
Curiosity				Curiosity
Interest				

2.4.2.1 Criticisms of flow

Flow is considered important in a computer-mediated marketing environment because website 'stickiness', or the ability of the website to hold consumers' attention, will possibly lead to consumers spending more time on a site and to a behavioural intention to return. Many of the dimensions of flow can certainly be considered highly relevant to online contexts. There are a number of issues though as to the conceptual usefulness of flow to characterise a consumer's interaction with an OSE. Firstly, the very vocabulary

used to describe flow – challenge, control – suggests a kind of ‘battle’ pitting the user against the environment, rather than a serene and enjoyable interaction. Csikszentmihalyi (1990) describes flow as the result of a voluntary effort, where mind and body have been stretched to the limit. While flow may lead to exhilaration, actually getting there is discussed in terms of “effort” and “stretching”. Secondly, the search for the right level of challenge to match one’s skills may be highly relevant for the more playful online activities, where overcoming challenges is part of the motivation to visit a site. It is less likely to apply to shopping situations, where the primary motivation is the search for product information (for decision-making or for its own sake). Challenge level is, therefore, not necessarily a desirable quality of retail websites. This supports the view expressed by some authors that flow can only describe recreational experiences, and therefore does not apply to many shopping situations (Mathwick and Rigdon 2004; Novak, Hoffman and Duhachek 2003; Zeithaml, Parasuraman and Malhotra 2002).

Thirdly, Rettie (2001) notes that flow on the internet seems to occur less frequently than flow in other activities: half her focus group respondents reported having experienced flow online, Chen et al. (1999) report 40% and Novak et al. (2000) report 47% - against Csikszentmihalyi’s (1975) figure of 87% offline. Furthermore, Novak et al. (2000) note that “the degree to which the online experience is compelling appears to decrease with years of online experience” (p. 38). It would appear therefore that as consumers become more adept at shopping online or generally at using the internet, they are less and less likely to experience flow. Fourthly, Rettie (2001) found that respondents were ambivalent about time distortion, the dimension which they most strongly associated with flow. While time distortion may be an indicator of enjoyment, it can also cause resentment because of its time and opportunity costs. It is as if flow is an ‘altered’ state of consciousness in which consumers experience a heightened sense of control over the environment but lose control over the use of their time. From an experiential perspective, time is, alongside money, an important resource. Therefore, flow may be experienced by some consumers as ‘robbing’ them of a precious resource. When Hoffman and Novak (1996) see flow as a “glue” (p. 58), one might be drawn to see it as an addiction. Fifthly, Koufaris (2002) found that flow variables (other than shopping enjoyment) were poor predictors of intention to return.

2.4.3 Emotions and value as outcomes of experience

2.4.3.1 *Emotional responses to consumption experiences*

All instances of consumption, to a greater or lesser degree, have emotional implications (Havlena and Holbrook 1986). There have been many attempts at defining emotions (e.g. Bagozzi, Gopinath and Nyer 1999; Clore, Ortony and Foss 1987; Izard 1977; Plutchik 1980), each drawing different lines between emotions and non-emotions. Some include more cognition-generated emotions such as surprise, interest or involvement, whereas these constructs are excluded from others. In an online context, with its computer-mediated and information-heavy traits, a broad definition of emotions is necessary, such as Carlson and Buskist's (1997, p. 432): "a relatively brief display of a feeling made in response to environmental events having motivational significance or to memories of such events". Emotions differ from attitudes in that they are not evaluative. Emotions are different from moods too: they are the direct result of exposure to a stimulus, whereas moods are more stable and durable states of mind (Allen, Machleit and Kleine 1992; Bagozzi et al. 1999). Further, contrary to moods, emotions are accompanied by a tendency to act (Bagozzi et al. 1999).

Marketing interest in the study of affective reactions in general and emotions in particular has followed the shift of focus towards the experiential side of consumption and away from the purely information-processing view of consumer behaviour. The importance of emotions lies in their mediating role between a stimulus (shopping environment, advertising content, computer-mediated environment) and a consumer response, in the form of attitude, intention or behaviour. In the particular case of a consumption experience, Holbrook (1986, p. 23) states that they are the one "key linking pin that holds together the entire consumption experience".

The experiential, the advertising and the environmental psychology literatures allocate a similar place to emotions. Environmental psychologist Ittelson (1973) argues that the first response level to any kind of environment is affective. Many authors (Babin, Chebat and Michon 2004; Baker et al. 2002; Mehrabian and Russell 1974) place emotions at the

centre of the relationship between atmospheric stimuli and approach/avoidance and other manifestations of behaviour (see Section 2.9.1.1, page 89 for a discussion of the role of emotions in the environmental psychology lens). Similarly, a number of advertising theorists have considered the mediating role of emotions between advertising content and attitude towards the ad, attitude towards the brand (Batra and Holbrook 1990; Burke and Edell 1989; Holbrook and Batra 1987), and moods (Gardner 1985).

Several studies have focused on emotions within a consumption context (e.g. Havlena and Holbrook 1986; Richins 1997; Westbrook and Oliver 1991), and a number of authors have focused more specifically on the particular emotions occurring in shopping contexts (Machleit and Eroglu 2000; Yoo, Park and MacInnis 1998). Machleit and Eroglu (2000) found that a broad range of emotions could be generated by a shopping context, but that these varied considerably between contexts, for example between a discount supermarket and a department store.

In summary, emotions are immediate reactions to experiences, environments and advertising communications, and provoke action and behaviours. However, in the more cognitive context of online shopping, emotions may need to be considered alongside cognitive processes.

2.4.3.2 Conceptualisations of shopping value

Value is considered to be the key outcome variable of consumer experience models (Havlena and Holbrook 1986; Holbrook 1986), and the most important link between emotions and retail outcomes. In an experiential context, it is preferred to satisfaction, because it can be accrued at any stage of the consumption experience (even pre-purchase) whereas satisfaction happens at the post-consumption stage (Sweeney and Soutar 2001). Furthermore, research suggests that consumer satisfaction may not be the best indicator of a consumer's future patronage (Jones and Sasser 1995). Value is important not only as an outcome to an experience; it is also a precursor to desirable consumer behaviours such as future purchase behaviour (Bolton and Drew 1991; Zeithaml 1988), retail patronage (Monroe and Guitinan 1975) or brand choice models

(Engel, Blackwell and Miniard 1993). Babin and Attaway (2000) contend that value creates perceptions of worth, which in turn influence future purchase decisions.

Several conceptualisations of value have been developed and used by different strands of research. Some are restricted to perceptions of quality and price (e.g. Sewall 1901; Zeithaml 1988). Two other conceptualisations provide interesting insights in the context of experiences. Schechter (1984, cited in Zeithaml 1988) defines value as “all factors, both qualitative and quantitative, subjective and objective, that make up the complete shopping experience”, while Holbrook and Corfman (1985, p. 40) offer the following definition: “an interactive relativistic preference experience... characterizing a subject’s experience of interacting with some object. The object may be any thing or event”.

These two definitions cover a number of important points. Firstly, Schechter’s (1984) definition encompasses “all factors” which constitute the experience. This is important because value drawn from online shopping experiences may be derived from several aspects, such as the environment, the interaction with the site or with products on the site, the interaction with the technology, and the communication received from the site. Secondly, Holbrook and Corfman’s (1985) definition focuses on the interactive nature of experience, between a person and an object. This has led Holbrook (1999, p. 8) to state that “consumer value is an experience”, to emphasise the fact that it is the experience with the object rather than the object itself which generates the value. This is important when studying online shopping experiences, in view of the importance of the technological mediation at the heart of the interaction, as well as the blurred boundaries, online, between product experience and product information. The value therefore lies not in the retail website itself, but in the experience the consumer has with the website. Thirdly, Holbrook and Corfman’s (1985) definition, by referring to a preference, suggests a link between value and future consumer choice. In this respect, it is congruent with Kaplan and Kaplan’s (1982) Preference Framework approach to assessing environments, which is discussed later in this chapter (see Section 2.9.1.2, page 96).

The extended conceptualisations of Schechter (1984) and Holbrook and Corfman (1985) therefore are highly appropriate to OSEs. Several studies stemming from these have

aimed to further understand the nature of consumer value by identifying a number of dimensions (e.g. Holbrook 1999; Sheth, Newman and Gross 1991; Sweeney and Soutar 2001). Yet the most common approach to consumer value in an experiential context consists in the dichotomous distinction between a utilitarian and a hedonic facet, thus capturing “a basic duality of rewards for much human behaviour” (Babin et al. 1994, p. 645).

2.4.3.3 Hedonic and utilitarian value

Interestingly, while the dimensions of hedonic and utilitarian value have been discussed in a number of studies, the terms appear to convey quite different meanings, as Table 2-5 (page 47) shows. For example, utilitarian value is associated with such concepts as task accomplishment (Babin et al. 2004), functional benefits (Babin et al. 1994; Voss, Spangenberg and Grohmann 2003) or thinking (Batra and Ahtola 1990), while hedonic value is variously related to entertainment, emotions (Babin et al. 1994), the senses (Jones et al. 2006) or feelings (Batra and Ahtola 1990). However, the overall distinction appears to lie between the consequences of more rational, cognitive processes related to a specific task or goal on the one hand, and the consequences of more emotional processes related to an evaluation of the experience itself, as a potentially rewarding activity in its own right. In this light, utilitarian value would result from a cognitive assessment of the *outcome* of the experience, while hedonic value would result from a more affective assessment of the actual *process* of undergoing the experience.

The two dimensions are not diametrically opposed, or mutually exclusive (Babin et al. 1994; Osgood, Suci and Tanenbaum 1957; Sheth et al. 1991). One dimension may inhibit the other, or, to the contrary, reinforce it. In other words, consumers who during the shopping activity accomplished their initial goal (utilitarian value) may also have enjoyed the activity for its own sake (hedonic value), or those who enjoyed the activity (hedonic value) may have gained a sense of accomplishment (utilitarian value) from their enjoyment. Their shopping trip would have been both successful and pleasurable (Babin et al. 1994). On the other hand, a highly pleasurable experience (hedonic value) which resulted in a large amount of time spent in the activity may lead to a low sense of accomplishment (utilitarian value), considering the time invested. Empirically, Babin et al.

(1994) found a low level of positive correlation between the two sources of value. Further, each dimension appears to have differential effects on shopping outcomes, with utilitarian shopping being more strongly related to repatronage intentions, and hedonic shopping being linked to a wider range of behaviours: satisfaction with retailer, word of mouth and repatronage anticipation (Jones et al. 2006).

Table 2-5: Descriptions of utilitarian and hedonic dimensions in various studies

Authors	Description of the utilitarian dimension of value or (where indicated) attitude	Description of the hedonic dimension of value or (where indicated) attitude
Babin et al. (1994)	Derived from the satisfaction of some functional, physical or economical need, 'work'.	"reflects shopping's potential entertainment and emotional worth" (Bellenger, Steinberg and Stanton 1976), 'fun'.
Babin et al. (2004)	Represents task accomplishment.	Represents the immediate gratification provided by the shopping experience.
Babin and Attaway (2000)	Task-related worth.	Worth found in the shopping experience itself aside from any task-related motives.
Voss et al. (2003)	Utilitarian attitudes are derived from functions performed by products.	Hedonic attitudes are derived from sensations arising from the experience of using products.
Noble et al. (2005)	Dominantly functional, instrumental and cognitive in nature, a means to an end, often equated to rational motives of time, place, possession needs.	Noninstrumental, experiential and affective, often related to non-tangible retailer/product attributes.
Jones et al. (2006)	Reflects the acquisition of products and/or information in an efficient manner. Reflects a more task-oriented, cognitive and non-emotional outcome of shopping.	Value derived from the multisensory, fantasy and emotive aspects of the shopping experience.
Batra and Ahtola (1990)	'thinking'.	'feeling'.
Overby and Lee (2006)	An overall assessment of functional benefits and sacrifices.	An overall assessment of experiential benefits and sacrifices, such as entertainment and escapism.

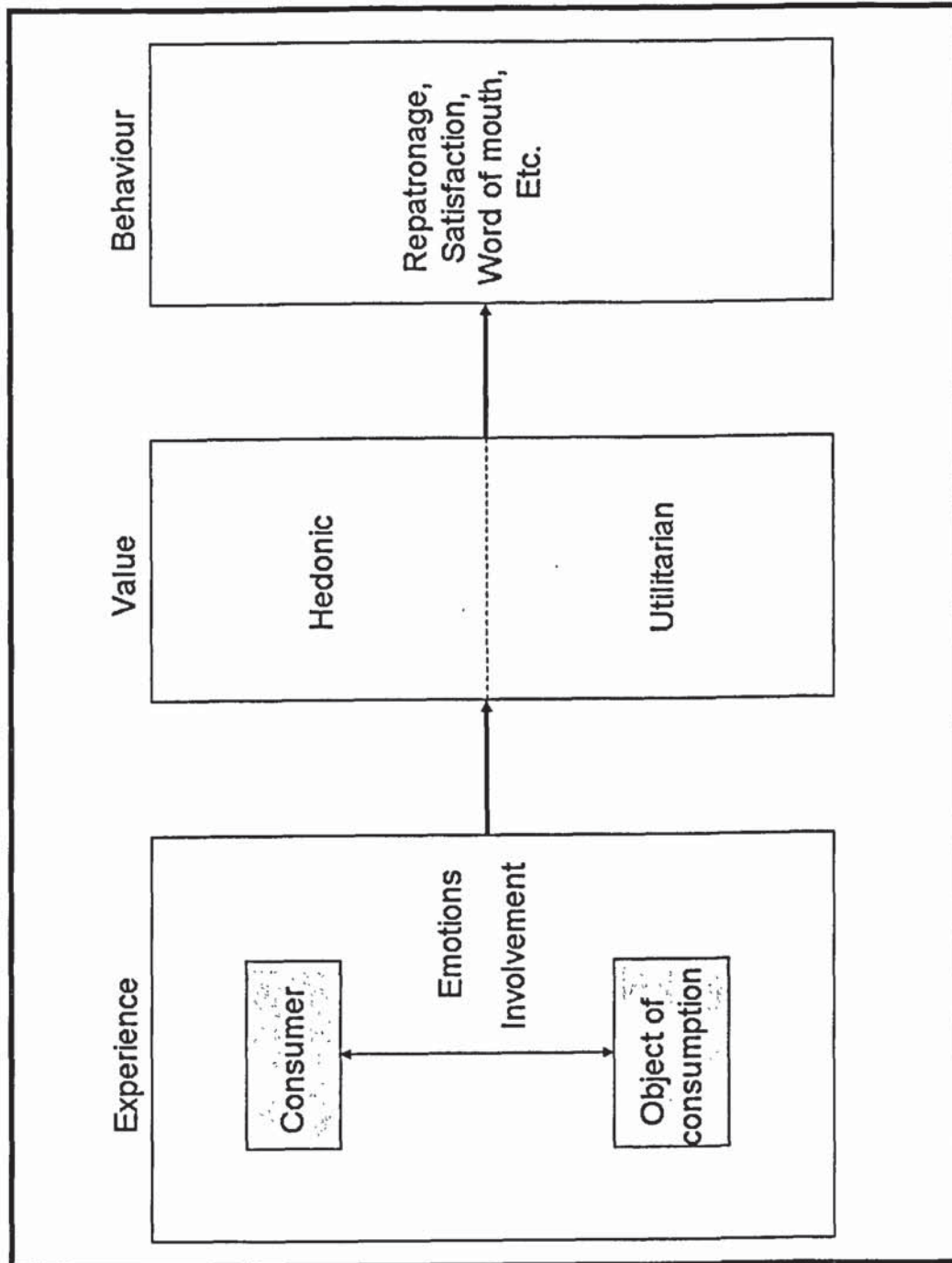
2.4.3.4 Value in an online shopping context

An online shopping experience includes interaction with a virtual environment, with web pages, with product images. It includes sensory perceptions, and the processing of verbal and sensory information. It involves information gathering through the use of tools, which can be used with instrumental or playful ends (Fiore, Jin and Kim 2005). The distinction between the hedonic and utilitarian dimensions of consumer value appears particularly suited to the context of online shopping, since the online shopping experience is likely to generate both cognitive responses (especially since it is less intuitive and fraught with the challenge of taming the technology) and affective ones (in view of the interactive and vivid nature of the experience). The existence of both dimensions online is also suggested by a number of recent empirical findings (Fiore and Jin 2003; Fiore et al. 2005; Koufaris, Kambil and LaBarbera 2001). Further, the experiential potential of OSEs has been shown to be an important motivation for people to shop online (Childers et al. 2001; Wolfinbarger and Gilly 2001).

2.4.4 Summary

In summary, the experiential lens has considered the nature of experiences and highlighted their intense nature. The creation of memorable experiences in OSEs is likely to be just as or even more important a source of competitive advantage online than offline, when differentiation through other means might be more difficult. While some of the characteristics of flow may not apply to all online shopping experiences, and it may not produce any intention to return (Koufaris 2002), experiences with OSEs are undeniably involving, and process and outcome can both be rewarding. Value, a major outcome of experiences, takes account of their subjectivity, and is able to encapsulate both cognitive (or instrumental) and affective (or intrinsic) aspects of the experience. Offering experiences which create both kinds of value is an important aim for marketers because they result in desirable consumption behaviours. A diagrammatical summary of the main phenomena explored in the experiential lens is shown in Figure 2-4 (page 49).

Figure 2-4: Summary of main phenomena investigated in the experiential lens



2.5 THE INVOLVEMENT LENS: SHOPPING ONLINE AS AN INTERACTIVE RELATIONSHIP BETWEEN THE CONSUMER AND THE SITE'S CONTENT

Engraved in any online shopping navigation is an interaction between a consumer and the retail website. When the consumer is interacting with content on a website, a relationship between the consumer and the web content (information, background, site map, animation, product photographs etc.) develops. The consumer clicks on hyperlinks and uses tools such as search engines, sends instructions to the website. In turn, the website returns answers, in the form of new pages. Thus, the consumer participates in a dialogue with the site. This series of actions and reactions, each mutually interdependent, can be likened to a relationship between a person and an object (the content of the website). It is involving, irrespective of whether the consumer is looking for something specific (product or information) or just browsing (Schlosser 2003). From this perspective, the literature on involvement, which deals with the relationship between consumers and objects, messages or situations of consumption, may help describe and explain the relationship under study.

The involvement lens is used:

1. to consider what kind of involvement is likely to be generated during the interaction of a consumer with an OSE;
2. to elucidate how cognitive and affective involvement might work in this context;
3. to clarify the likely antecedents and consequences of involvement during an online shopping navigation.

2.5.1 Involvement – definition and types

2.5.1.1 *Involvement as a state*

There are many strands in involvement research (cf. Laaksonen 1994), but all are concerned with the connection between a person and an object, be it a product category, a brand, a communication, a consumption situation, media content, etc. The importance of involvement theory stems from the fact that involvement activates consumer responses, cognitive, affective or behavioural (Mittal 1989; Park and Young 1986; Putrevu and Lord 1994).

There are two major conceptualisations of the construct. The first, and probably the most common, considers involvement as a durable *trait*, an individual difference variable (Bloch 1981; Evrard and Aurier 1996; O'Cass 2000; Zaichkowsky 1986), which characterises the degree of personal relevance to a person of a 'thing' (product, issue, brand, message etc.). Its levels change only slowly, over a succession of consumption situations (Evrard and Aurier 1996). Much of the literature concerned in this cognitive stream has considered involvement as a moderator and focused on the differential impact low and high involvement has on cognitive processes or persuasion (e.g. Andrews and Shimp 1990; Petty and Cacioppo 1986). Typically, investigations have been in the form of experiments where the level of involvement was manipulated (e.g. Andrews and Shimp 1990; Celsi and Olson 1988; Krugman 1966). These studies have focused on the cognitive linkages between person and object.

However, in the context of this study, another stream of the involvement literature is more relevant – the stream which considers involvement as a variable which *mediates* the relationship between a stimulus and shopping behaviour during the course of a single interaction, and which therefore varies in intensity over a short period of time. Rather than a trait, involvement is considered as a *state*. Under this behavioural conceptualisation, several definitions have been proposed (e.g. Andrews, Durvasula and Akhter 1990; Broderick, Greenley and Mueller 2007; Hansen 1981; Mitchell 1979; Rothschild 1984). These definitions focus on the activating or motivating state which results from some stimulus or situation. For example, Rothschild (1984, p. 216) defines

involvement as “an observable state of motivation, arousal or interest. It is evoked by a particular stimulus or situation and has drive properties. Its consequences are types of searching, information processing and decision making.” (p. 216).

2.5.1.2 Affective and cognitive involvement

Historically, involvement studies have focused more on the cognitive qualities of involvement. In 1977, Krugman suggested that involvement was more a left-brain activity. Then, Hansen’s (1981) view that left-brain processes dominate in high involvement conditions and right-brain processes dominate in low involvement conditions, took hold. This view is also espoused by the authors of the seminal Elaboration Likelihood Model (Petty, Cacioppo and Schumann 1983).

An alternative perspective consists of distinguishing between two types of high involvement: cognitive and affective. Cognitive involvement would enhance left-brain processes, while affective involvement would give rise to right-brain processes (Mittal 1987). Cognitive involvement would result from utilitarian cognitive motives, while affective involvement would result from value expressive or affective motives (Park and Mittal 1985; Park and Young 1986). Evrard and Aurier (1996) distinguish between experiential and nonexperiential components of the person-object relationship, thus also suggesting that there are two different forms of involvement.

The distinction between both types of involvement, while sparse in the consumer behaviour literature, has been suggested by a number of authors. Nevertheless, the distinction is also used in the communications literature (Perse 1998). Broderick (2007) found empirical support to the view that affective involvement, conceptualised to consist of situational and enduring involvement, is a consequence of cognitive involvement, conceptualised to consist of normative and risk involvement. Sometimes though (e.g. Huang 2006), situational involvement has been associated with risk, and therefore with cognitive processes. However, if one also takes account of the physical environment of the situation, the stimuli produced by that environment, or the overall ‘atmosphere’ around the situation could suggest a more experiential, affective kind of response.

Other studies have focused more specifically on affective involvement. For example, Tavassoly et al. (1995) clearly have affective involvement in mind when stating that “its intensity is the internal state of arousal or excitement experienced by the viewer” (p. 62). If one adopts an experiential perspective, and considers that many products or purchases contain at least an element of hedonism, then one can see how consumers would evaluate products differently, depending on the kind of benefits (functional or hedonic) expected (Loudon and Della Bitta 1993). This view was supported by Broderick’s (2007), Kim’s (1991) and Putrevu and Lord’s (1994) studies, which found that affective and cognitive involvement were independent dimensions across a range of product categories.

Mittal (1989) suggests that what is common across both types of involvement is the level of ‘caring’ for the object of involvement. As such, involvement suggests a form of engagement, whether mental or emotional, at the opposite end from passivity and nonchalance (Mittal 1989). In the case of an online shopping navigation, involvement could happen with both the content of a website and the navigation task itself.

2.5.2 How do cognitive and affective involvement work?

Most of the literature has focused on the cognitive consequences of involvement, such as the use of more attributes when considering products (Mitchell 1979), the search for more information (Beatty and Smith 1987), more detailed information processing (Chaiken 1980), and the stronger resistance of attitudes to change (Petty et al. 1983). Interestingly, Rothschild’s (1984) definition of involvement (see page 52), while suggesting that involvement is characterised by such affective states as motivation, arousal or interest, only proposed cognitive consequences (search, information processing and decision-making). According to this view, an involved consumer is a consumer who considers more attributes, searches for more information, and processes information in a more detailed manner. As Arora (1982) points out, however, such an involved consumer is also more difficult to persuade! Yet, using Mittal’s (1989)

expression, surely the 'caring' for the object of one's involvement also has less reasoned consequences.

It was thought that when consumers are highly involved, their cognitive structure is more complex than in situations of low involvement. However, several studies (Arora 1982; Wilkinson 1975) were unable to support that view. Mittal (1987; 1989) proposes that the situations which some prior authors may have considered to be low involvement ones, were in fact situations of high affective involvement (and low cognitive involvement), and that high affective involvement is associated with a high level of right-brain activity. This high level of brain activity may help explain Park and Moon's (2003) results, which suggest that it is difficult for consumers who are highly involved with a hedonic product to realise that they do not know very much about the product's concrete attributes. It may be that the high level of affective involvement ('caring') obtained through experience leads consumers to believe they are familiar with the product.

In a separate study, Mittal (1989) found that in situations of affective or 'expressive' involvement, information processing is not increased, and he suggests that this state of involvement leads to a more holistic type of processing, and probably increases liking for the object of involvement. This view could help further explain Park and Moon's (2003) results: when people have a high level of affective involvement with a hedonic product, they do not consider the product's individual attributes separately, forming instead an overall attachment to the product. Laurent and Kapferer (1985) have also found cognitive as well as affective responses to involvement: extensiveness of the decision making process (cognitive) and liking of the ad (affective).

Several other studies point to possible phenomena at play. Park and Young (1986) studied the effect of music on brand attitude under three involvement conditions (high cognitive, high affective and low involvement). The results suggest that music enhances brand attitude under the low involvement condition; that it distracts from brand attitude under the high cognitive involvement condition; while the results were mixed under the high affective involvement condition. In their study of the impact of arousal on information processing and persuasion, Sanbonmatsu and Kardes (1988) found that endorser status, which according to the Elaboration Likelihood Model is a peripheral cue,

had a stronger influence under high than under moderate levels of arousal, while argument strength (a central cue) was more powerful under moderate than under high levels of arousal. Arousal is conceptually close to affective involvement. It seems, therefore, that arousal is 'competing' with the capacity to process information, and high levels of arousal reduce the possibility to process information to elaborate on the persuasive message. This hypothesis might also help explain Putrevu and Lord's (1994) findings on the effectiveness of comparative advertising. The results indicate that comparative advertising produces more positive brand attitudes when both cognitive and affective involvements are high, while non-comparative advertising is preferable when affective involvement is high and cognitive involvement is low. This suggests that people who are only involved affectively do not process arguments as fluently as cognitively involved consumers. Another possible reason for the reduced cognitive fluency in high affective conditions is given by Mittal (1987), who suggests that the negative relationship found by Park and Young (1986) between affective involvement and cognitive responses may be explained by the lateralisation of responses: if, in high affective involvement conditions, stimuli are processed holistically, then individual features may not be considered separately.

Taken together, these results and views indicate that situations of high affective involvement may result in a holistic processing of a product's attributes (Mittal 1987). This suggests that a new category of high affective involvement could be added to the Elaboration Likelihood Model, thus enabling it to explain further phenomena, especially those involving products or shopping situations rich in hedonic potential. Thus, non-cognitive, holistic processes are more likely the result of high affective involvement than low involvement (Mittal 1987).

In summary, different types of involvement may engage different parts of the brain and generate different kinds of processing. In particular, in situations of high affective involvement, consumers may size up the attributes of a product or environment holistically, but be less competent at the level of the individual attributes.

2.5.3 Involvement online

Because of its ability to contain both a cognitive and an affective component, involvement appears to be an essential concept with which to consider the level of engagement of consumers with the content of OSEs. The engagement can be with the content of the website, which consists of both stimuli (verbal and pictorial) displayed on every page, and product information, or with the task of shopping online, i.e. the navigation through the website. From the preceding discussion, online shopping has the potential to elicit high levels of both affective and cognitive involvement. Affective involvement can result from the arousing atmosphere of the OSE or the interaction between the consumer and the website every time the consumer requests a new page. Cognitive involvement can arise from the ability of the consumer to zero in on relevant products and information. Conditions are met online for the possibility of high affective and high cognitive involvement to occur.

Several studies considering involvement in OSEs have yielded valuable results, which are summarised in Table 2-6 (page 57). These studies reflect the same wide range of definitions and objects of involvement as offline. For example, several definitions (Hoffman and Novak 1996; Kim, Fiore and Lee 2007b; Koufaris 2002; Koufaris et al. 2001) focus on the relevance or importance of the object/idea to the consumer, while others (Griffith et al. 2001; Richard 2005; Richard and Chandra 2005) adopt a 'state' approach, focusing on the motivational quality of involvement. The object of involvement also varies widely from study to study.

Table 2-6: Studies of involvement in online shopping contexts

Study	Involvement definition used	Situation	Object of involvement	Findings/propositions
Richard and Chandra (2005)	Behavioural response rather than personality dimension	Real pharmaceutical products website	Site involvement	Highly site involved surfers search for more information and explore more new stimuli Site involvement \leftrightarrow attitude towards the site, exploratory behaviour and pre-purchase intentions
Gammack and Hodgkinson (2003)	Not defined	Surfing equipment website	Involvement with the information environment	More complex information displays \rightarrow attention and involvement
Fortin and Dholakia (2005)	Not defined	Viewing an online ad	Involvement with a web-based ad	Interactivity and vividness \rightarrow social presence \rightarrow involvement with the ad. "If the medium itself is fundamentally more involving than other media from a cognitive point of view, then the incremental level of involvement for a particular ad within that medium might draw upon more affective than cognitive dimensions" Involvement \leftrightarrow attitude towards the ad, attitude towards the brand, purchase consideration and arousal. Only the affective component of involvement is affected by interactivity and vividness. Plateau effect on interactivity and involvement for medium/high levels of vividness.

(continued next page)

Study	Involvement definition used	Situation	Object of involvement	Findings/propositions
<i>(continued from previous page)</i>				
Griffith et al (2001)	Involvement as interest	Catalogues (print-based and online)	Involvement with the site content (product offering and other information)	The web interface does not automatically generate higher levels of consumer involvement. Vivid online content presentations can generate higher levels of involvement than print presentations.
Richard (2005)	Site involvement: behavioural response, not personality dimension	Over the counter drugs store	Site involvement	Effective information content → site involvement
		Building of information bank	Enduring involvement with the product	Site involvement → pre-purchase and purchase intentions Site involvement → approach attitudes
		Opinion leadership	Enduring involvement with the product	Organisation of site, entertainment both impact on site involvement.
		Recreation	Enduring involvement with the process	
Kim et al (2007b)	Perceived relevance to the consumer	Clothing retail site	Involvement with the shopping experience	Image interactivity → involvement Perception of online store environment → shopping involvement Shopping involvement → desire to stay and patronage intentions
<i>(continued next page)</i>				

Study	Involvement definition used	Situation	Object of involvement	Findings/propositions
<i>(continued from previous page)</i>				
Koufaris et al. (2001)	Concept comprises one's motivational state towards an object where the state is activated by the relevance or importance of the object	Online bookshop	Involvement with the product	As the number of past visits increases, the level of customer involvement with the product will have a stronger positive relationship with the customer experience of shopping enjoyment.
Koufaris (2002)	Concept comprises one's motivational state towards an object where the state is activated by the relevance or importance of the object	Online bookshop	Involvement with the product (and use perceived control, shopping enjoyment and concentration as proxy to involvement with the purchase process)	Product involvement → shopping enjoyment Product involvement → concentration Product involvement X → perceived control Perceived control, shopping enjoyment, concentration(proxy to involvement with the purchase process) all produce unplanned purchases and intention to return
Balabanis and Reynolds (2001)	Motivation to process information about an issue	Clothing retail websites	A set of products or services	Involvement X → time spent on the site (involved consumers may spend less time in a website than uninvolved consumers) Involvement X → attitude towards a site
<i>(continued next page)</i>				

Study	Involvement definition used	Situation	Object of involvement	Findings/propositions
<i>(continued from previous page)</i>				
Hoffman and Novak (1996)	Felt involvement – formed by the presence of situation and intrinsic self-relevance	Task completion	Situational involvement with the goal	Hoffman and Novak quote Webster, Trevino and Ryan (1993): Intrinsic interest/curiosity => focused attention
		Prepurchase deliberation	Situational involvement with the product	
		Building of information bank	Enduring involvement with the product	
		Opinion leadership	Enduring involvement with the product	
		Recreation	Enduring involvement with the process	

Four studies (Balabanis and Reynolds 2001; Hoffman and Novak 1996; Koufaris 2002; Koufaris et al. 2001) consider involvement with the product; three studies consider involvement with the goal (Hoffman and Novak 1996), the process (Hoffman and Novak 1996), the purchase process (Koufaris 2002); two studies (Richard 2005; Richard and Chandra 2005) consider involvement with the website; three studies consider involvement with the content of the site, as information environment (Gammack and Hodgkinson 2003), a web-based ad (Fortin and Dholakia 2005), the site content, meaning product offering and other information (Griffith et al. 2001); finally, one study (Kim et al. 2007b) considers involvement with the shopping experience.

A main distinction can be drawn between involvement with an interface-specific object (website, informational content, experience) and involvement with product, process or goal. Findings about involvement with product, process or goal mirror offline findings. Product involvement enhances concentration (Koufaris 2002), shopping enjoyment (Koufaris 2002; Koufaris et al. 2001). Involvement with the purchasing process (as measured by perceived control, shopping enjoyment and concentration) leads to increased unplanned purchases and intentions to return (Koufaris 2002). However, product involvement does not increase the amount of time spent on a site, nor the attitude towards a site (Balabanis and Reynolds 2001), leading the authors to suggest that “if involvement is not enough to hold the consumer, then in-site motivation (i.e. features, content) may be required” (Balabanis and Reynolds 2001, p. 119), in other words turning to a behavioural approach where the source of involvement is to be found in the consumption situation itself.

Several of the studies focusing on involvement with the OSE have found support for the claim that some OSE elements are involving, such as image interactivity (Kim et al. 2007b), perceptions of the OSE (Kim et al. 2007b), organisation of the site, entertainment and effective information content (Richard 2005), vivid online content presentations (Griffith et al. 2001), more complex information displays (Gammack and Hodgkinson 2003) and, via telepresence, interactivity and vividness (Fortin and Dholakia 2005). In turn, involvement leads to search for more information (Richard and Chandra 2005), exploration of more new stimuli (Richard and Chandra 2005), higher attitude towards the object of involvement (Fortin and Dholakia 2005), pre-purchase and

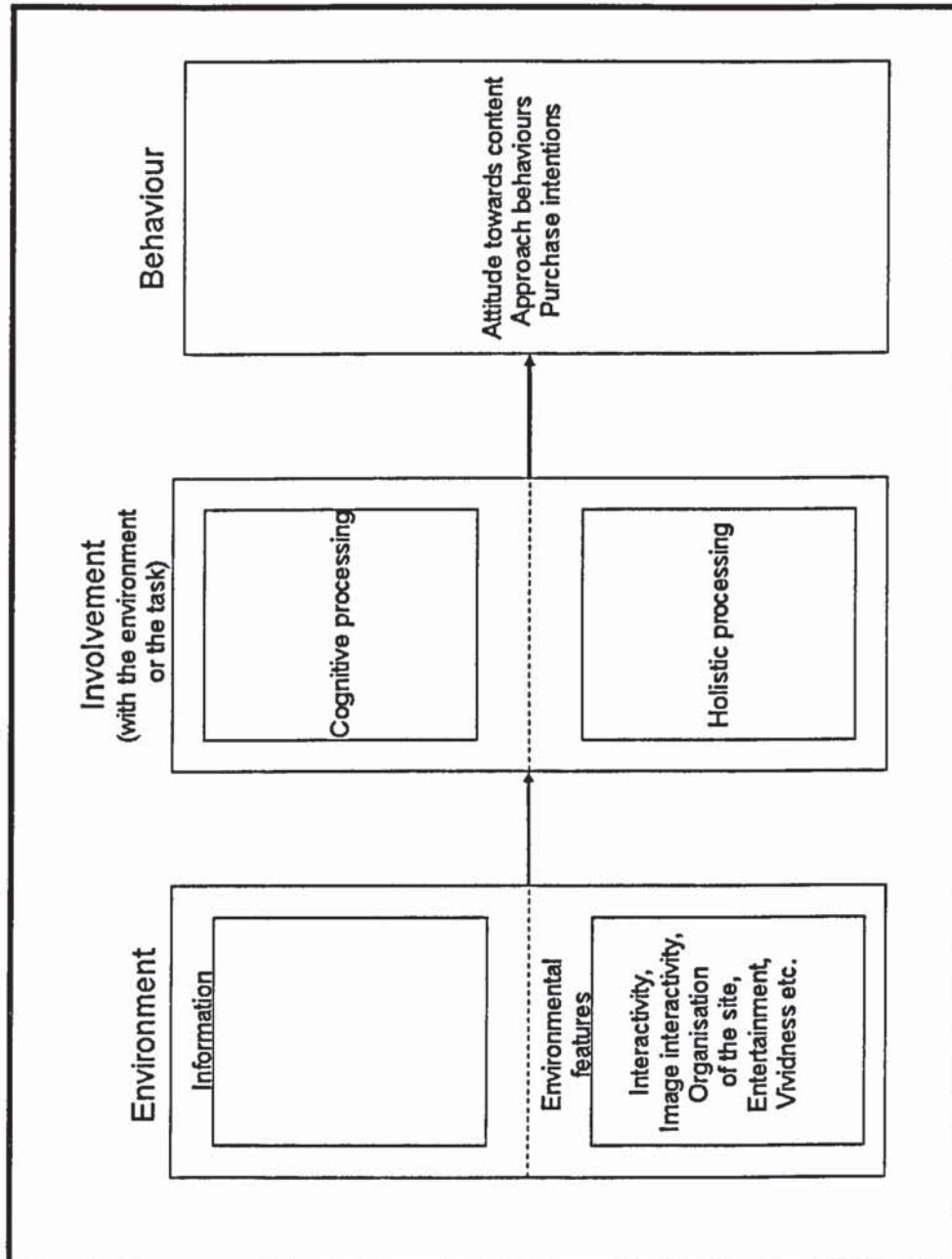
purchase intentions (Richard 2005), approach attitudes (Kim et al. 2007b; Richard 2005). Further, Griffith et al. (2001) established that the online medium does not necessarily lead to higher levels of involvement than other media such as print catalogues. However, Fortin and Dholakia (2005, p. 394) note that “If the medium itself is fundamentally more involving than other media from a cognitive point of view, then the incremental level of involvement for a particular ad within that medium might draw upon more affective than cognitive dimensions”. A related finding in the same study (Fortin and Dholakia 2005) suggests that the affective component of involvement is the only one affected by interactivity and vividness.

Altogether, these results suggest that OSEs can be involving and produce both cognitive and affective involvement. Results point to specific attributes of the OSE which are involving. Antecedents to involvement can be cognitive (organisation of the site, information content, complex information displays) or affective, right-brain elements (entertainment, interactivity, vividness). In turn, involvement online produces behaviours which are desirable to the marketer: attitude towards the content, approach behaviours and purchase intentions.

2.5.4 Summary

In summary, the involvement lens has discussed the distinction between a trait and a state conceptualisation of involvement and identified the possibility of both cognitive and affective involvement developing during an online shopping navigation. It has considered the possibility of affective involvement leading to more holistic processes, while cognitive involvement leads to a deeper cognitive processing. A review of studies which have considered involvement online has identified elements of the OSE as antecedents of involvement. Some relate to information while others relate to the general qualities of the online medium or the environment (interactivity, vividness, entertainment). Finally, it has identified a number of outcomes such as attitude towards the content, approach behaviours, and purchase intention. The main constructs and relationships are summarised diagrammatically in Figure 2-5 (page 63).

Figure 2-5: Summary of the main phenomena reviewed with the involvement lens



2.6 THE MARKETING COMMUNICATION LENS: THE WEBSITE AS A MARKETING COMMUNICATION MEDIUM

Inasmuch as a retail website contains information and claims, it can be considered as a marketing communication medium. From this standpoint, the marketing communication lens may be useful in considering how consumers might process the content presented on the site.

The marketing communication lens is used:

1. to consider the impact of information load on consumer responses;
2. to consider how consumers might process complex information;
3. to consider the impact of the availability of different information sources on consumers responses.

2.6.1 The impact of information load on consumer responses

OSEs can present consumers with a wide range of information, potentially from all desirable sources, thus dramatically reducing their information search costs. They can also choose the information they access. On the other hand, they are faced with more complexity, which demands precious cognitive resources: “What information consumes is rather obvious: it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention.” (Simon 1997, p. 40). The information serves several purposes. It can help consumers navigate around the website. For example, site maps, hyperlinks, the navigation bar etc. all assist in the navigation of the site. It can help consumers learn about the service transaction. Statements of return policy, packing and shipping options, etc. belong to this category. Other information shows the way to different products. The amount of this kind of information depends on the variety of products available and on the organisation of the site. Finally, some information concerns the attributes of the products available. It can also vary in depth, depending on the number of attributes described, on the availability and amount of third-party information featured. Each of these categories of information is likely to elicit different

consumer responses. Product information is likely perceived differently from 'enabling' information. Product information abundance in particular may be viewed more favourably than general information overload. However, the first challenge consumers face every time they call up a new page on screen is the actual information load, and how to deal with it.

2.6.2 The challenges of perceived information load

Traditional marketing communication has been primarily focused on product information: advertisements, TV commercials, outdoor billboard ads all aim to convey information on the virtues, benefits or enjoyment of owning or consuming the product or service advertised. In OSEs, marketers cannot be as single-minded when designing their web pages. Marketers face the threat of producing online interfaces, replete with stimulus information in both verbal and pictorial form, which are so complex that they may challenge consumers' processing capabilities and their abilities to shop online.

Yet, perceived assortment variety is known, offline, to influence store choice (Broniarczyk, Hoyer and McAlister 1998) and to be, after location and price, the main predictor of store choice (Louviere and Gaeth 1987). Variety provides consumers with more options when they have not yet decided what exactly to buy. It also helps satisfy the need for stimulation through exposure to novel information (Berlyne 1960), thus helping satisfy some of the more experiential needs of shopping (Holbrook and Hirschman 1982).

However, variety also increases information load, the processing of which calls for the allocation of additional cognitive resources. While valuing variety, consumers prefer stores high in both variety and organisation (Hoch et al. 1999). Similarly online, consumers prefer websites with medium complexity over those with high and low complexity (Martin, Sherrard and Wentzel 2005). Further, the more visually simple and less cluttered the product information is, the more likely consumers are, to further explore and search the product information available (Janiszewski 1998).

The literature distinguishes between several dimensions of information load, and has identified contrasting effects for these dimensions. When considering the information load on offline shopping environments, Donovan and Rossiter (1982) distinguished between novelty and complexity, and found that novelty increases arousal while complexity reduces it, and that overall, consumers tend to stay longer in environments high in information load. In the context of OSEs, Huang (2000) found that novelty keeps consumers exploring the site, whereas complexity produces more impulse purchases (presumably as a result of the variety associated with the complexity). These results in both offline and online contexts highlight the challenge marketers face in providing consumers with enough variety and novelty to keep them exploring and offer them the choice they favour, while minimising the perceived complexity of the information.

For consumers, information complexity is a 'necessary evil' if they want to avail of the variety of information they crave. It is pertinent, therefore, to consider how they might cope with information complexity. The next section reviews a body of literature concerned with the different ways consumers may process different kinds and amounts of information.

2.6.3 Processing complex information – analytical vs. holistic processing

While the amount of information consumers are exposed to in an OSE is unprecedented in their consuming lives, the different strategies they use to process complex information has been a topic of interest to consumer behaviourists and psychologists for many years. Hansen (1981) was one of the first scholars in the consumer behaviour field to link information processing to knowledge about brain lateralisation, linking mental activities to one side of the brain or the other. Thus, the left brain is associated with rational, systematic, analytical thinking and the processing of verbal, linguistic information. The right brain is associated with impulsive, holistic thinking, and the processing of visual, pictorial and spatial information. The right hemisphere focuses more on perceptual units (wholes), while the left hemisphere is linked to the internal features of a thought. Other

authors (e.g. Carlson and Buskit 1997) have used the bottom-up vs. top-down analogy to discuss the differences between analytical and holistic processing.

Analytical processing requires considerable cognitive resources, and both motivation and ability to process (McElroy and Sheta 2003). While it is adults' preferred thinking mode, they often have to rely on holistic processing to process complex information, before they are able to focus on a particular part of the stimulus which is of focal interest to them. A number of studies have sought to explain the different ways consumers may process stimuli. Hutchinson and Alba (1991) in their study on how consumers process product attribute information, identify problem complexity as one of the environmental factors which limit consumers' ability to inspect and compare products. The study reveals that analytical processing is hindered by complexity, which leads to information overload and selective attention. Alternatively, consumers may resort to holistic processing since perceptual information is most easily processed in this manner rather than being broken down into specific stimuli, which would require a lot more cognitive resources (Jacoby and Brooks 1984). In a study on perceptions of assortment variety, Hoch et al. (1999) suggest that even though adults prefer to process information analytically, they sometimes resort to holistic processing, in particular under time pressure or when they are faced with complex stimuli. They may also resort to this strategy when browsing in a store, as they scan the display until something which interests them catches their attention.

Analytical processing involves common cognitive abilities which are usually associated with verbal information, symbolic representation, sequential tasks, whereas holistic processing enables the sizing up of stimuli in an overall, heuristic assessment (Hansen 1981). Several studies (e.g. Bryden and Ley 1979; Meyers-Levy 1989) and theories suggest verbal cues are usually processed analytically while visual ones are processed holistically (Moriarty 1996). Holbrook and Moore (1981) established that product features, when they are conveyed pictorially or verbally, lead to qualitatively different kinds of processing and judging. The holistic, 'gestalt' nature of visual processing is borne out by Biederman (1990), who showed that man is able to identify and interpret an image seen for just 1/10 second.

Some studies (Hutchinson and Alba 1991) have equated holistic processing with multi-attribute processing and found such mental activities to be rare, and often erroneous. Generally, the literature associates holistic processing with a more superficial, less desirable form of processing than analytical processing (Hansen 1981; Hoch et al. 1999; Hutchinson and Alba 1991). McElroy and Seta (2003) associate holistic processing with low levels of motivation and ability. However, an alternative explanation may be that when they set eyes on a complex scene, consumers first set their attention on the global scene, in a holistic appraisal of its constituent parts, before, in a second phase, focusing their attention on specific segments and ‘verifying’ their initial appraisal (Broadbent 1977). Holistic processing may, therefore, be associated with both situations of low interest and situations of high complexity. The literature has not fully distinguished between these two situations. Further, it may be that complex information with a high visual vs. verbal proportion is even more likely to be processed holistically.

OSEs are complex scenes made of both pictorial and verbal elements. It could be envisaged that when they call up a page of a retail website, consumers first adopt a holistic approach to quickly size up the contents of the page, holistically scanning the overall mostly pictorial and spatial layout to locate the items of interest. This stage may be followed by a more analytical, in-depth processing of the parts which the initial scan had determined were worthy of attention. This second stage would mostly involve verbal processing. Similarly, when assessing a website as a whole, their assessment is likely to be made on a small number of attributes rather than on a lengthy number of cues, which they have neither the processing power nor the motivation to process.

2.6.4 Information sources and consumer responses

The internet enables online retailers to host information from different sources. Retail websites can feature expert reviews, consumer reviews. They can also give indications of what other customers have purchased. As discussed earlier (see Section 2.1.2.2, page 22), virtual reality can provide consumers with a mediated, personal experience of certain product attributes. Personal experience is an extremely valuable source of product information (Hoch 2002; Nelson 1974).

However, some goods cannot usually be searched fully prior to purchase. It seems, though, that the internet may change the searchability of products by changing the salience of certain attributes. Klein (1998) argues that the characteristics of the medium may enable marketers to turn goods which have traditionally been experience goods into search goods. Experience goods are those for which pre-purchase information acquisition is more costly than consumption through purchase. Search goods are those whose attributes can be appreciated prior to purchase (Klein 1998). She suggests three possible ways this transformation can take place. First, large amounts of complicated, technical or detailed information may be made available to the consumer online, which could not possibly be available from salespeople instore. For example, compatibility and performance issues of a piece of software may be researched through a deep database of technical information, Q&A etc. In this case, new, objective attribute information is made available by the marketer.

Second, the ability of online environments to provide information on new attributes may influence the importance that consumers accord to specific attributes. For example, consumers may feel that they can make informed choices about which wine (thus far an experience good) to buy based on information provided about the *terroir*, the region it was produced in and the kind of dishes it can accompany harmoniously. Alternatively, they may decide to trust wine experts for their choice. Varlander (2007) also suggests that in the case of experiential goods, other consumers' opinions, which marketers may make available online, may be used as proxies by consumers to assess the more sensory aspects of experiential products, thus enriching the stock of information available to them prior to making a decision. Third, the new medium may allow the consumer to obtain a personal experience of the product. This can be made possible for example in the case of software which can be trialled, or the download of sample tracks from a CD.

Concurrently, the internet also enables the provision of impersonal recommendations. For example, once it has recorded a number of products accessed by a consumer, Amazon is able to provide a number of impersonal (i.e. database-driven), yet personalised recommendations. Senecal and Nantel (2004) have found that online

impersonal recommendations influence the product choices consumers make, and in a more significant manner for experience products than for search products.

Other goods remain difficult to evaluate through objective information. Services belong to this category. In these cases, perceived risk increases, and in situations of high perceived risk, consumers tend to carry out more information search (Murray 1991), and rely more on personal experience and personal sources of information (Lutz and Reilly 1973), which they find more relevant (Murray 1991).

Personal, non-marketer sources of information are valued because they are considered as more objective than marketer sources of information (Godes et al. 2005), and because they are able to convey more emotive product attributes, providing consumers with a vicarious account of a peer's personal experiences (Varlander 2007).

Furthermore, what people do with non-marketer information may be different offline and online. Offline, consumers generally use non-marketer information to help them shorten their information search and decision-making (Oliver and Bearden 1983; Solomon 1986). Online however, Senecal et al. (2005) found that consumers who consult product recommendations display a more complex shopping behaviour (in terms of number of pages visited, a linearity of the navigation pattern, and the number of product pages visited) than those who did not consult recommendations, suggesting that they used product recommendations as just one of several factors contributing to their decisions. This behaviour is different from offline, where recommendations are often used to reduce decision-making effort and time (Solomon 1986).

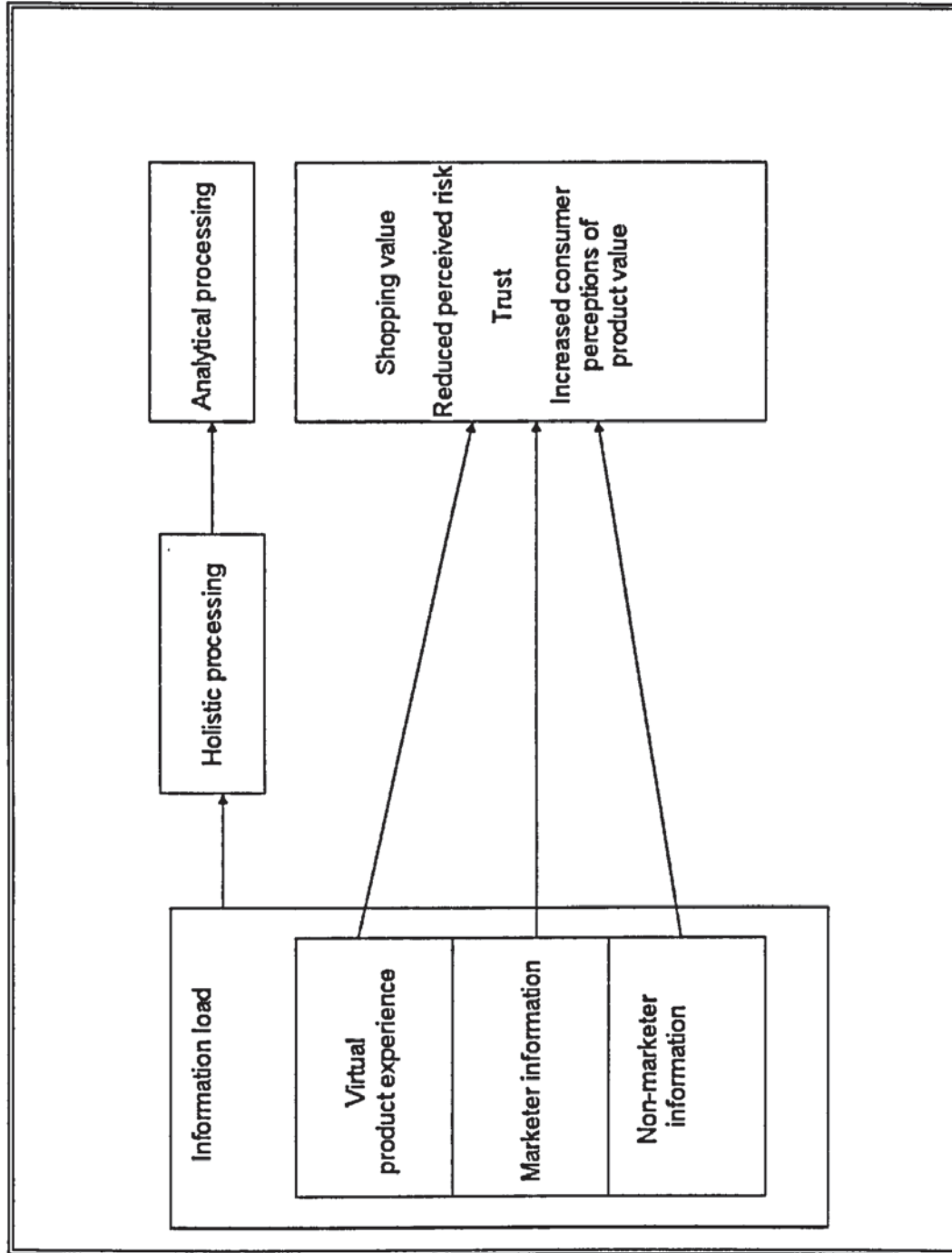
It may be, therefore, that in view of its low cost, non-marketer information is used more often and differently by consumers than offline. Thus, the supply of non-marketer information may be of crucial importance to consumers and online retailers for two reasons. Firstly, personal sources of information are valued differently by consumers than marketer-generated sources of information, due to the different level of trustworthiness of their sources (Kelman 1961). Supporting this view, recent online research found that other consumers' messages on electronic exchanges influence consumers more than

marketer-generated information (Chiou and Cheng 2003), and that the exchange of know-how increases consumer perceptions of product value and the likelihood of them later recommending the product (Gruen, Osmonbekov and Czaplewski 2006). Futher, Huang and Chen (2006) in their study on 'herding' in online product choice, found that consumers rely more on other consumers' recommendations than on experts' recommendations. Secondly, personal sources of information, in an online context where it is easily accessible at little cost, adds to the general informativeness which consumers seek, by providing emotive information (Varlander 2007) and opportunities for vicarious learning through the direct experience of others (Klein 1998).

2.6.5 Summary

In summary, the marketing communication lens has considered the impact of information load on consumer responses, suggesting that consumers may first deal with the complex information presented to them in a holistic manner, before they manage to locate the information of interest and process it analytically. The potential to access more sources of information at the same place than has ever been possible before has important implications for marketers, since it can reduce perceived risk and provide consumers with opportunities for vicarious learning through other consumers' experiences. It would also appear that online, consumers use non-marketer information as additional elements for consideration for decision-making rather than as a means to shorten the information-gathering and decision-making process. The marketing communication lens has led again to recognising the need to take account of two distinct kinds of phenomena, one anchored in highly analytical processes, and the other related to more holistic, right brain activities. Online shopping contexts appear to have the potential to activate both kinds of processes, potentially in a sequential manner. A diagrammatic summary of the lens is shown in Figure 2-6 (page 72).

Figure 2-6: Summary of the main phenomena investigated with the marketing communication lens



2.7 THE HUMAN-COMPUTER INTERACTION AND INFORMATION SYSTEMS LENS – THE WEBSITE'S TECHNOLOGY AS A TOOL

Shopping online is far less intuitive than shopping offline. Shopping in a real environment is an everyday activity whose protocols and scripts everyone knows. People have less familiarity and experience with shopping online. While everyone can recognise a till in a shop and has an intuitive sense of where to find it, reaching the till online is far less straightforward. Shopper anxiety is likely to be higher online than offline, stemming from the presence of a 'glass wall' coming in-between the consumer on one side and the products and the shopping environment on the other side. The mediating technology mitigates or changes the nature of the experience. Technology needs to be interacted with competently in order to 'open the door' to what the consumer is looking for. In this respect, therefore, the mediating interface and the systems it encompasses, can be construed as a tool whose complexities consumers need to grasp in order to achieve their shopping goals – utilitarian and hedonic. As any tool, the site and accompanying technology can facilitate the process of shopping online, but they can also alienate consumers from the object of their attention (Norman 1988; Winner 1994). As all technologies, it is paradoxical in opening up the possibility of prodigious results, while concurrently highlighting the inefficiency of incompetent users (Mick and Fournier 1998). The human-computer interaction literature can provide useful insights into key components of a successful interaction.

The Human-Computer Interaction (HCI) and Information Systems (IS) lens is used:

1. to consider the main drivers to technology usage;
2. to consider their respective roles during an online shopping navigation.

2.7.1 The drivers of technology usage

The primary focus of the Information systems literature has been the Technology Acceptance Model (TAM), initially developed by Davis et al. (1989), which explains or predicts the relationships between beliefs about a technology and attitudes, behavioural intentions and behaviour. It has been prevalent in studies of human-computer interaction, to the point of overshadowing other research areas (Benbasat and Barki 2007). The generic TAM uses two belief constructs: perceived ease of use, defined as “the degree to which a person believes that using a particular system would be free of effort” (Davis Jr 1989, p. 320), and perceived usefulness, defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (p. 320). A subsequent study (Venkatesh et al. 2003) further advanced the field by integrating eight models of the user acceptance literature (of which the TAM is one), resulting in the Unified Theory of Acceptance and Use of Technology (UTAUT). Empirically tested, the UTAUT accounted for 70% of the variance in usage intention.

The TAM and UTAUT models are extensions of the theory of reasoned action (Fishbein and Ajzen 1975), which predicates a strong link between intentions and future behaviour. To study the impact of technology on behaviour, the unit of analysis is perceptions – of ease of use and of usefulness, rather than the objective characteristics of individual, technical cues. In this respect, these models are of relevance to this study, by using the same user perspective. Therefore, in the context of this research, the TAM and the UTAUT validate the suggestion that the perceptions of the users (or, in this context, the consumers) are strong determinants of future usage. However, the TAM and UTAUT are concerned with organisational settings. Thus, they are about the behaviours of people at work – workers rather than shoppers. The motivations and perceptions captured by these models are likely different from shopper motivations and perceptions. For example, the UTAUT considers such antecedents to behavioural intention as performance expectancy, which relates to the perceived ability of the system in improving the user’s job performance, or social influence, neither of which have the same prevalence in an online context.

Related studies have aimed to extend the TAM to the web. Commonly, a third, more 'hedonic' variable has been added to perceived ease of use and perceived usefulness, which both have a very instrumental orientation. The third construct has been labelled enjoyment (Teo, Lim and Lai 1999) or playfulness (Ahn, Ryu and Han 2007; Dabholkar and Bagozzi 2002; Moon and Kim 2001). Other authors have aimed to identify the antecedents of ease of use and usefulness. Thus, web experiences predict both ease of use and usefulness (Moon and Kim 2001), informativeness predicts usefulness, while ease of finding and ease of understanding predict ease of use (Lederer et al. 2000). Interface style (i.e. a menu-driven or a command-driven interface, Hasan and Ahmed 2007), as well as interaction richness (Jahng, Jain and Ramamurthy 2007) were found to predict both ease of use and usefulness.

In summary, while the TAM and the UTAUT have been exclusively developed for and researched in organisational settings (Venkatesh et al. 2003), further studies have extended it to the online context, and have identified a number of constructs of potential relevance. These extensions of the TAM, however, remain the only models to have attempted to offer a holistic understanding of the phenomena at play and their impact on behavioural intent, while the other studies have either restricted their focus to categorising the interface itself, or to the impact of individual cues or technological features (Siekpe 2003). Much of the literature has also remained data-driven, or based on heuristics (e.g. Nielsen 1993; Shneiderman 1998), with few theoretical explanations (Siekpe 2003). The studies which have aimed to identify the main components of the web interface are reviewed in more detail in Chapter 3, Section 3.1.1.2 (page 118), while the next section considers two theoretical explanations of the relative roles of interface perceptions.

2.7.2 The evolving roles of perceived ease of use, usefulness and playfulness

The respective roles of perceived ease of use and perceived usefulness have concerned researchers for some time, especially since there is a growing series of mixed findings concerning the role of perceived ease of use. While earlier studies (e.g. Venkatesh and Davis 1996) reported a significant relationship between perceived ease of use and

behavioural intention, later ones (e.g. Gefen and Straub 2000; Henderson and Divertt 2003; Karahanna and Straub 1999) did not find evidence of that relationship. A suggestion is that, as familiarity with a technology increases, the perceived ease of use of that technology is no longer an issue (Siekpe 2003). Castaneda et al. (2007) obtained similar results, finding that perceived ease of use has more impact on intentions to revisit a website with inexperienced users than with experienced ones.

Other approaches have consisted in distinguishing between sets of cues based on their motivational qualities (Liang and Lai 2002) or on how much they are expected (Zhang and von Dran 2001). Liang and Lai (2002), using an approach similar to Herzberg's (1966) theory of motivation, classify individual cues into hygiene factors, motivators and media richness factors, finding that hygiene factors affect the decision to shop online, while motivators affect the choice between several online alternatives. Siekpe (2003), using Herzberg's (1966) same theory, found that hygiene factors were significantly correlated with irritation, while motivating factors were significantly correlated with informativeness, entertainment and irritation. In a similar vein, Zhang and von Dran (2001) use Kano's (1984) quality model to distinguish between the features of a website depending on whether they are perceived by users to be expected, normal or exciting. However, consumer perceptions of particular features change over time: features which once were exciting can quickly become normal or even expected. Here again as with Castaneda et al. (Castaneda et al. 2007), there is the suggestion that familiarity and experience influence user perceptions. The other important implication of Zhang and von Dran's (2001) approach is that these different expectation levels will likely have different consequences, with the authors concluding that "knowing the basic and performance factors [...] is not enough to attract new customers or retain existing ones. [...] Anticipation of exciting factors will provide a competitive edge that can vault a company into a leading position." (Zhang and von Dran 2001, p. 29).

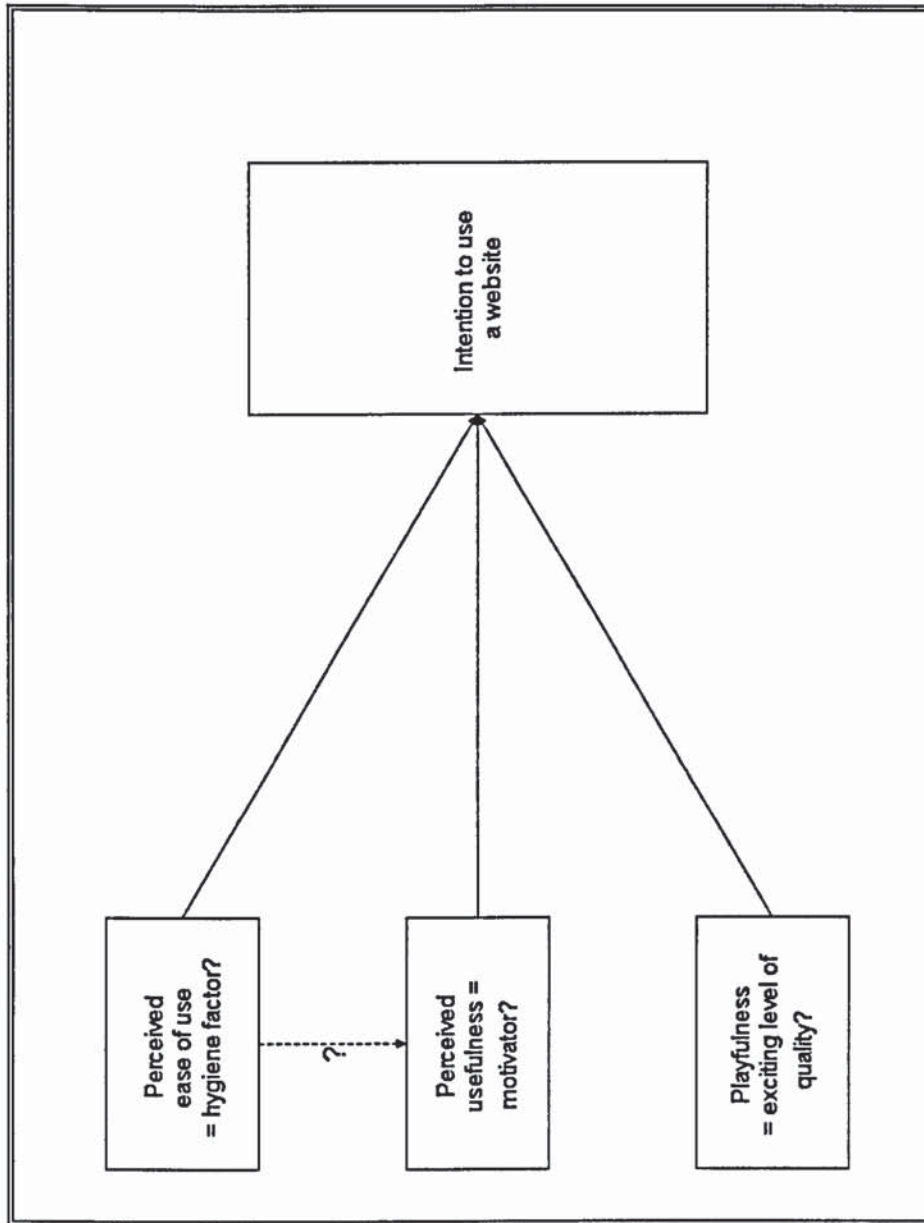
Taken together, these studies are revelatory of the likely diminishing role of perceived ease of use, of the possibly central role of perceived usefulness in retaining customers, and of the need to capture the more affective aspects of online navigations, as suggested by Zhang and von Dran's (2001) 'exciting' category of cues. The need to fully account for the affective reactions to technology in a literature dominated by a cognitive and

instrumental orientation has been raised by Kim et al. (2007a). It is tempting to draw a parallel between perceived ease of use, the 'expected' level of quality, and hygiene factors; between perceived usefulness and the 'normal' level of quality and motivating factors; and between playfulness and the 'exciting' level of quality. In this case, one could envisage a sequential relationship between perceived ease of use and perceived usefulness, in the same manner that hygiene factors need to be in place before motivators can be perceived.

2.7.3 Summary

In summary, the HCI/IS lens has identified the main constructs predicting the intent to use a technology or a technology-imbued object such as a website. The dominant model, the TAM (Davis Jr 1989), has been extended to the web, and suggests that intentions to re-visit a website are predicted by perceived ease of use, perceived usefulness and playfulness. However, several studies and theories such as Herzberg's (1966) motivation theory and Kano's (1984) quality model, point to the differential importance and impact of these main attributes. In particular, it is possible that as experience with a website increases, the importance of ease of use will decrease, and the usefulness of a website is more critical to driving future visits than ease of use. Finally, while the HCI/IS literature is historically anchored in organisational settings and therefore has had a very instrumental approach, the role of more affective qualities is being acknowledged, with the concept of playfulness describing the desirable quality of a website, and the concept of 'exciting qualities' describing the potential for websites to 'delight' users. The main constructs and relationships are summarised diagrammatically in Figure 2-7 (page 78).

Figure 2-7: Summary of the main phenomena reviewed with the HCI/IS lens



2.8 THE SERVICES MARKETING LENS: THE RETAIL WEBSITE AS A SERVICE PROVIDER

An online shopping navigation can be considered as a service encounter, or ‘moment of truth’ (Carlzon 1987). From this perspective, the retail website is a servicescape, within which consumers self-produce their own service. Relevant literature (e.g. Bitner 1990, 1992; Gabbott and Hogg 1998) has considered the different roles servicescapes play during the service encounter. Recent literature has also concerned itself with the impact of technology on the delivery of service, or rather the co-creation of service. It has led to new services marketing paradigms (Lovelock and Gummesson 2004; Vargo and Lusch 2004), which emphasise the central role of the consumer in the creation of value and the deriving of customer satisfaction. This is especially critical in the case of self-service technologies such as retail websites, since there is no service staff presence on them, and consumers can only rely on themselves as their skills are pitted against the website’s processes and technologies.

The services marketing lens is used:

1. to identify the main facets of technology-infused service encounters or ‘moments of truth’;
2. to envisage the impact of self-service technologies on service encounters and consumers.

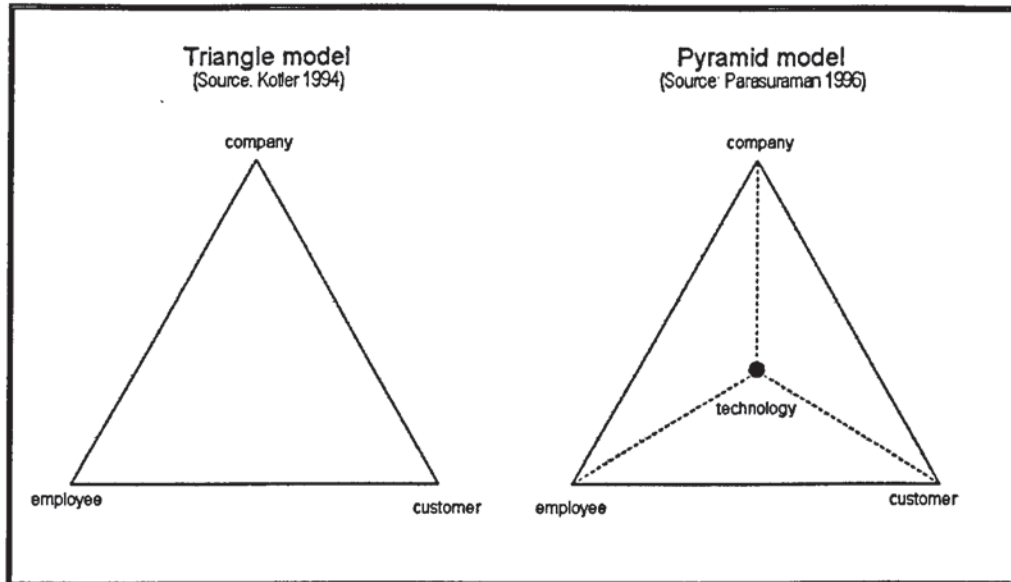
2.8.1 The evolving characterisation of services

The services marketing domain has been defined by a number of paradigms, as these aim to reflect the evolving nature of services (Vargo and Lusch 2004). They were originally characterised in the 1980s as ‘products’ which possessed four common characteristics: intangibility, heterogeneity, inseparability and perishability (Fisk, Brown and Bitner 1993). The relationship between goods and services is ‘turned on its head’ when Vargo and Lusch (2004) consider products to be part of services. Yet another paradigm (Lovelock

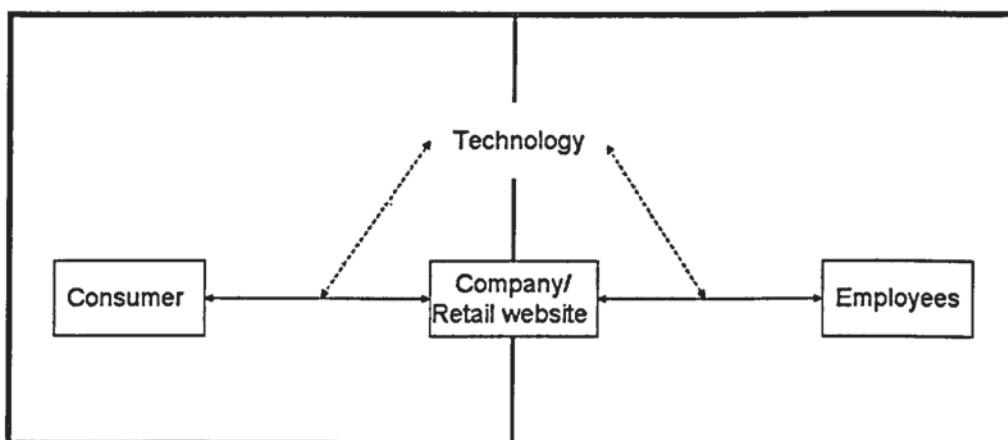
and Gummesson 2004) characterises services from the perspective of the absence of ownership transfer: services are accessed or rented, but the ownership remains with the service provider.

The evolution of these paradigms has been helped along by the impact of the 'information revolution' (Rust 2004) made possible by the development of information technology. If services were heterogeneous because consistency across service staff or across service instances by the same staff could not be guaranteed, technology has enabled automation, resulting in certain kinds of services being homogeneous. Similarly, technology advancements have rendered the outcomes of some services, including retail offerings, less perishable (Lovelock and Gummesson 2004), for example when an online interface is available to the customer at any time.

Concurrently, technology has moved the spotlight away from a main stream of the services marketing literature which had focused on employee/customer interactions (Bitner, Brown and Meuter 2000), with Brown (2000, p. 62) arguing that "the ability to obtain and consume services without interacting with a human provider challenges much of our existing knowledge". Technology has been integrated into extant models. For example, Kotler's original 'Triangle Model' featuring interactive relationships between the company, its employees and customers, has been extended by Parasuraman (1996) into 'the Pyramid Model', to reflect the additional relationships between technology and the company, its employees and customers. The two models are reproduced graphically in Figure 2-8 (page 81).

Figure 2-8: Two models of services marketing

However, in the case of online retailing and other self-service technologies, the interactive relationship between employee and customer disappears altogether, and the customer's only perceptible relationship is, through technology, with the company, as represented by its website. This changed set of relationships is represented graphically in Figure 2-9.

Figure 2-9: The possible impact of self-service technologies on service relationships

This new network of interactions suggests that (1) customers have far more responsibility in the production of the services they request and the creation of value (Vargo and Lusch 2004); (2) the retail website (or servicescape) is highly important, both as the “factory” (Bitner 1992) in which consumers produce their service, and as a proxy or source of cues for consumers to get a feel for the company offering the services and (3) the technology affects both the manner in which the company ‘represents itself’ in its retail website, and the manner in which customers interact with the retail website. These three aspects, and the literature relevant to them, are now reviewed in more detail.

2.8.2 Customers are co-producers and co-creators of value

An online shopping navigation can be considered as a service encounter between the customer and the website, when the customer experiences the service first-hand (Gabbott and Hogg 1998). Consumers have to create the service (obtain the relevant information, access the relevant range of products or initiate and carry out a purchase transaction) themselves, a view also echoed by Firat and Venkatesh’s (1993) description of consumers as producers. Such a service encounter is an experience requiring a heavy involvement on their part, in terms of both time and cognition. As such, it is likely to produce significant emotional and cognitive reactions (as also discussed in the reviews of the Experiential lens (see Section 2.4, page 37) and the Involvement lens (see Section 2.5, page 50)). As producers, or partial employees, consumers require training and education (Bitner et al. 2000) or be given ‘a job’ (i.e. a service encounter) commensurate with their skills.

Because such services as online retailing cannot exist before consumers produce them, no value is created until the service is consumed. During the consumption of a service, therefore, the consumer is the creator of value (Gummesson 1998; Vargo and Lusch 2004). This emphasises the importance of the consumer’s perceptions of and experience with the OSE as the inputs to value creation, since value is subjective, and perceived by the service recipient (Holbrook and Corfman 1985; Lusch, Brown and Brunswick 1992).

Consumers, therefore, play two roles: (1) as productive resources (in essence, they are partial employees, Kelley, Donnelly and Skinner 1990), and (2) as contributors to service quality and satisfaction (Gabbott and Hogg 1998). Further, the consumers' participation in the production of a service can influence their level of satisfaction towards the service provider. In their study of the psychological effects of customer participation in the production of services, Bendaputi and Leone (2003) confirm the existence of self-service bias: consumers tend to claim more responsibility for a successful encounter, and to place more of the blame on the service provider in the case of unsuccessful encounters. Other research (Dabholkar 1991, 1996) has shown that perceived control increases quality perceptions of services based on self-service technologies and that the two most influential attributes expected by consumers using computerised fast-food ordering SST are enjoyment and control (Dabholkar 1996). Therefore, when engaging consumers in production, service providers need to ensure that the encounter results in both utilitarian and hedonic benefits – also called 'psychic benefits' by Lusch et al. (1992).

Unsurprisingly, empirical studies have identified a significant impact of the service encounter on customer satisfaction (Bitner, Booms and Mohr 1994; Smith and Bolton 1998), loyalty (Gremler and Brown 1999) and word-of-mouth communication (Gremler and Brown 1999; Meuter et al. 2000). If consumers are the main producers of service, it is possible that the outcomes will depend on how successful and enjoyable their production of the service was. Interestingly, the services marketing literature has historically given more importance to the utilitarian benefits of services (Bauer, Falk and Hammerschmidt 2006). Parasuraman et al. (2005) even consider the hedonic, experiential elements of services to be outside the domain of service quality. Yet, as the Experiential literature argues (see Section 2.4, page 37), the value drawn from an experience can be derived from the enjoyment with the process as much as from the satisfaction with the outcome.

Therefore, consumers must be trained and educated (Bitner et al. 2000) – or be given 'a job' (i.e. a technology-infused process) commensurate with their skills, if service providers want them to stand a chance of creating high levels of value, and deriving

satisfaction. The role of the servicescape in the production of services and the creation of value is reviewed next.

2.8.3 The role of the servicescape

Because services are intangible and difficult for consumers to research and assess prior to their purchase and consumption, the tangible cues of service environments, or servicescapes, are often used by consumers to evaluate a service or a firm prior to consuming the service (Bitner 1992). Furthermore, since service consumption is usually inseparable from its production, the servicescape is a major contributor to the service experience. Servicescapes have therefore always occupied an important place in services marketing research (Bitner 1992; Ward, Bitner and Barnes 1992; Williams and Dargel 2004).

Servicescapes such as OSEs can act as ‘packages’ enveloping the service, as facilitators in assisting consumers in the co-production of their service, and as differentiators, communicating a company’s positioning towards specific segments, and in relation to competitors. (Zeithaml and Bitner 2003).

In the case of OSEs however, servicescapes are also the repositories of vast amounts of information – originating from marketers or other, potentially more trusted, sources. The OSE can be conceived, metaphorically, as a large chest of drawers (hyperlinks), each drawer giving consumers access to yet more information. Consumers can find more value, in these drawers – as long as they find the right ones, and value the information they contain. However, the multitude of drawers can be confusing to them. Bitner (1992) has produced a typology of servicescapes, based on the expected level of customer participation (self-service, interpersonal service, remote service) and the level of complexity of the servicescape (lean or elaborate). OSEs stand at the extreme of both dimensions of this typology, as elaborate self-services. Consequently, they need to possess two seemingly antithetical attributes: they need to be functional to enable consumers to produce the service they desire with ease (Bitner 1992), yet they need to

contain enough information (and therefore become quite complex) to enable consumers to draw more value from the service. The fragile equilibrium between these two qualities can be helped (or hindered) by technology and consumers' attitude towards it. The role of technology in service contexts is reviewed next.

2.8.4 The role of technology

The progress of information technology has brought about the transformation of retail services, by making the separation possible between the location of the products and the location of the consumers, bridging the distance through the 'virtual' shopping environment. As a result of these same technological advances, Rayport and Sviokla (1994) contend that marketplaces have become 'marketspaces' – "virtual realm[s] where products and services exist as digital information and can be delivered through information-based channels".

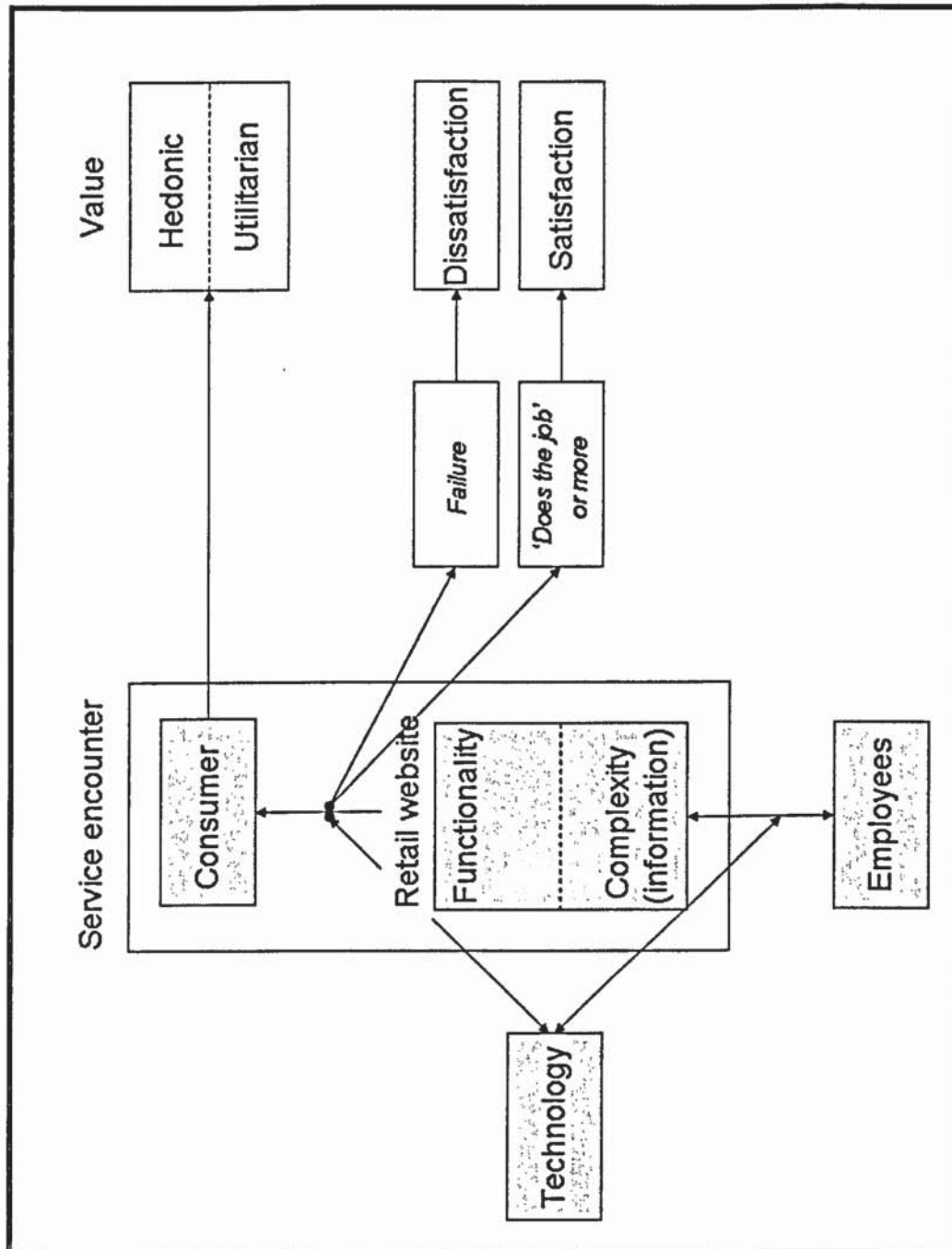
Technology, which enables consumers to help themselves to retail offerings anytime, anywhere, is a double-edged sword, as it can act as an enabler, or equally as a 'disabler' (see Section 2.7, page 73). Several studies by Meuter and colleagues (Meuter et al. 2005; Meuter et al. 2003; Meuter et al. 2000) provide a better understanding of consumers' relationships with self-service technologies. In particular, one study (Meuter et al. 2000) sought to identify the main sources of satisfaction and dissatisfaction for consumers of self-service technologies. Sources of satisfaction revolve around the solving of an intense need (such as being able to shop at all hours), the superiority of the self-service technology over its alternative, and the fact that it worked at least as well as expected. Sources of dissatisfaction were all the result of some kind of failure: of the technology (if, for example, the website is down, or some links do not work), of the service delivery process (if, for example, the items delivered do not correspond to the items ordered), of the design (if, for example, the offering is not designed to serve the customers' specific needs), or of the customers (if, for example, the customer has forgotten the relevant login and password and as a result cannot proceed with a transaction or enter a specific part of the site).

These findings differ from what is known of sources of satisfaction in technology-free service contexts in two ways. First, while the manner in which the service providers handled service recovery was a key source of satisfaction or dissatisfaction in traditional contexts, it does not appear to have the same importance in self-service technology contexts. The authors suggest, as a possible explanation, that there are far fewer opportunities for service recovery online even though failure is at the origin of all sources of dissatisfaction. The need to get it right the first time by removing sources of failure, therefore, is more critical online. Second, contrary to traditional service contexts, the sources of dissatisfaction and satisfaction are not the same. This a-symmetry means that dealing with the causes of dissatisfaction will not necessarily make customers satisfied, suggesting that factors removing the causes of dissatisfaction may only be 'hygiene' factors, while different 'motivating' factors are needed to cause satisfaction.

2.8.5 Summary

In summary, the services marketing lens has discussed the evolving services marketing paradigms, brought about by the transformational impact of technology. It has considered the impact of the infusion of technology during the service encounter, which has removed human-employee interaction. As a result, it has explored the additional burden placed on consumers to produce their own service, counterbalanced by the opportunity for consumers to create more value as the result of an engaging and rewarding experience. It has, then, reviewed the different roles played by OSEs as servicescapes, and shown the need to aim concurrently for functionality and complexity in the form of information richness. Finally, it has considered the interaction between consumers and technology in self-service technology contexts, and again identified functionality (as absence of failure) and complexity (as ability to do the job and more) as the two most desirable attributes of SSTs. The main constructs and relationships are summarised diagrammatically in Figure 2-10 (page 87).

Figure 2-10: Summary of the main phenomena reviewed with the services marketing lens



2.9 THE ENVIRONMENTAL PSYCHOLOGY LENS: THE RETAIL WEBSITE AS AN ENVIRONMENT

Each new page which shoppers access from a retail website can be conceived as a new landscape or environment within which they must navigate, orientate themselves, find products and information, find their way forward and back, etc. As such, online shopping contexts can be considered through the environmental psychology lens, which is concerned with the interactions between man and environment.

The environmental psychology lens is used:

1. to consider the different theoretical perspectives on how consumers might 'use' the shopping environments with which they interact;
2. to consider how consumers might 'use' OSEs, and identify likely reactions to them.

2.9.1 How do consumers 'use' environments?

Environmental psychology has provided the main conceptual ground for the study of offline shopping environments and their impact on consumption behaviour. Interest in the study of *shopping* environments can be traced back to Kotler's (1973) seminal article on 'atmospherics', which identified the manipulation of the stimuli of a shopping environment as one of the marketing tools at the disposal of retail managers to influence consumer behaviours towards desirable ends. Environments have also acquired increasing importance in the marketing arsenal as a basis for gaining competitive advantage in a time of increasing product and service commoditisation (Gottdiener 1998).

As in most fields of psychology, cognitivists and behavioursists have proposed different perspectives on the study of man's behaviour in relation to the surrounding environment. Theories and studies from both approaches have been considered for this study, and are reviewed in succession, starting with the most 'prolific' – the cognitive approach (Sections 2.9.1.1 and 2.9.1.2, pages 89 and 96).

2.9.1.1 Atmospherics: environments as sources of stimulation

According to Kotler (1973), a shop's atmosphere is a medium which can be used to create attention, communicate a message and give rise to emotions. He defines atmospherics as "the effort to design buying environments to produce specific emotional effects in the buyer that enhance his purchase probability" (Kotler 1973, p. 50). In Turley and Milliman's (2000) review of 60 empirical studies published over 30 years of offline atmospherics research, there is overwhelming evidence that environmental stimuli have an impact on consumer behaviour, especially in terms of consumer purchase and approach-avoidance behaviours.

Marketing and consumer behaviour scholars have drawn mostly from Mehrabian and Russell's (1974) Stimulus – Organism – Response model. The model has been used by many authors (e.g. Donovan and Rossiter 1982; Kotler 1973; Menon and Kahn 2002; Spangenberg et al. 1996) to research the impact of environmental stimuli (S) on behaviour (R), through the mediation of organismic (affective) responses (O). Most of the responses in 'O' which have been considered are affective responses, even though Baker (1998) notes the informational qualities of shopping environments and suggests a number of cognitive responses which consumers might produce when exposed to them. The emotions investigated in 'O' have commonly been described as a combination of three emotional dimensions: pleasure, arousal and dominance (Mehrabian and Russell 1974) or of two: pleasure and arousal (Donovan and Rossiter 1982; Russell and Pratt 1980). The 'R' of the model was conceptualised by Mehrabian and Russell (1974) as approach/avoidance behaviour. In Mehrabian and Russell's (1974) original model, the stimuli (S) were conceptualised as either sense modality variables (such as colour, sounds or temperature), or information rate.

From this perspective, the stimuli are overwhelmingly a source of stimulation. In fact, Kotler's (1973) definition of atmospherics (see above) focuses solely on emotions and does not consider any kind of cognitive responses to environments.

A majority of the studies reviewed by Turley and Milliman (2000) have concentrated on general interior variables such as colour, lighting, music scents, temperature, cleanliness, width of aisles etc., which are sometimes labelled 'ambient variables' (e.g. Bellizi and Hite 1992; Hui et al. 1997; Spangenberg et al. 1996). A large proportion of the 31 studies focus more specifically on sensorial variables (e.g. Milliman 1982; Spangenberg et al. 2006; Summers and Hebert 2001). It is difficult to consider the transferability of some of these results online, since the online shopper apprehends the online environment with fewer senses (sight and sometimes hearing) than offline.

The studies focusing on elements which may be more relevant online are fewer, and older. Three studies consider the impact of layout and design variables. Results suggest that low store knowledge leads to increased unplanned purchases and brand switching (Iyer 1989; Park, Iyer and Smith 1989). Among the studies focused around point-of-purchase and decoration elements, several consider the impact which shelf space, product displays and in-store signs have on sales. Interestingly though, the studies concerning layout, design and point-of-purchase and decoration all use purchase as the dependent variable, and do not consider the impact of these on more relational forms of behaviour such as future patronage, which this research is concerned with. These studies, therefore, can be considered as being more about the tactics of increasing current sales than about the generation of longer-lasting approach behaviours. Furthermore, they are older studies, nine of them dating from before 1980 and only two of them from the period going from 1990 to the date of publication of the Turley and Milliman article (2000). In other words, it appears that issues of shopping environment layout and design have received scant attention in the consumer behaviour literature arena lately, and that recent studies have focused more on the more sensorial aspects of shopping environments, using a wider range of approach behaviour measures.

Another important point to note is that of the 60 studies, only two have adopted a more holistic consideration of environments. Using videotapes of two major league baseball stadiums, Wakefield and Blodgett (1994) found that different atmospheres affect perceptions of quality, satisfaction and repatronage intentions. Ward et al. (1992) use the concept of prototypicality to study how the interior and the exterior attributes of a shop are used by consumers to categorise the outlet, and how in turn this categorisation

influences attitudes. This study introduces a cognitive perception element which mediates the relationship between the environmental attributes and affect.

A further 20 studies on atmospherics have been identified since the publication of Turley and Milliman's (2000) paper – see Table 2-7 (page 93). Most of these have focused on individual ambient factors. For example, seven have focused on music (Caldwell and Hibbert 2002; Cameron et al. 2003; Chebat, Chebat and Vaillant 2001; Chebat, Vaillant and Gelinat-Chebat 2000; Dube and Morin 2001; Morrin and Ratneshwar 2000; Yalch and Spangenberg 2000); five have focused on the impact of scent (Chebat and Michon 2003; Michon, Chebat and Turley 2005; Morrin and Ratneshwar 2000, 2003; Spangenberg et al. 2006); two have focused on colour (Babin et al. 2003; Brengman and Geuens 2004); one has focused on lighting (Summers and Hebert 2001). Hightower et al.'s (2002) study considers the 'servicescape' as a whole, and finds that in the context of hedonic services, it has a strong impact on behavioural intentions (mediated by affect) and perceptions of service quality. Finally, Kaltcheva (2006) shows that consumers experience arousing environments as pleasurable only when they are driven by recreational motives.

A noteworthy recent trend concerns the attempt of a number of these 20 studies at considering the effect of combinations of cues. The most comprehensive model (Baker et al. 2002) comprising perceptions of social, design and ambient factors considered their impact on store patronage intentions. Mattila and Wirtz (2001) took a gestalt approach to consider the impact of congruency of scent and music on store evaluations and behaviour. Concerns of congruency are also part of Spangenberg et al.'s (2006) study on scents (they establish that the congruency of the perceived gender of a scent with a store's gender-based products affect perceptions of the store, of the merchandise, and sales), and of Babin et al.'s (2003) study on colour (their study of the three-way congruence between environmental cues, consumers' cognitive categories and situational shopping motivation shows that colour and lighting interact and may change the perceptions consumers have of a store).

These findings, together, point to the need for further research which would conceive of environments holistically. They echo Turley and Milliman's (2000) call for more research on "how consumers process the entire atmosphere, which can often send competing or deviant signals, and form some evaluation of it" (p. 208). While the studies which consider environments holistically in the consumer behaviour literature are few, the holistic perspective is well-established in the environmental psychology literature. It is reviewed next.

Table 2-7: Studies of offline atmospherics published since the Turley and Milliman (2000) review

Authors	Research aims	Main findings
Spangenberg et al (2006)	Explore the evaluative and behavioural effects of congruity between perceived gender of an ambient scent and store's gender-based products.	Scent congruity → internal consumer responses → store, merchandise perceptions, sales
Michon et al (2005)	Investigate the moderating effects of ambient odours on shoppers' emotions, perceptions of the retail environment, perceptions of product quality under different levels of retail density.	U-shape relationship between ambient odours and mall perceptions.
Brengman and Geuens (2004)	To validate Pleasure-Arousal-Dominance scale's validity with brightness and saturation, and hue.	Four factors emerge: Pleasure, Tension, Excitement and Dominance.
Chebat and Michon	To test competing models based on different theories of emotions.	The effect of ambient scent on emotions and spending behaviours is mediated by perceptions of the retail environment and product quality.
Babin et al. (2003)	To investigate how consumers react to different colour, lighting and price point combinations.	Various combinations of environmental cues (colour/lighting/price point), known store types and situational shopping motivations have different effects on consumer reactions, highlighting the need to consider cues in combination.
Cameron et al. (2003)	To investigate the effects of judgment about music, waiting time evaluation and customer mood on overall experience evaluations.	Music likeability → wait-length evaluation and mood Mood → overall experience evaluation Wait-length x → overall experience evaluation
Morrin and Ratneshwar (2003)	To examine the effects of ambient scent on brand recall and recognition.	Ambient scent → recall and recognition of both familiar and unfamiliar brands. Ambient scent → attention
(continued next page)		

Authors	Research aims	Main findings
<i>(continued from previous page)</i>		
Caldwell and Hibbert (2002)	To investigate the effect of music tempo and musical preference on consumer behaviour in a restaurant.	Music preference → actual time spent in restaurant → money spent Tempo x → actual time spent in restaurant Music preference, tempo x → perceived time spent in restaurant
Hightower et al (2002)	To better understand how the servicescape influences behavioural intentions.	Servicescape → positive affect → behavioural intentions, value Servicescape → perceptions of service quality → value perceptions → positive affect, behavioural intentions.
Dube and Morin (2001)	To investigate the effects of background music (with different pleasure intensities) on store evaluation.	Music pleasure → attitude towards servicescape → store evaluation Music pleasure → attitude towards sales personnel → store evaluation
Chebat et al. (2001)	To understand how musical cues impact on cognitive processes.	In situations of low cognitive stimulation, soothing music → cognitive activity (-) → attitudes
Summers and Hebert (2001)	To study the influence of lighting on approach/avoidance behaviour.	Lighting x time at display → number of items touched, number of items picked up
Mattila and Wirtz (2001)	To consider the holistic impact of scent and music on evaluations and behaviour.	Scent/music congruency in their arousing qualities → store evaluations, approach, impulse buying, satisfaction
Chebat et al.	To investigate the effect of music on the persuasiveness of sales staff.	Music does not appear to moderate the impact of sales staff argument on purchase intention. Low, moderately arousing music moderates impact of sales staff argument on acceptance of the argument and desire to affiliate
<i>(continued next page)</i>		

Authors	Research aims	Main findings
<i>(continued from previous page)</i>		
Babin and Attaway (2000)	To investigate the impact of positive and negative affect together with ambient cues.	Positive affect, negative affect → hedonic and utilitarian value → customer share
Machleit and Eroglu (2000)	To explore the emotions felt in shopping contexts.	The ranges of emotions felt vary widely across retail types The emotion typologies of Izard (1977) and Plutchik (1980) are better than Mehrabian and Russell's (1974) P-A-D typology at capturing the richness of emotions experiences.
Yalch and Spangenberg (2000)	To investigate the effect of music on time perceptions.	Familiar music → longer reported shopping times BUT shorter actual times
Morrin and Ratheshwar (2000)	To study the impact of scent on cognitive processes	Pleasant ambient scent → brand evaluations, recall for unfamiliar brand names Scent x → recognition, recall for familiar brand names
Kaltcheva , #567}	To consider the moderating role of motivational orientation on the effect of arousal on consumer behaviour.	In situations of recreational motivational orientation, arousal → pleasantness, sales In situations of task-oriented motivational orientation, arousal (-) → pleasantness, sales.
Baker et al. (2002)	To research the simultaneous impact of multiple store environmental cues.	Store design perceptions → service quality, merchandise quality, price perceptions → merchandise value perceptions → store patronage

2.9.1.2 A perceptual approach: environments as sources of information

An important stream of the environmental psychology literature focuses on the informational power of environments, and therefore turns its attention to cognitive processes such as perceptions (Ittleson et al. 1974). It adopts the Gestalt theory standpoint, whose main premise is that people perceive ‘things’, whether objects, persons or environments, as wholes, rather than parts. Traditionally, Gestaltists have focused on environments as they were experienced by people, rather than on the environments’ objective qualities, arguing that there is often a difference between these two concepts, and that it is the subjective experience, the perception of the environment, rather than the environment’s objective qualities, which affect behaviour (Koffka 1935).

While the Gestalt approach has not been as dominant in the consumer behaviour literature as the atmospherics approach, several empirical studies have shown its relevance. Zimmer and Golden (1988), in their study of consumer images of retail stores, found that consumers form global impressions of stores by integrating information, in addition to their evaluations of specific features. The Gestalt approach was also used by Mattila and Wirtz (2001) to show that consumers perceive servicescapes holistically, and that their stimuli should not be considered in isolation. Similarly, Babin et al. (2004), in their study on the effect of environmental appropriateness on quality, emotions and behaviour, take the approach that since the cues of an environment are perceived holistically rather than piecemeal, it is important that they “work together” to produce the desired consumer responses. Gestalt psychology’s principles regarding visual organization have also been investigated in the context of interface design (Donderi 2006; Ngo, Teo and Byrne 2002).

A related perceptual theory, Gibson’s (1966) theory of perception, may be of particular relevance to the study of OSEs. Gibson (1966) views environmental stimuli as sources of information rather than sources of stimulation, and surmises that as people are exposed to environments, they form a progressively more accurate idea of the environment as it really is, and of what can be done with specific cues. He uses the term “affordances” to

describe people's perceptions of what can be done with an object in an environment. Authors have argued that this approach may be applicable to online contexts, and online shopping contexts in particular, where consumers have to 'learn' about the virtual environment and what objects within that environment can 'do' (Li et al. 2001a). For example, people need to progressively work out what particular features of a website enable them to do.

Gibson's theory of affordances, combined with Gestalt principles, form the basis of Ohno's (1985; 2000) dual model of environmental perception which suggests that there are two distinct (and successive) modes of perception: ambient perception, which is holistic and enables the observer to scan the environment and identify the key elements requiring their attention, and focal perception, which subsequently focuses the person's cognitive attention on specific elements and eliminates the peripheral, unwanted elements. Such a process is similar to the information processing sequence suggested in the Marketing communication lens (see Section 2.6.3, page 66), and could explain how online shoppers process the abundance of environmental information which each new web page brings up.

Turning to the motivations which might drive people in the manner they process environments, Kaplan and Kaplan (1982) posit that beyond pure survival, man's two main needs in an environment are to make sense of it and explore it. It is thus possible to distinguish between the sense-making and exploratory qualities of an environment. Kaplan and Kaplan's (1982) distinction between the sense-making and exploratory qualities of environmental cues seems particularly apt online since such elements as site maps, navigation bars, hyperlinks etc. are designed to enable consumers to understand where they are, where they can go and how to get there, while other cues such as categories to browse, links to further consumer reviews or similar products, animation etc. invite exploration. This view is convergent with a holistic approach, by proposing constructs (sense-making and exploration) with which to organise the individual, subjective perception of an environment. The model is considered again in Section 2.9.2.2.2 (page 105) which reviews the empirical evidence obtained by two studies applying it to OSEs.

2.9.1.3 *The Behavioural perspective: environments as sources of reward*

While a majority of the environmental psychology and consumer behaviour literature adopts a cognitivist standpoint when considering consumers' interactions with shopping environments, the behaviourist perspective is also highly salient, in view of the central importance it gives to environments and contexts to explain behaviour. The Behavioural Perspective Model (BPM; Foxall 1990) explains behaviour by: (1) the setting of the behaviour: the environment in which the behaviour is to take place, (2) the consumer's learning history: what the consumer has learnt from past behaviour, and (3) a consideration of the expected reinforcements which would occur as a result of performing the behaviour. The BPM is reproduced diagrammatically in Figure 2-11. The environment (together with the consumer's learning history) is the cause of reinforcement (or reward).

Figure 2-11: The Behavioural Perspective Model



(Source: Foxall 1997)

Reinforcements are of three types: (1) utilitarian reinforcement, which results from the utility and gratification one draws from purchasing or using a product/service, (2) informational reinforcement, which results from receiving, from others or from oneself, feedback on how well one is doing, and (3) aversive consequences. Consumer behaviour

settings can be either open or closed. In open settings, consumers have a large amount of discretion as to how to act. In closed settings, consumers have a much more limited range of behaviour options, because of social, physical or regulatory restrictions. For example, the difference between a closed and an open setting can be seen between eating while watching in-flight entertainment on board a flight (few options) and having drinks, then dinner in front of the television, remote control in hand (Foxall 1997).

From this perspective, behaviour towards an OSE is predicated by the setting of the online shopping navigation, the consumer's learning from previous navigations, and the expected reinforcements from the navigation. Online shopping navigations have the potential to elicit relatively high utilitarian reinforcement or relatively high aversive consequences, depending on the success or failure of previous navigations. High utilitarian reinforcement can originate from previous navigations when the desired products were found, purchased, when the sought-after product information was obtained, or the navigation itself was gratifying. Aversive consequences can originate from past navigations which were unsuccessful or frustrating. High informational reinforcement can originate from the feedback the consumer gets during the navigation. Each page called up as a result of clicking on a hyperlink or doing a search can constitute informational reinforcement. OSEs can be construed as open settings, due to the variety of options available to them on each page – there are usually dozens of hyperlinks, and a search engine often gives consumers immediate, direct access to any of the products or information on the site.

The consideration of reinforcements highlights the necessity for the marketer to enable consistently successful navigations, since they contain the reinforcing stimuli which in turn will drive future behaviour towards the site. The model also points to the necessity of identifying what particular 'discriminative' stimuli in the setting are the principal drivers of reinforcement.

Consumer behaviour settings have also been linked, empirically, to particular types of emotional reactions (Foxall and Greenley 1999; Foxall and Yani-de-Soriano 2005), all of which have been found to predict approach/avoidance behaviours. Open settings high in utilitarian and informational reinforcements have been associated with high levels of

pleasure, arousal and dominance. Pleasure could be drawn from the products purchased or from the activity itself. In this respect, it shares traits with the concept of shopping value discussed in the Experiential lens (see Section 2.4.3.2, page 44). Arousal could be the product of successively more relevant pages being returned, containing more information or stimuli important to the consumer. In this respect, it shares traits with the concept of involvement discussed in the Involvement lens (see Section 2.5.1.1, page 50). Dominance could be drawn from the ability to call up the content (product images, shortlist of products, browsing categories, detailed product information etc.) which the consumer is seeking, with a minimal number of clicks or searches.

Dominance however relies on the skill of the consumer in taming the technology. A low set of skills is likely to result in the consumer feeling powerless and 'trapped' in an environment where there appear to be few ways forward. As such, to a low-skilled consumer the setting may appear as closed. Similarly, an OSE which provides few options on every page, and does not have a powerful search engine, could be a closed setting. In turn, the closed setting would result in low dominance, and a reduced sense of 'freedom of movement'. This could explain Griffith's (2005) findings on consumers' preference for the more 'open' type of online store layout, which is reported further ahead in this chapter (see Section 2.9.2.2.1, page 103).

Considered from the perspective of the Behavioural Perspective Model (Foxall 1990), therefore, OSEs are open settings, which offer the prospect of relatively high levels of utilitarian and informational reinforcement. Such settings can generate high levels of pleasure, arousal and dominance. The BPM has highlighted a number of important considerations. Firstly, it shows the importance of OSEs in driving desirable behaviours. They have the potential to generate high levels of pleasure and arousal. In this respect, the BPM draws attention to similar phenomena as the experiential and the involvement lenses. Secondly, the concepts of utilitarian and informational reinforcement point to the need for online navigations to produce practical or hedonic benefits (utilitarian reinforcement) and to provide adequate search returns and new pages, since these act as informational reinforcement. Thirdly, approach behaviours are optimal in open settings high in both utilitarian and informational reinforcement. They can be jeopardised if the setting 'closes up', as when each web page offers few options or does not enable search,

or when the consumer's lack of skills 'closes the door' to more options. This last point is not evident in the other streams of the environmental psychology literature. Indeed, many of the studies using Mehrabian and Russell's (1974) Pleasure-Arousal-Dominance typology of emotions reported non-significant results for dominance, or omitted it (e.g. Donovan and Rossiter 1982; Menon and Kahn 2002; Russell and Pratt 1980).

2.9.2 How might consumers use online shopping environments?

2.9.2.1 *Would atmospherics work online?*

A number of authors (e.g. Childers et al. 2001; Eroglu, Machleit and Davis 2001) have proposed that opportunities to manipulate environmental stimuli to produce desired consumer responses are available to online retailers. 'Webmospherics' describes the conscious designing of the online retail interface with the intention of creating certain emotional responses in online consumers (Childers et al. 2001). If an atmosphere is described in sensory terms, along visual, aural, olfactory and tactile dimensions, a 'webmosphere' may currently be described along visual and aural dimensions only.

Kotler (1973) had proposed that atmospherics were relevant in the following situations: (a) at point of purchase or consumption, (b) when the number of competitive outlets increases, (c) when product and/or price differences are small and (d) when products or services are aimed at specific lifestyle or social class segments. Certainly the first three situations typify retail websites and the fourth situation is relevant when online retailers target specific segments.

However, the potency and nature of atmospherics, the 'silent language of communication' (Kotler 1973) requires careful consideration as to its transferability online, because of the different nature of offline and online environments. Offline the environment is 3-dimensional, relatively easy to negotiate; it surrounds the consumer and has the capability of overpowering the senses. Online it is 2-dimensional, less easy to negotiate because every new page is a new environment, probably less able to overpower

the senses but able to come under the control of the skilled consumer, or to cognitively confuse the less skilled consumer.

It is possible, therefore, that OSEs affect consumers' senses less powerfully, but elicit more intense cognitive activity. While consumers navigate and negotiate shops from their childhood onwards, they are usually less familiar with online shops. OSEs are also less intuitive because they are only revealed to the consumer one page at a time. It may be therefore that the stimuli of online environments become stronger sources of information (about the environment and how to navigate it, and about the products which the shopping environment showcases), but weaker sources of stimulation.

There is a further essential difference between online and offline environments. While online the environment is not conveyed sensorially as powerfully as offline, it is not separate or easily distinguishable from the manifestations of the product (in the form of descriptions, illustrations or photographs). Representations of the product are seamlessly blended with representations of the environment – they are not, in substance, different from the environment: all are but a series of pixels on a screen. Consequently it is possible that the online environment, if it includes all manifestations of the actual, tangible product, accounts for a far larger part of the 'total product' than the offline environment. Manifestations of the product would be an integral part of the environmental stimuli then, and may therefore induce stronger organismic responses than might be conjectured at first sight. Further, the OSE acts as a proxy for other elements of the shopping experience which are absent: there are no building exteriors, employees, actual products or any other evidence for consumers to use, as they form impressions and opinions of a firm. As such, the cues provided by the OSE may be given more weight and attention in the absence of other cues.

It may be that online, organismic responses are more cognitive in nature than those commonly considered in atmospherics studies, and that atmospherics online, therefore, need to encompass a wider range of organismic responses (the 'O' of Mehrabian and Russell's model) than just the three dimensions of Pleasure-Arousal-Dominance which Mehrabian and Russell (1974) claimed were sufficient to capture organismic responses.

2.9.2.2 *Impact of online environments on consumption behaviour – empirical evidence*

2.9.2.2.1 'Webmospherics' studies

A review of the empirical studies which have considered the impact which cues of the virtual environment have on consumer responses in online contexts, supports the view that online environments generate both emotional and cognitive responses (see Table 2-8, page 104 for a summary of the findings). Relationships have been established between navigational cues and emotions, approach/avoidance behaviours (Childers et al. 2001; Dailey 2001; Richard 2005); website layout, organisation and structure and ease of use, purchase intentions, attitudes (Griffith 2005; Richard 2005); convenience and usefulness, ease of use and enjoyment (Childers et al. 2001); entertainment, and attitude and purchase intention (Richard 2005); site atmospherics and emotions, attitudes, satisfaction and approach/avoidance behaviour (Eroglu et al. 2003). Further results suggest the presence of strong cognitive reactions to environmental cues. For instance, relationships were identified between store layout and elaboration of product information, product/brand recall (Griffith 2005); organisation, entertainment, information content effectiveness and involvement with the site (Richard 2005).

Further, two studies report a weaker explanatory power of emotions than expected. In one study, while Eroglu et al. (2003) found a significant effect of online cues on several approach/avoidance behaviours as a result of emotions experienced during the shopping navigation, they suggest that the Pleasure-Arousal-Dominance dimensions may not have been able to capture a wide enough range of organismic responses to the environment. Davis (2001) found no relationship between low-task relevant (i.e. peripheral to the task) cues and pleasure, yet she found that when given the choice, consumers preferred to shop on a website which contained both low-task and high-task relevant (i.e. central to the task) cues. She suggests that the absence of a relationship between low-task relevant cues and emotions may be caused by high involvement with the task, which she attributes to the heightened attention of the respondents due to the study's artificial condition. An alternative explanation may be that when shopping online, consumers are

generally more involved, and therefore pleasure may be drawn more from the intensity of the involvement with the website's content than from a series of peripheral cues. Yet, shoppers prefer environments containing cues which have both central and peripheral relevance to their task because all together, the cues are able to convey the overall intense experience of shopping.

Table 2-8: Studies of atmospherics in online shopping contexts

Study	Findings
Dailey (2001)	Restrictive navigational cues → negative emotions, negative attitudes, avoidance
Childers et al. (Childers et al. 2001)	Navigation → ease of use, enjoyment Convenience → usefulness, ease of use, enjoyment Substitutability to personal examination → usefulness, enjoyment
Menon and Kahn (2002)	Initial navigations high in pleasure lead to approach behaviours and engagement in more exploratory activities. Initial navigations high in information load/stimulation lead to subsequent navigations which are less arousing.
Davis (2001)	Low task-relevant cues X → pleasure, perceived risk Consumers preferred to shop at the online store which contained both high and low-task relevant cues
Eroglu et al. (2003)	Site atmospherics → emotions → attitudes, satisfaction, approach/avoidance behaviours
Griffith (2005)	Store layout (tree/tunnel) → ease of use, elaboration of product information, product/brand recall, attitude towards the retailer, purchase intentions
Richard (2005)	Organisation → site involvement Structure → purchase intent Navigational cues → purchase intent, exploratory behaviour Informativeness → (negative) site attitude, exploratory behaviour Information content effectiveness → site involvement, site attitude, exploratory behaviour Entertainment → site involvement, purchase intent, site attitude

Taken together, these results suggest that (1) there is a wider range of reactions to cues online than offline, both affective and cognitive, and (2) involvement may mediate the relationship between cues and emotions and cognitive responses.

2.9.2.2.2 Gestalt approaches to online shopping contexts

Concurrently, three other studies have used Gestalt principles to consider the impact of OSEs on consumption behaviour. Two of the studies (Rosen and Purinton 2004; Singh et al. 2005) have used Kaplan and Kaplan's (1982) principles of need for exploration and need for sense-making, and found that environments high in sense-making and exploration create higher overall impressions and are more likely to be visited again (Rosen and Purinton 2004), create more favourable attitudes and increase behavioural attentions (Singh et al. 2005). These studies will be reviewed and discussed in more detail in the next chapter (see Section 3.1.1.3, page 125). Morin et al. (2007) used the 'dual model of environmental perception' (Ohno 1985) to show that offline as online, individual elements of the shopping environments only influence consumer responses (attitude towards the service provider and service evaluation) through their impact on consumers' holistic perception of the servicescape. This result goes against the 'S – O – R' explanation, by suggesting that individual cues only influence attitudes and behaviour once their impact on the overall environment has been perceived. Therefore 'perception of the environment' would mediate the relationship between the 'S' and the 'O'.

The three studies suggest that a holistic, perceptual level is appropriate to study OSEs. Furthermore, OSEs may be processed more holistically than their offline counterparts because cues online are just a series of pixels, and therefore it is harder for the human mind to distinguish between them and process them individually.

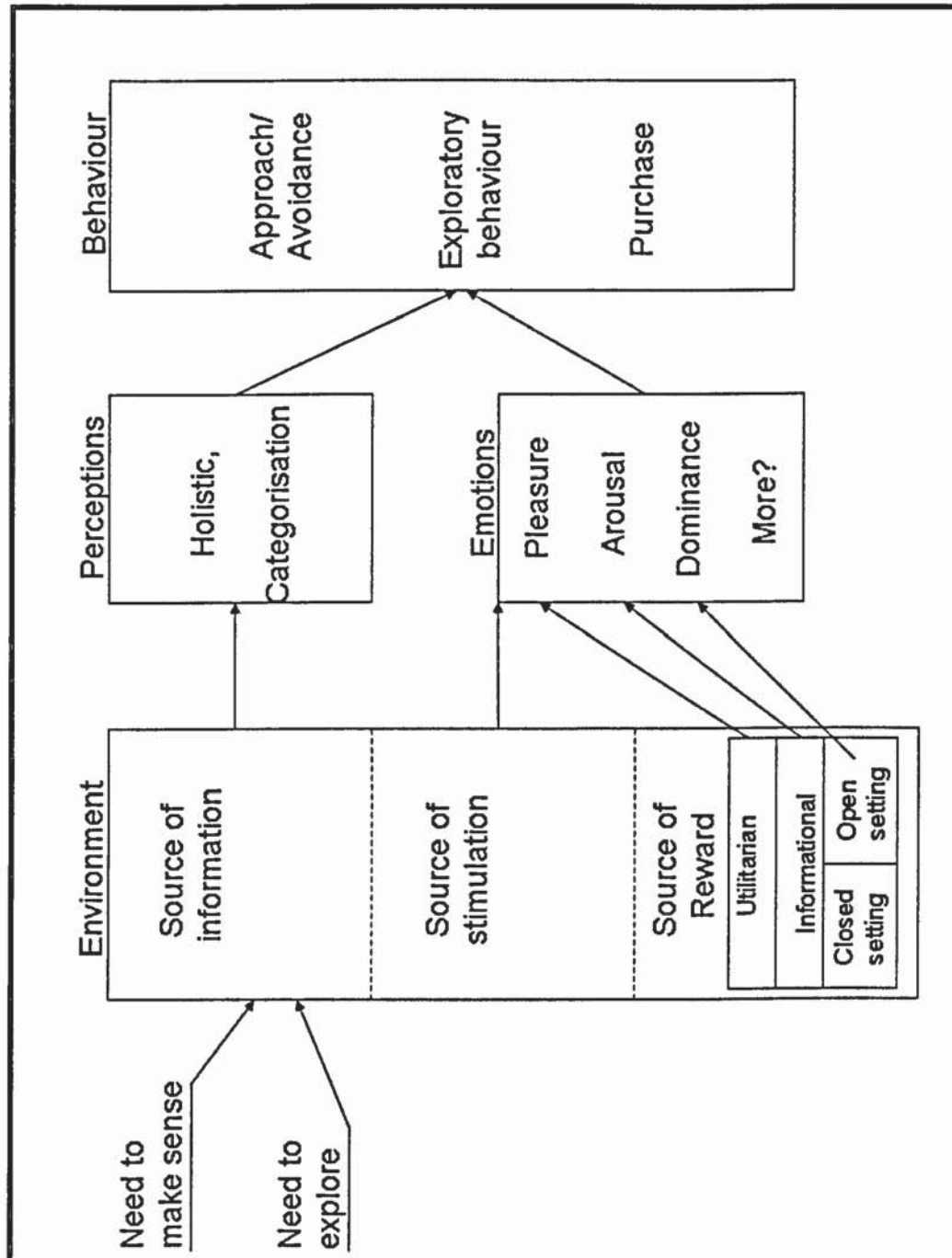
2.9.3 Summary

In summary, the environmental psychology lens considered the theoretical perspectives on how consumers 'use' environments and discussed the ways in which they might 'use' online environments. Environments are seen by different theoretical perspectives as sources of stimulation, source of information or sources of reward. As sources of stimulation, environments are conceived as a series of discrete stimuli which elicit emotions and ultimately behaviours. As sources of information, environments are conceived as a series of discrete stimuli which are perceived holistically by consumers,

who can then act in function of their categorisations or preferences. As sources of reward, environments can elicit pleasure, arousal and dominance, and approach/avoidance behaviours if they are open and offer both utilitarian and informational reinforcement.

Online environments are smaller and less overpowering to the senses than their offline counterparts. They also hold far more information. Their cues are likely considered with attention since online consumers have fewer other cues to assess the worth of a retailer, than offline. They have the potential to offer utilitarian and informational reinforcement, and to be open settings. As heavy sources of information, they are likely perceived holistically, while as sources of stimulation and rewards, they elicit affective reactions. A diagrammatic summary of the main phenomena discussed in the environmental psychology lens is shown in Figure 2-12 (page 107).

Figure 2-12: Summary of the main phenomena reviewed with the environmental psychology lens



2.10 CONCEPTUALISING NAVIGATIONS OF ONLINE SHOPPING ENVIRONMENTS

Six conceptual lenses were brought to bear on a consideration of the main phenomena at play during an online shopping navigation. A number of constructs were identified in each lens, and they are summarised in Table 2-9 (page 110). The review of these six bodies of literature has yielded a number of insights pertinent to the study of consumer behaviour in OSEs, as follows:

1. The experiential literature provides an enriched perspective to study consumer behaviour. More specifically, it provides insights into the variety of motivations which drive people to shop and consume, and takes account of a variety of outcomes beyond the purely economic, utilitarian ones considered by the information processing literature.
2. The involvement literature provides a number of explanations as to how consumers become involved with products, purchase situations and communication. Specifically, it considers the conditions under which the stimuli of a message can increase consumer involvement, and it investigates how different types of involvement (cognitive vs. affective) can engender different types of processing (analytical vs holistic).
3. The marketing communication literature considers how consumers process complex information, and how they may initially adopt a holistic processing approach. It also highlights the value, for marketers, of providing consumers with information from different sources.
4. The human-computer interaction literature provides an understanding of how people come to use and adopt a technology, and consider the differential impact of ease of use, usefulness and playfulness on future approach behaviours.

5. The services marketing literature highlights the additional burden placed by technology on consumers to produce their own service, and the further opportunities offered by the same technology for consumers to create more value.
6. Environmental psychology provides theories to consider how man 'uses' environments, and how these can be sources of both stimulation, information and reward. A review of empirical studies on OSEs suggests that they generate both affective and cognitive reactions.

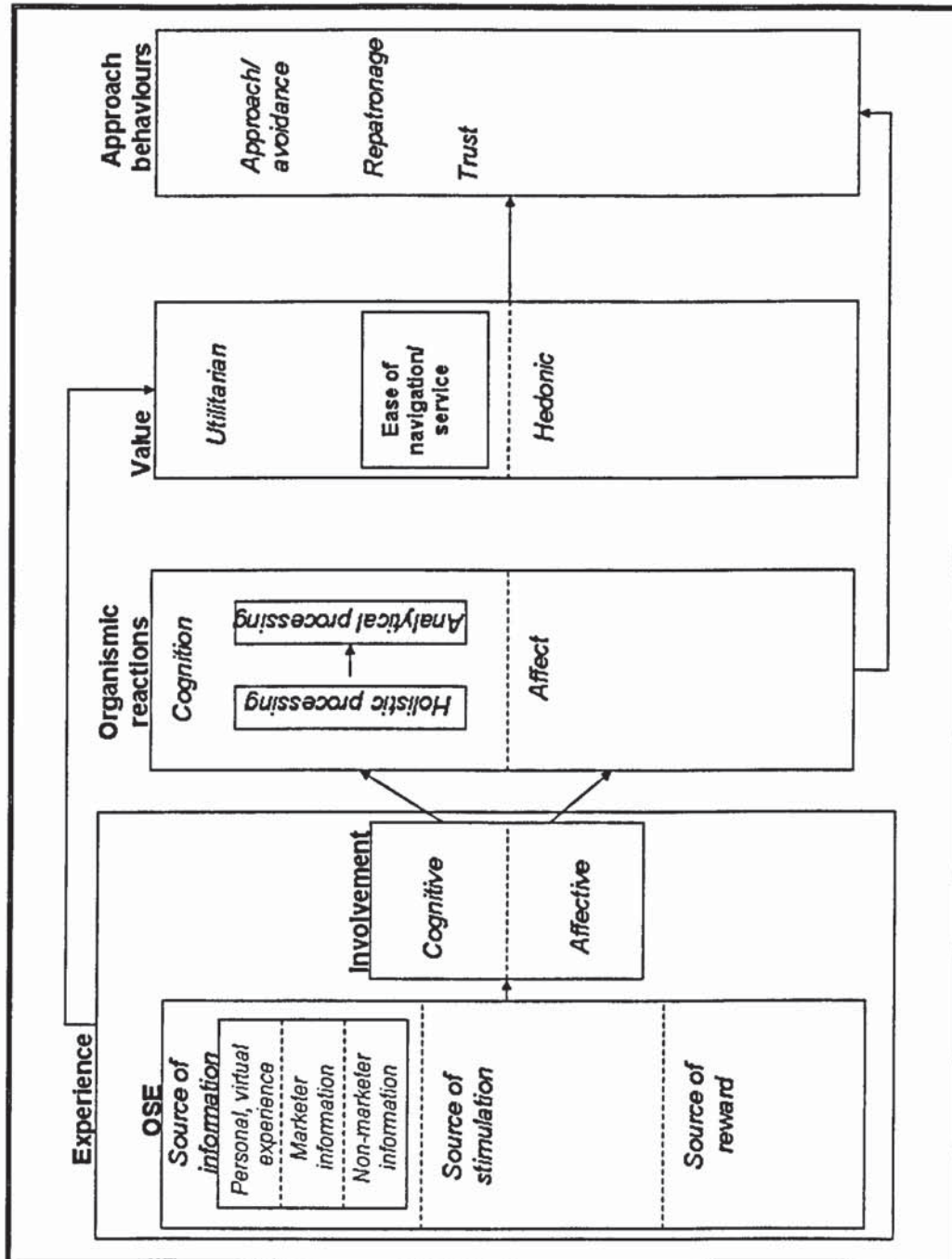
There are visible commonalities shared by the literatures, especially as they are applied to OSEs. While areas of focus and terminologies vary across lenses, they overshadow a number of convergences which enable the emergence of an overall picture of the phenomena at play during an online shopping navigation. The six lenses suggest that OSEs are sources of both stimulation and information. Online information is part of the environment, and for the first time, information from all sources valued by consumers is potentially available at the same place. Both the information and the atmospheric and interactive qualities of the environment can be involving. Perceptions of the environment's qualities can facilitate or hinder navigation and service quality perceptions. Involvement and information likely elicit both analytical and holistic processing. Overall, the quality of the experience during the navigation results in hedonic and utilitarian value, the levels of which can be seen as reinforcers which can predict future behaviours. These phenomena are summarised in Figure 2-13 (page 111).

A recurrent theme from the six lenses is that OSEs have the capability to elicit strong cognitive and affective responses and, due to their complexity and their arousing qualities, they may be processed holistically in a first instance, before more analytical processing of the sought-after information can take place.

Table 2-9: Relevant constructs used by the literatures reviewed

Lens	Experiential	Involvement	Marketing communications	HCI	Services marketing	Environmental psychology
Stimuli	Experience, Product/environment interaction	Objects, products, situations, communications	Advertising cues and stimuli (pictorial, verbal)	Perceived ease of use, Perceived usefulness, Playfulness	Cues present in servicescape	Cues (e.g. ambient, layout, point of sale, etc.)
Organism	Emotions	Involvement Holistic processing Cognitive processing	Emotions Cognition, holistic vs. analytical processing		Emotions Cognition	Emotions Sense-making Involvement
Response	Hedonic and utilitarian value	Enhanced cognitive processing, positive affective evaluation	Involvement	Intention to use	Satisfaction Value	Approach/avoidance Preference

Figure 2-13: Summary of the main phenomena considered in this chapter



The online medium, when vivid and interactive, is able to create telepresence and thus present a virtual reality to the consumer. OSEs, therefore, have the potential for strong experiences. Furthermore, through affordances, consumers may also switch to other ways of assessing products than they use in 'real reality'. Additionally, retail websites are able to store and make easily accessible, on demand, a vast amount of information, from both marketer and non-marketer sources. OSEs, therefore, are more complex than offline ones. They may have the potential to convey more potent experiential stimuli and more complex information. This duality further highlights the presence of a series of dichotomies revealed during the course of the review of the literature conducted in this chapter, as summarised in Table 2-10. It points to the likelihood of both terms of the dichotomies being present or at play concurrently, and to the need to consider the importance of both cognitive and affective processes at work, capturing outcomes in both utilitarian and hedonic terms.

Table 2-10: Dichotomies related to OSEs as revealed by the literature

Literature reviewed	Object of study	Dichotomy discussed in the literature	
Experiential lens	Shopping motives	Hedonic	Utilitarian
	Shopping goals	Experience	Information search
	Shopping value	Hedonic	Utilitarian
		Experiential qualities	Informativeness
Involvement lens	Involvement	Affective	Cognitive
Marketing communication lens	Goods	Experience	Search
		Product experience	Product info. search
	Information	Variety	Complexity
	Information processing style	Holistic	Analytical
	Stimuli	Visual	Verbal
	Information sources	Marketer	Non-marketer
Environmental psychology lens		Environment	Product
	Environment perception	Atmospheric sensation	Cognitive appreciation
Human-Computer Interaction lens		Usefulness, Playfulness	Ease of use

2.11 SUMMARY

The chapter was compiled around three research questions, which were: (1) to clarify how the internet has changed shopping experiences, (2) to define OSEs and (3) to elucidate how consumers interact with a shopping environment during a navigation. The main results of this chapter are as follows.

Firstly, on clarifying how the internet has changed shopping experiences, six unique key aspects of online shopping navigations were identified: (1) they have the potential to be vivid experiences; (2) interactivity heightens the involvement of the consumer with the website's content; (3) they can provide the consumer with vast amounts of searchable information – in the form of virtual product experience, marketer product information or product reviews, recommendations, know-how etc. from non-marketer sources; (4) the technology necessary to shop online can create a barrier and frustrate or open new horizons; (5) the absence of sales staff places the burden of self-help on the consumer; and (6) the shopping environment can be quite vivid and life-like – yet it remains small and can only be apprehended through two senses.

Secondly, OSEs were defined as virtual environments which may be perceived and experienced both cognitively (information, orientation, understanding of tools sense-making etc.) and affectively (sensory, experiential, interactive, playful) by consumers through a technology-mediated interaction with their computer screen.

Thirdly, a multi-disciplinary approach highlighted relevant phenomena at play during an online shopping navigation. The experiential lens showed that the quality and the intensity of the shopping experience matter to consumers because they result in both utilitarian and hedonic value, which in turn leads to loyalty and repatronage intentions. The involvement lens has shown that an online shopping navigation can produce both cognitive and affective involvement, and that the OSE's content itself can heighten the sense of involvement. The marketing communication lens has shown that information load could have a mixed impact on consumers, before suggesting that consumers might first process information holistically, before zeroing in on the items most relevant to them and processing them analytically. The information systems/human-computer interaction lens has shown that, in organisational settings, technology

acceptance is a function of perceptions of ease of use and usefulness. The relative impact of these varies with experience and over time. The services marketing lens has shown that the self-service context of online shopping places more responsibility on the consumer in producing the service, and also provides the consumer with opportunities to create value. Finally, the environmental psychology lens has shown that while OSEs may be weaker sources of stimulation than their offline counterparts, they are greater sources of information.

The multi-disciplinary approach has shown that the more successful OSEs are likely those which:

- alleviate the burden technology places on the consumer by being easy to navigate and serve oneself;
- provide consumers with a wide range of product information, through a variety of sources (personal virtual experience, marketer, non-marketer);
- offer involving and successful shopping experiences, in terms of high levels of both utilitarian and hedonic value.

The next step of the enquiry will consist in conceptualising the relationships between OSE attributes and consumption behaviours. This first necessitates a clarification of OSEs' salient attributes. These two research questions form the subject of the next chapter.

CHAPTER 3:

CONCEPTUAL MODEL, HYPOTHESIS DEVELOPMENT:

CONSUMER PERCEPTIONS AND CONSUMPTION OF

ONLINE SHOPPING ENVIRONMENTS

3.0 INTRODUCTION

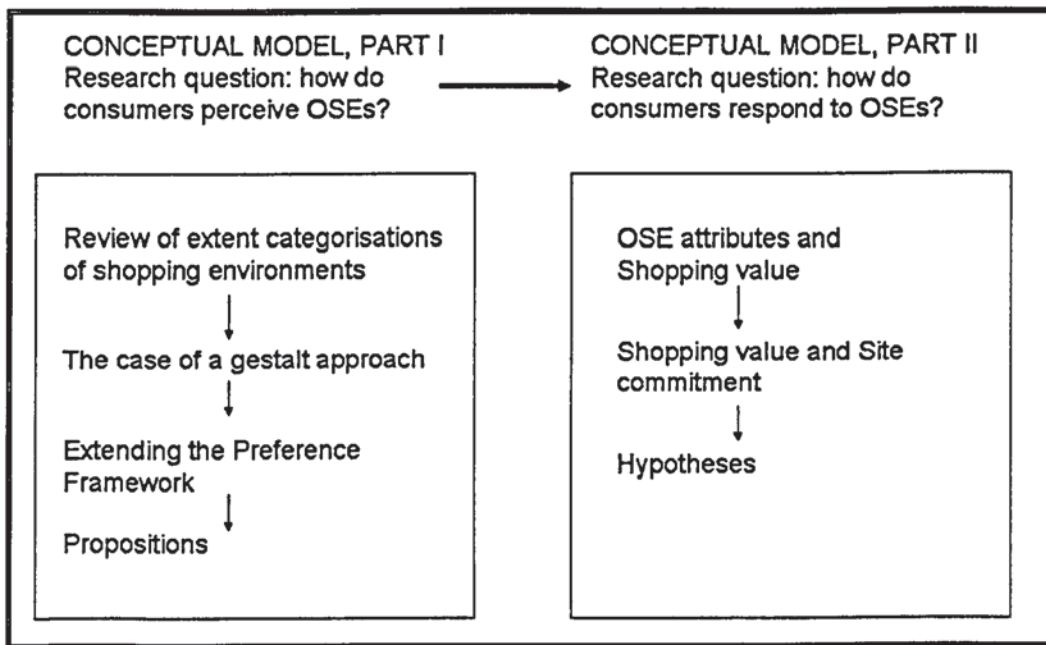
The last chapter clarified the fundamental ways in which the internet has changed the shopping experience. The conceptualisation of online shopping environments (OSEs) and a consideration of the characteristics of the online medium led to the conclusion that OSEs are complex and vivid virtual environments, and consumer interactions with them will generate both cognitive and affective reactions. Six conceptual lenses were used to consider the possible perceptions and reactions of consumers to OSEs. The review of six bodies of literature highlighted similarities in approaches and in the problems considered, which are somewhat obscured by the varied terminologies used. It also revealed the presence of a series of dichotomies traversing each of these literatures, between a cognitive, utilitarian approach to the apprehension and consumption of environmental stimuli, and an experiential, affective one.

The purpose of this chapter is to develop a conceptual model making explicit the manner in which OSEs are perceived by consumers, and the hypothesised relationships between OSEs and consumption responses. The two research questions motivating this chapter are:

1. to conceptualise how consumers perceive OSEs;
2. to conceptualise how they react to them.

The main outcome of this chapter is presented in a set of propositions and hypotheses, and summarised in the form of a conceptual model, the testing of which is reported in subsequent chapters. A diagrammatic representation of the chapter's compilation is shown in Figure 3-1.

Figure 3-1: Overview of Chapter Three



3.1 CONCEPTUAL MODEL PART I: HOW DO CONSUMERS PERCEIVE ONLINE SHOPPING ENVIRONMENTS?

3.1.1 Extant categorisations of shopping environments

This section reviews the studies which have proposed categorisations of shopping environments. It starts with studies concerned with offline environments, and considers their applicability to the online context. It then reviews the literature to date on categorisations of OSEs, which emanate from different disciplines. As discussed previously (see Section 1.7.2 on page 14), the environments of concern here in the online context are the virtual environments which are presented to consumers on their computer screens, as opposed to the physical environments surrounding consumers and their computer screens.

3.1.1.1 Offline categorisations of shopping environments

Four main typologies have been used in the offline retail and service marketing literature; those by Baker (1987), Bitner (1992), Berman and Evans (1995) and Turley and Milliman (2000). They are summarised in Table 3-1, where similar categories of cues across different typologies have been shown in the same row, even though they are not fully equivalent across typologies.

Table 3-1: The main typologies of offline retail and service environments

Baker (1987)	Bitner (1992)	Berman and Evans (1995)	Turley and Milliman (2000)
		External variables (exterior signs, building, location, parking availability etc.)	External variables (exterior signs, building, location, parking availability etc.)
Ambient cues (background elements: scent, music, temperature)	Ambient conditions (background characteristics: music, temperature, lighting, noise, scent etc.)	General interior variables (flooring, aisle width, colour schemes, lighting, music, merchandise, scents, cleanliness etc.)	General interior variables (flooring, aisle width, colour schemes, lighting, music, merchandise, scents, cleanliness etc.)
Aesthetic-design cues (colour, architectural style, décor)	Signs, symbols and artefacts (signage, quality of materials and furnishings, artwork, certificates, , personal objects)	Point of purchase and decoration variables (pop displays, signs, degrees and certificates, pictures, artwork, product and price displays, instructions, etc.)	Point of purchase and decoration variables (pop displays, signs, degrees and certificates, pictures, artwork, product and price displays, instructions, etc.)
Functional-design cues (layout, signage)	Spatial layout and functionality (layout, its ability to facilitate performance and accomplish goals)	Layout and design variables (space design, merchandise placement & grouping, furniture placement, waiting areas, traffic flow etc.)	Layout and design variables (space design, merchandise placement & grouping, furniture placement, waiting areas, traffic flow etc.)
Social cues (customers and employees in the store)			Human variables (crowding, employees and customer characteristics, uniforms).

It emerges from the review of these typologies that when considering the online environment, ambient cues/ambient conditions or certain elements of the general interior variables, which concern the senses, are likely to have less impact online, since fewer senses are used to

apprehend an online environment. Similarly, social cues are also absent online, and external variables have no import in this research, which focuses on the result of navigation on specific websites, irrespective of how a consumer may have reached a site in the first place. Aesthetic-design cues/signs, symbols and artefacts/decoration variables on the one hand, and functional-design cues/spatial layout and functionality/layout and design variables on the other hand, have great relevance. These two categories are further explored in Table 3-2, which lists the cues considered by the different typologies.

Table 3-2: An exploration of categories of atmospheric cues with possible relevance online

Typology	Functional design cues	Aesthetic design cues
Baker (1987)	Layout, signage	colour, architectural style, décor
Bitner (1992)	layout, its ability to facilitate performance and accomplish goals	signage, quality of materials and furnishings, artwork, certificates, photographs, personal objects
Berman and Evans (1995) and Turley and Milliman	space design and allocation, placement and grouping of merchandise, placement of furniture and equipment, waiting areas, traffic flow etc.	point of purchase displays, signs and cards, degrees and certificates, pictures, artwork, product and price displays, usage instructions, etc.

The dichotomy thus derived once again reflects the dual nature of OSEs, satisfying both utilitarian and experiential needs. Similar dichotomies had been observed as several bodies of literature were reviewed to consider online shopping experiences (see Chapter 2, Table 2-10 and discussion, page 112). However, the cues described clearly reflect physical spaces (e.g. quality of materials and furnishings, waiting areas, point of purchase displays etc.), and are not sufficient to encompass the complexity of OSEs. Not surprisingly therefore, a number of studies have focused on developing new categorisations of OSEs. These are reviewed in the next section.

3.1.1.2 Online categorisations of shopping environments

A systematic review of the services marketing, information systems, experiential and environmental psychology literatures was carried out, using a search through the Web of Science's Social Sciences citation index and ISI Proceedings, with the following search terms:

'online shopping', 'atmospherics' 'web site', 'website' 'online environment', 'e-service', 'e-quality', 'e-retail', 'internet'. It yielded a total of 30 studies containing categorisations of retail websites. Table 3-3 (page 120) displays the attributes investigated which relate to the environment, organised according to the main literature on which these studies were based (attributes concerning other aspects of the e-tailing experience such as service, transaction, security etc. are omitted since they are outside the scope of this study). Davis Jr's (1989) Technology Acceptance Model and Venkatesh et al's (2003) Unified Theory of Acceptance and Use of Technology are not included in the review because, as Venkatesh et al. (2003) emphasised, the models are conceived specifically for organizational settings, and they do not attempt to encompass the more voluntary and leisurely aspects of shopping.

The review reveals a broad convergence around three major dimensions. The first category, present in 27 categorisations, relates to the environment's ease of understanding. It concerns the ability of the website's design to facilitate navigation, orientation, information gathering and access to the desired parts of the website or the right products. This dimension appears in the literature under a number of labels such as 'ease of use', 'site organization', 'technical adequacy' or 'navigation/organization'.

The second category concerns informativeness and is present in 20 categorisations. Retail websites are informative when they contain information which is both of good quality and plentiful. The dimension is represented in the literature under such labels as 'product attribute description', 'information/content quality', or 'informativeness'.

Table 3-3: Review of categorisations of OSE attributes investigated in past studies, organized by disciplinary origin

Author	Aims	Categories investigated		
		Ease of understanding	Informativeness	Involving qualities
Services Marketing Literature				
Szymanski and Hise (2000)	Identify antecedents of e-satisfaction	Site design	Product information	
Francis and White (2002)	Measure consumer expectations and perceptions of quality in internet retailing	Web store functionality	Product attribute description	
Janda et al. (2002)	Identify Internet serv. quality dimensions		Information	Sensation
Srinivasan et al. (2002)	Investigate the antecedents to customer loyalty in online B2C context	Convenience	Cultivation Choice	Contact interactivity Character
Yang and Jun (2002)	Identify e-comm. service qual. dimensions	Ease of use		
Wolfinbarger & Gilly (2003)	Identify the retail experience's dimensions	Website design •		Website design •
Williams and Dargel (2004)	Adapt Bitner's "servicescape" model to cyberspace	Space/function		Ambient conditions Signs,symbols, artefacts
Hopkins et al. (2005)	Examine the relevance of considering the website as an e-servicescape	Spatial layout/functionality	Informativeness	Ambient conditions
Parasuraman et al. (2005)	E-S-QUAL scale development and testing	Efficiency		
Bauer et al. (2006)	Develop a transaction-based scale for measuring service quality (eTransQual)	Functionality/design •	Functionality/design •	Enjoyment
Collier and Bienstock (2006)	Extend work on service quality beyond process quality, using formative indicators	Ease of use Functionality	Information accuracy	Design
				(continued next page)

Author	Aims	Categories investigated		
		Ease of understanding	Informativeness	Involving qualities
(continued from previous page)				
Information Systems literature				
Liu et al. (2001)	Identify key dimensions influencing the design quality of an e-commerce website	System design quality	Information and service quality	Playfulness
Yoo and Donthu (2001)	Develop an instrument to measure the perceived quality of an internet shopping site (SITEQUAL)	Ease of use		Aesthetic design
Cho and Park (2001)	Develop an instrument to measure electronic commerce consumer satisfaction	Site design • (structure, menu) Ease of use	Product information Product merchandising Additional information services	Site design • (site color, site character)
Ranganathan and Ganapathy (2002)	Examine the key characteristics of a B2C website as perceived by online consumers	Design	Information content	
McKinney et al. (2002)	Develop constructs for measuring web-customer satisfaction during information phase	Web-system quality	Web-information quality	
Aladwani and Palvia (2002)	Develop an instrument which captures key characteristics of website quality	Technical adequacy	Specific content Content quality	Appearance
(continued next page)				

Author	Aims	Categories investigated		
		Ease of understanding	Informativeness	Involving qualities
(continued from previous page)				
Information Systems literature (continued)				
Barnes and Vidgen (2002)	Assess usefulness, validity of WebQual instrument to assess e-commerce sites	Usability	Information	
Palmer (2002)	Develop website usability, design and performance measures	Navigation/organization	Information/content	Interactivity
Loiacono et al. (2002; 2007)	Develop website evaluation measure	Ease of understanding Intuitive operation	Information fit to task	Visual appeal Innovativeness Flow – emotional appeal Interactivity
Kim and Stoel (2004b)	Examine dimensionality of website quality for apparel retailers (using Loiacono's 2000 WebQual)	Web appearance•	Information fit to task	Web appearance• Entertainment
Liao et al. (2006)	Investigate the role of habit and website quality in e-commerce	Appearance	Content quality Specific content	
Otim and Grover (2006)	Investigate the effect of web-based services on customer loyalty		Support of product search and evaluation	Website aesthetics
				(continued next page)

Author	Aims	Categories investigated		
		Ease of understanding	Informativeness	Involving qualities
<i>(continued from previous page)</i>				
Experiential Literature				
Chen et al. (2002)	Extend the validity of three content scales	Site organization		Entertainment
Constantinides (2004)	Identify web experience components	Functionality factors	Content factors*	Content factors*
Edvardsson, et al. (2005)	Show how six dimensions of the 'experience room' can co-create value			Physical artifacts <u>Intangible artifacts</u> (mental images, themes)
Huang (2005)	Develop, validate measure of web performance as perceived by consumers	Utilitarian performance		Hedonic performance
Environmental Psychology literature				
Eroglu et al. (2001; 2003)	Consider potential influences of the atmospheric qualities of an online store	<u>High-task relevant cues</u> * (cues enabling shopping goal attainment)		<u>Low task-relevant cues</u> (cues which do not directly affect task completion)
Rosen & Purinton (2004)	Develop the Web Preference Scale based on Kaplan and Kaplan's (1982) Preference Framework	<u>Coherence</u> - of the environment <u>Legibility</u> - distinctiveness		Complexity
Singh, et al. (2005)	Develop theory of web page perceptions	Coherence		Mystery Diversity
<i>Notes.</i> Elements of the typologies which do not relate to the environment per se (e.g. service, transaction, fulfilling) are omitted from the table. The labels used in the studies to describe a dimension are underlined. *: where a study mentioned a category containing cues or features applicable to more than one dimension, they are featured in all relevant columns.				

The third category, found in 21 categorisations, concerns the involving qualities of the environment. It contains a number of quite distinct concepts, such as 'aesthetic design', 'playfulness', 'entertainment' or 'flow'. A distinction can be discerned between visual, two-dimensional aspects such as 'design', 'visual appeal' and 'appearance' on the one hand, and more experiential, three-dimensional elements such as 'entertainment', 'playfulness' or 'sensation' on the other hand. The distinction could reflect two different aspects of website perception: one (visual) could be of the page currently on the screen; the other (experiential) could be of the succession of pages called up by means of following hyperlinks, clicking on a part of the navigation bar or typing in searches. This succession of pages, in the mind of the shopper, can constitute an experience, which takes place over a period of time. It is also conceivable that the same two aspects exist when shoppers assess the ease of understanding of the site: the assessment of ease of understanding of a page could be different from the assessment of the ease of understanding of the site as represented in the consumers' mind by the succession of pages visited. However, this distinction is not apparent in the literature.

Further consideration of the review reveals that these three broad categories are not present to the same degree in each of the literatures. Table 3-4 (page 125) shows that the services marketing literature has focused more on ease of understanding and informativeness than on involving qualities, reflecting the discipline's more functional approach to consumer behaviour, as noted by Bauer et al. (2006). Other services marketing authors such as Parasuraman et al. (2005) have deliberately excluded hedonic aspects from the domain of service quality. The information systems literature has followed a similar trend, focusing more on the same two dimensions of ease of understanding and informativeness. On the other hand, the categorisations based on the experiential and the environmental psychology literatures have focused more on ease of understanding and involving qualities than on informativeness. This reflects the more traditional focus of these literatures, in offline environments, along the utilitarian/hedonic line, and the lesser importance, in offline shopping environments, of information.

Table 3-4: Number of studies in each literature, which have identified constructs in each major category

	Number of studies	Ease of understanding	Informativeness	Involving qualities
Services marketing	11	10	8	6
Information systems	12	11	11	8
Experiential	4	3	1	4
Environmental psychology	3	3	0	3
Total	30	27	20	21

When reviewing the 30 studies, the observation made by Turley and Milliman (2000) about research on offline shopping environments that many studies were “a-theoretical” seems to also apply to many studies online, which have identified dimensions but do not explain ‘how’ or ‘why’ consumers might perceive them. A number of theories have nevertheless been suggested. Eroglu et al. (2001; 2003), have proposed a distinction between high- and low-task relevant cues. High task-relevant cues are those which are central to helping consumers achieve their goals, and low task-relevant cues are those which are more peripheral. This categorisation is based on the dichotomy between central and peripheral cues found to lead to different routes to persuasion in the marketing communication literature (Petty and Cacioppo 1986). Thus defined however, specific cues might be high-task relevant for some shoppers, while they might be low-task relevant for other shoppers, depending on their motives for visiting the website. Huang’s (2005) hedonic and utilitarian dimensions are based on two information systems theories and two marketing theories. However, the dimensions are evaluative rather than perceptual, and as such do not enable marketers to consider the possible organismic responses to perceptions.

3.1.1.3 Applications of the Preference Framework to the Online Context

Two recent studies (Rosen and Purinton 2004; Singh et al. 2005) have considered the relevance of Kaplan and Kaplan’s (1982) Preference Framework to the online shopping context, with promising results. Kaplan and Kaplan’s (1982) Preference Framework suggests that people perceive environments based on their two fundamental

informational needs, which exist concurrently: the need to make sense of the environment and the need to explore it. Further, the Framework distinguishes between two kinds of environmental information: immediate attributes and those which are inferred from a scene and give clues as to what the environment might yield if it were entered into. When sense-making and exploration are combined with immediate and future promise, four determinants of preference can be identified. Coherence enables immediate sense-making, complexity enables immediate exploration while legibility offers the promise of making sense in the future and mystery offers the promise of exploration in the future. These four informational qualities are represented in the 2 x 2 matrix in Table 3-5.

Table 3-5: Kaplan and Kaplan's (1982) Preference Framework

		Availability of environmental information	
		Current or immediate	Future or promised
Informational need fulfilled	Sense-making	Coherence	Legibility
	Exploration, involvement	Complexity	Mystery

Source: Kaplan (1992, p.587)

Rosen and Purinton (2004) aimed to develop a Web Preference Scale based on Kaplan and Kaplan's (1982) framework. Using exploratory factor analysis on 2,035 responses collected from a sample of 211 students, they were able to surface three of Kaplan and Kaplan's (1982) four attributes: coherence, complexity and legibility. The 'mystery' dimension did not emerge as a factor. They also found that favourable perceptions of each of these attributes led to greater overall impressions of the site and greater probability of revisit. The availability of future information was conceptualised as the longer-term possibilities which consumers can infer from a web page (such as a site map to make navigation easier, or more 'mysterious', less automatic links between pages). In their discussion, they wonder whether mystery is a desired attribute online where, they say, time is of the essence. They propose instead a fourth dimension of flow or engagement.

It may, indeed, be that the distinction between immediate and future promise is less applicable in a computer-mediated environment, since at any point in time the scene

visible to the consumer is two-dimensional, and a sense of the 'depth' or future promise of the site can only really be gotten by navigating through several pages. Complexity, therefore, may not be distinguishable from mystery, nor legibility from coherence. Rosen and Purinton's (2004) proposed new dimension of flow or engagement could capture the experience of the website as a succession of web pages. Thus, complexity would capture exploration at the immediate page level, and flow/engagement would capture exploration at the overall site navigation level. The possibility of such a distinction between the page level and the site experience level was already raised during the review of the extant categorisations (see the discussion on the category of involving qualities, part of Section 3.1.1.2, page 124). Note that this distinction between page-level and site-level perceptions would also make conceptual sense when considering sense-making attributes, but is it not discussed in Rosen and Purinton's study (2004).

Singh et al. (2005) used structural equation modelling to test the hypothesis that liking for a home page and behavioural intention could be explained by two higher-order constructs: the understanding of information and web page involvement. Understanding of information was developed to reflect the need to make sense, and web page involvement to reflect the need to explore. Kaplan and Kaplan (1982) have used exploration and involvement interchangeably. The results provided support for this model, but the existence of understanding of information as a second-order construct could not be tested, since one of Kaplan and Kaplan's (1982) original constructs (legibility) could not be developed into a scale. Singh et al.'s (2005) analysis focused on the perception of a single page (the home page). However, in practice shoppers rarely stop on the home page for more than a few seconds before quickly navigating through other pages. Other shoppers never see the home page, when search engines or recommendations from other sites take them directly to a page inside the site. It appears more appropriate, considering the manner in which retail websites are navigated and experienced, to use entire websites (or, in practice, the succession of pages a shopper visits) as the unit of analysis.

Furthermore, neither study accounts for the particular role of information in OSEs. Yet, compared to their brick and mortar counterparts, online retailers have the opportunity of storing on their site a quasi-unlimited amount of information about their products, which

can be accessed on demand by shoppers, enabling them to delve further into product attributes, performance, origins etc. Humans can use environments for a variety of reasons (because they have to go through them to go to work, because they enjoy a stroll in a forest etc.), but information seeking about the contents of the environment is not always a need. This is different in the online shopping context, where in the absence of physical products, shoppers seek information to learn about products. This goal is equally present among shoppers who aim to make a purchase and those who are just browsing out of interest or involvement with a certain product category (Bloch et al. 1989). It is likely that online shoppers prefer OSEs which contain the sought-after information, as also suggested by the review of studies investigating the key attributes of OSEs (see Table 3-3, page 120). Table 3-6 (page 129) summarises the main findings and the critique of these studies.

To summarise the review of the extant literature on categorisations of OSEs, several points seem pertinent. Firstly, many of the categorisations have concerned themselves with identifying dimensions rather than providing a theoretical explanation of why they were important to consumers and how they impacted on consumer responses. The one theory which has been applied with some success is Kaplan and Kaplan's (1982) Preference Framework. Secondly, Kaplan and Kaplan's (1982) distinction between sense-making and exploratory attributes is consistent with the ease of understanding and involving dimensions uncovered in the literature. Thirdly, Kaplan and Kaplan's (1982) original distinction between the attributes which can be immediately perceived and those which can be inferred from a scene does not apply to OSEs. However, it may be re-conceptualised as the distinction between the attributes of the page immediately present on the screen and those inferred from the succession of pages visited during one shopping navigation. This distinction is present among the involving dimensions investigated by the studies reviewed. It is not apparent among the ease of understanding dimensions, even though it also makes conceptual sense.

Table 3-6: Studies of OSEs which have used Kaplan and Kaplan's Preference Framework

Studies	Study aims	Constructs uncovered	Consequences	Critique
Rosen and Purinton (2004)	To develop a Web Preference Scale (WSPS) based on the Preference Framework	Coherence Complexity Legibility	All three dimensions correlate with overall impression of the site and likelihood of revisit	<ol style="list-style-type: none"> 1. Does not take account of the role of information in OSEs. 2. Authors question existence of mystery, and propose instead that flow/engagement captures inferred exploration potential, thus suggesting distinction between page-level and site-level perceptions. 3. This distinction, which would also make conceptual sense for sense-making attributes, is not evoked.
Singh et al. (2005)	To develop a theoretical model able to explain user reactions at the 'molar' level.	Coherence Web page involvement (consisting of the dimensions of diversity and mystery)	Coherence → attitude towards the web page Web page involvement → attitude towards the web page, behavioural intentions	<ol style="list-style-type: none"> 1. Uncovers the existence of a higher-order structure between individual attribute and informational need (web page involvement). 2. Home page as the unit of analysis, yet many shoppers spend little or no time on the home page 3. Perceptions of a website cannot be considered through a single page as the succession of pages is a fundamental part of the shopping experience 4. Does not take account of the role of information in OSEs.

Fourthly, as suggested by many of the studies, the informativeness of OSEs is likely to be a crucial attribute of OSEs in view of the information-seeking motivations of all shoppers and of the 'raison d'être' of retail websites as providers of product information. Fifthly, the two studies (Rosen and Purinton 2004; Singh et al. 2005) of OSEs based on Kaplan and Kaplan's (1982) Preference Framework have shown promising results as to the pertinence of this theory in the context of OSEs, and suggest that this area deserves further development. In particular, Singh et al. (2005) suggest extending the model and methods they used to entire websites. Both Rosen and Purinton (2004) and Singh et al. (2005) highlight the involving or engaging qualities of retail websites as a promising area worth further investigating, and both groups of authors point to the presence of similar constructs in several literatures.

3.1.2 The case for a gestalt approach

Turley and Milliman (2000), in their review of the literature on offline shopping environments, voiced the need for theory at a more "macro level", which would explain how consumers process the entire atmosphere, noting that it can at times send "competing" or "deviant" messages. This call for a macro level approach is at least as applicable online, especially since the role of specific cues may be more difficult to isolate online, where cues are nothing more, in essence, than a series of pixels combined to produce the impression of an environment on the screen.

Gestalt psychologists have long argued that consumers form overall impressions of consumption objects (see Chapter 2, Section 2.9.2.2.2, page 105). Furthermore, several of the lenses used to consider the online shopping experiences suggested that in a first instance, consumers consider OSEs holistically, before they are able to locate the individual elements to which they then turn their attention. Holistic processing can occur in situations of affective involvement (see Chapter 2, Section 2.5.2, page 53) and complexity (see Chapter 2, Section 2.6.3, page 66). Similarly, Ohno's (1985; 2000) dual model of environmental perception (also discussed as part of Section 2.9.1.2, on page 97) suggests that ambient perception, which is holistic, happens before focal perception,

which focuses the person's cognition on specific elements and eliminates the peripheral, unwanted elements. Using Ohno's (1985; 2000) theory, Morin et al. (2007) found that changes to individual elements of servicescapes only affected consumers insofar as their perceptions of the servicescape was altered. This is consistent with the model developed by Bitner (1992), which conceptualised consumer responses as derived from the holistic environment rather than individual cues. The point was also made in Chapter 2 (Section 2.9.2.2.2, page 105) that OSEs may be processed more holistically than their offline counterparts because cues online are just a series of pixels, and, therefore, it is harder for the human mind to distinguish between them and process them individually.

Other studies have provided empirical support to the gestalt approach. Zimmer and Golden (1988), in their study of consumer images of retail stores, found that consumers form global impressions of stores by integrating information, in addition to their evaluations of specific features. A gestalt approach was also used by Mattila and Wirtz (2001) to show that consumers perceive servicescapes holistically, and that stimuli should not be considered in isolation. Gestalt psychology's principles regarding visual organisation have also been investigated in the context of interface design (Donderi 2006; Ngo et al. 2002).

Pursuing the same theoretical path, this study adopts a gestalt approach to conceptualise consumer perceptions of OSEs, as a necessary foundation to understanding how consumers might react to them. It pursues the initial, promising work of Rosen and Purinton (2004) and Singh et al. (2005) in using Kaplan and Kaplan's Preference Framework as a conceptual underpinning to explain how consumers perceive OSEs.

3.1.3 Extending the Preference Framework

A review of the two studies of OSEs which used Kaplan and Kaplan's (1982) Framework (see Section 3.1.1.3, page 125) has highlighted the potential of the Framework to explain how OSEs are perceived, while suggesting that future/promised information could be re-conceptualised and that product information was likely to be a differentiating attribute as

consumers perceive and come to grips with OSEs. The purpose of this section is to propose an extended Preference Framework, taking these two points into consideration.

Kaplan and Kaplan (1982) organise attributes on the basis of whether they help people make sense of the environment or enable them to explore it. In the context of OSEs, sense-making attributes are conceptualised here as those which enable shoppers to grasp the content and organisation of the pages (or scenes) presented to them, as well as the interconnections between the individual pages they visit (the site). The exploratory attributes are conceptualised here as those which suggest abundance to the shopper and invite deeper examination. In an online shopping context, these attributes concern both the sensorial 'landscape' of the page and the site and its provision of the desired shopping-related information. For example, such cues as navigation buttons, the overall clarity or clutter of screens, product information, transactions and shipping information enable consumers to make sense of the environment, its products and the transactions they are engaged in. On the other hand, cues such as the visual attractiveness of the pages, icons and layouts which convey the feeling of shopping, hyperlinks to more information, user reviews, encourage consumers to further explore the environment.

Kaplan and Kaplan (1982) also distinguish between two-dimensional, immediate and more three-dimensional, future-oriented perceptual attributes. In the context of OSEs, two-dimensional attributes are conceptualised here as those which are perceived at the level of an individual page as it is called up on the computer screen. The three-dimensional attributes are conceptualised as those which are perceived at the level of the navigation through a trail of individual pages, during the experience of one site visit.

Further, inherent to people's motives to visit OSEs is the search for product-related information, and therefore it is proposed that the exploratory potential of websites consists not only of 'spatial' attributes, but also of 'informational' attributes. Information diversity is defined as the ability of the website to provide the consumer with a varied range of relevant product-related information. Table 3-7 (page 133) shows how it is proposed to extend Kaplan and Kaplan's (1982) original Preference Framework to OSEs.

Table 3-7: Proposed extension to Kaplan and Kaplan's Preference Framework for OSEs

Kaplan and Kaplan's (1982) Preference Framework				Proposed extended Preference Framework for OSEs			
		Availability of environmental information		Availability of:			Product-related information
		Current or immediate	Future or promised	Spatial information			
		Coherence	Legibility	Page level	Website level		
Informational need fulfilled	Sense-making			Sense-making	Page-level sense-making potential	Website-level sense-making potential	
	Exploration, Involvement				Page-level exploratory potential	Website-level exploratory potential	Information diversity (marketer informativeness, non-marketer informativeness)

Grey shading indicates the part of the extended framework which exists in Kaplan and Kaplan's Framework.

3.1.4 Consumer perceptions of online shopping environments – Propositions

Based on the conceptualisation developed in the last section, individual attributes are now defined. The two fundamental attributes of sense-making and exploration, corresponding to man's two main needs in an environment, are conceptualised as two higher-order constructs, which are reflected in the six attributes described below, as follows: sense-making potential consists of the perceptions of page clarity and site architecture, and exploratory potential consists of the spatial perceptions of visual impact, experiential intensity, and the product information-related perceptions of marketer informativeness and non-marketer informativeness.

3.1.4.1 Sense-making attributes

Page clarity is defined as *"the ease with which one can grasp the organisation of the scene"* (Kaplan 1992), or more specifically the web page. It helps shoppers make sense of the OSE at the two-dimensional level of the individual page. It corresponds to Kaplan and Kaplan's (1982) coherence attribute. Examples of cues contributing to Page clarity include the organisation of information on the screen, the overall amount of 'clear space' on the page, the cohesion of the page's various components.

Site architecture is defined as *the shoppers' perception of the organisation of the different pages of the website as a coherent, understandable whole*. It helps shoppers make sense of the OSE at the three-dimensional level of the entire website visit. It eases orientation, wayfinding and information finding. It corresponds to Kaplan and Kaplan's (1982) legibility attribute. Examples of cues contributing to Site architecture include navigation aids, site maps, intuitiveness of the directions and hyperlinks, etc.

3.1.4.2 Exploratory potential attributes

3.1.4.2.1 Spatial exploration

Visual impact is defined as *the attention-grabbing, aesthetic visual diversity of individual web pages*. It invites *shoppers* to explore and delve into the scene of individual pages and corresponds to Kaplan and Kaplan's (1982) complexity attribute. Examples of cues contributing to Visual impact would be include the colour scheme of a page, the manner in which it blends text and visual elements, the layout of the page.

Experiential intensity is defined as *the ability of the website to produce an involving shopping experience*. It invites shoppers to further explore the site at the three-dimensional level, by visiting more pages. It corresponds to Kaplan and Kaplan's (1982) mystery attribute. Examples of cues contributing to Experiential intensity include elements such as shopping carts, wish lists, checkout icons reminiscent of offline shopping experiences, the ability to try clothes out on a mannequin, the ability to see the inside pages of a book, the ability to see a product from a different angle or experience some of its functions by clicking on a specific part of the screen etc.

3.1.4.2.2 Information diversity

Marketer informativeness is defined as *the extensiveness of marketer information available on the site*. It enables shoppers to further explore their shopping interests or needs by learning more about product features, by viewing products, and possibly manipulating them virtually, thus 'experiencing' them. This attribute has no equivalent in Kaplan and Kaplan's (1982) framework. Examples of cues contributing to Marketer informativeness include product descriptions, photographs of different angles of the product, a video of the product used in context, options to download selected tracks on a new CD, etc.

Non-marketer informativeness is defined as *the extensiveness of information available on the site, which originates from non-marketer sources*. Examples of cues contributing to non-marketer

informativeness are product comments posted by users, product reviews written by opinion formers such as journalists or experts. Non-marketer informativeness also helps shoppers further explore their shopping interests, by enabling them to access additional information on the object of their interests. It is distinguished from marketer informativeness because the source of messages (marketer vs. non-marketer) is an important determinant of its credibility and trustworthiness (Gotlieb and Sarel 1992; Kelman 1961). Non-marketer sources are likely to be more credible since consumers assume that the third party does not have a vested interest in the product. They can, therefore, invite further exploration beyond marketer informativeness, perhaps touching on elements which marketers have chosen not to highlight if they did not compare favourably with competing products. It is reasonable therefore to consider both marketer information and non-marketer information as distinct exploratory attributes.

The perceptual attributes developed can also be linked back to the cues and dimensions which make up the categorisations reviewed in Section 3.1.1.2 (page 118). At the higher level, sense-making potential is related to the ease of understanding category, exploratory potential to involving qualities, and information diversity to the informativeness category. Table 3-8 (page 137) shows the constructs developed above, their definitions and their links with Kaplan and Kaplan's (1982) Preference Framework and the attributes investigated in the studies reviewed.

The distinction between sense-making and exploratory potential shares traits with the Technology Acceptance Model (Davis Jr 1989), whose two main constructs, ease of use and usefulness, are conceptually close to sense-making and exploratory potential respectively. Liang and Lai (2002) distinguish between hygiene factors and motivators to describe the difference between the elements of the website which alleviate shoppers' concerns, and those which lead the shopper to decide on one online store over the other. Similarly, Rossiter and Percy (1987) distinguish between products with hygienic characteristics (solving problems) and those with motivational characteristics (enriching meaning). A parallel may be drawn between the problem solving characteristics of a product and the sense-making attributes of an environment, and between meaning enrichment qualities and exploratory attributes.

Table 3-8: Links between the constructs developed in this study with constructs in the Preference Framework and dimensions identified by other scholars

Constructs in this study (higher-order constructs in bold black/attributes in blue)	Constructs of the Preference Framework (Kaplan and Kaplan, 1982)	Dimensions identified during literature review (broad category in bold/dimensions in plain)
Sense-making potential		Ease of understanding
Page clarity: "the ease with which one can grasp the organization of the scene" (Kaplan 1992).	Legibility	Technical adequacy, design, website design, web appearance, efficiency, utilitarian performance, system design quality, site design, high-task relevant cues, ease of use, usability, ease of understanding, web store functionality, intuitive operation, site organisation, navigation/organisation
Site architecture: the shoppers' perception of the organisation of the different pages of the website as a coherent, understandable whole	Coherence	
Exploratory potential		
Spatial exploration		Involving qualities
Visual impact: The attention-grabbing, aesthetic visual diversity of individual web pages.	Complexity	Appearance, sensation, entertainment, hedonic performance, playfulness, low-task relevant cues, aesthetic design, visual appeal, innovativeness, interactivity, flow
Experiential intensity: The ability of the website to produce an involving shopping experience	Mystery	
Information diversity		Informativeness
Marketer informativeness: the extensiveness of marketer information available on the site	(not present)	Product information, information and service quality, information, product attribute description, information fit to task, information/content, informativeness, specific content, content quality, information content, website design
Non-marketer informativeness: the extensiveness of information available on the site, which originates from non-marketer sources	(not present)	

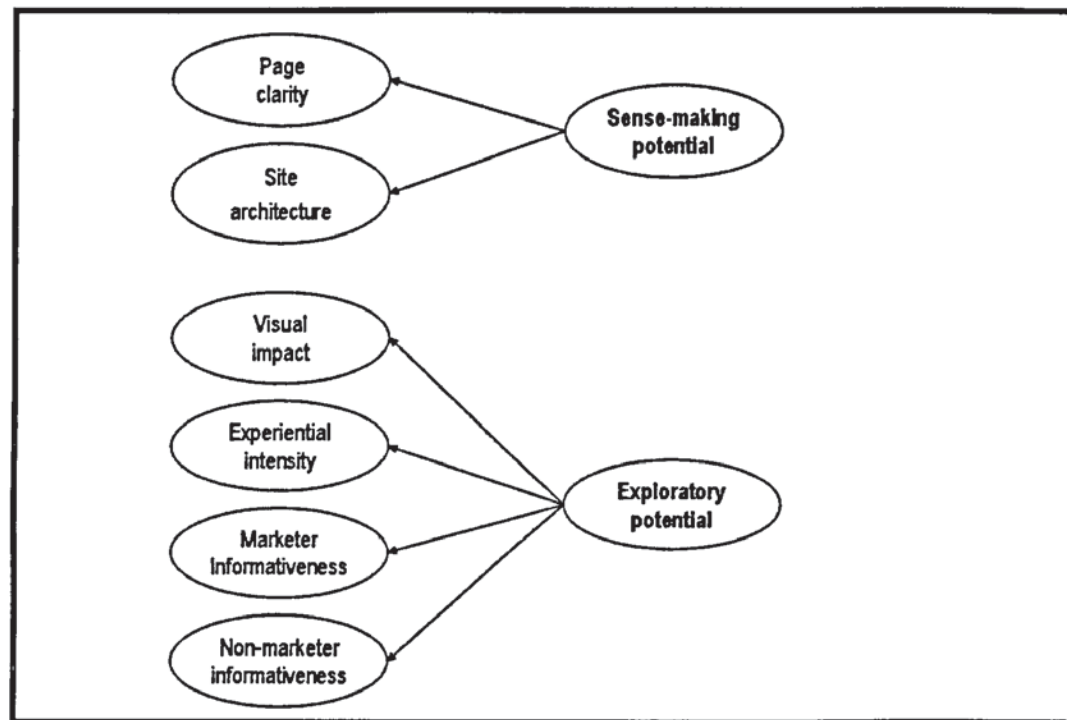
Structurally, it is proposed that the essential perceptions of exploratory and sense-making potential drive the individual perceptual attributes. This hierarchical relationship underlies Kaplan and Kaplan's (1982) original model, and was also used successfully in Singh et al's (2005) empirical study. Thus, it is proposed that:

P1: Perceptions of Page clarity and Site architecture are explained by the Sense-making potential of an OSE.

P2: Perceptions of Visual impact, Experiential intensity, Marketer informativeness and Non-marketer informativeness are explained by the Exploratory potential of an OSE.

The relationships between the higher-order constructs and their underlying dimensions are represented graphically in Figure 3-2 (page 138).

Figure 3-2: Conceptual model, Part I – Conceptualising the attributes of OSEs



3.2 CONCEPTUAL MODEL PART II: HOW DO CONSUMERS RESPOND TO ONLINE SHOPPING ENVIRONMENTS?

This section now considers the impact which the two key attributes of OSEs, sense-making potential and exploratory potential, have on consumption behaviour.

3.2.1 Sense-making potential and value

Value is considered as a main outcome of shopping experiences (Babin et al. 1994; Holbrook 1986). People may shop to satisfy a variety of needs, some of which are independent of the acquisition of products (Bloch et al. 1989; Tauber 1972). Shopping value needs to encompass an appreciation of the whole shopping experience rather than just the success of the shopping trips with regard to product acquisition. The outcome of a shopping trip or navigation may result in both utilitarian and hedonic shopping value (Babin et al. 1994). Using Schechter's (1984) definition, **Shopping value** is "*all factors, both qualitative and quantitative, subjective and objective, that make up the complete shopping experience*". Further, Overby and Lee (2006) define **Utilitarian value** as "*an overall assessment of functional benefits and sacrifices*" (p. 1161) and **Hedonic value** as "*an overall assessment of experiential benefits and sacrifices, such as entertainment and escapism*" (p. 1161). These definitions are relevant to the context of online shopping, and they are adopted for the purpose of this study.

When consumers perceive the website to be easy to make sense of, they are likely to find products or product information more easily. As they accomplish what they set out to do, the navigation will likely produce some utilitarian value (Babin et al. 1994). Thus:

H1: The Sense-making potential of an OSE provides consumers with Utilitarian value.

3.2.2 Exploratory potential and value

The exploration of landscapes is involving (Kaplan and Kaplan 1982). Similarly, shopping navigations can be involving due to the medium's potential for interactivity and vividness (Fortin and Dholakia 2005). The exploratory potential of websites is involving. More complex information displays (Gammack and Hodgkinson 2003) and image interactivity (Kim et al. 2007b) increase attention and involvement. Content itself can increase levels of affective involvement (Fortin and Dholakia 2005). The involvement resulting from the exploration of a website's content can be both cognitive and affective (see Chapter 2, Section 2.5.3, page 56).

Exploratory potential can provide further product knowledge for its own sake, and be perceived as an intrinsically enjoyable experience. The mere presence of involvement suggests that the experience is hedonically rewarding (Bloch and Richins 1983). Consumers may be able to enjoy a lively interaction with the website or with the product without proceeding with a purchase, and this in itself can produce hedonic value (MacInnis and Price 1987). Thus:

H2: The Exploratory potential of an OSE is positively related to the production of Hedonic value.

Furthermore, the cognitive involvement elicited by the Exploratory potential of a website makes consumers pay more attention (Celsi and Olson 1988), which facilitates instrumental tasks (Hoffman and Novak 1996). Cognitively involved consumers are known to increase information processing abilities and search for more information (Beatty and Smith 1987). Further exploration of the site and interest in looking at more products and more information can lead consumers to find more suitable products, thus making the shopping trip more successful in utilitarian terms (Kroeber-Riel 1979). Thus:

H3: The Exploratory potential of an OSE is positively related to the production of Utilitarian value.

3.2.3 Site commitment

While the research concerns the emotional, cognitive and behavioural changes taking place within the duration of one single navigation, the actual impact of the OSE on consumer responses needs to be carried over to the next navigation to make business sense. Therefore, it is necessary to consider the likelihood of a future long-term relationship between the consumer and the website resulting from the navigation.

The outcome of an online shopping navigation can be expressed in terms of:

- The short-term result: has the consumer purchased any products during the navigation?
- The long-term result: has the online shopping navigation enhanced or decreased the consumer's desire to maintain a relationship with the site?

Obtaining consumer commitment as a result of any site navigation is important (Christopher, Payne and Ballantyne 2002). Commitment explains future behavioural intentions (Park and Kim 2003). It may even be more so online since consumers are less likely to 'stumble' into a shop online than in the high street or in a mall. Online retailers need to keep a customer for 1.1 year before breaking even (Mohammed et al. 2001), and acquiring an online customer has been estimated to cost US\$ 50-100 (Barsh, Crawford and Grosso 2000).

Considering the long-term outcome of a shopping navigation reflects a relationship marketing approach, which emphasises customer retention as its philosophy. In this perspective, each online shopping navigation is a 'moment of truth', the results of which will impact on the consumer's future intentions and behaviour. Similarly, the Behaviour Perspective Model (Foxall 1990) suggests that future behaviour is driven by the prospect of obtaining the same rewards which were obtained during the performing of past behaviours. Therefore, the more reinforcements or rewards a consumer receives from one navigation, the more committed that person will be to performing similar behaviours in future.

Whether the consumer has purchased or not during the navigation under study, the ongoing relationship between consumer and retail website – or absence thereof – is subject to the consumer's Site commitment. **Site commitment** is defined as *the degree to which the consumer is willing to remain associated with the retail website*. It indicates a future-focused assessment of a consumer's recent navigation, linking past and future behaviour.

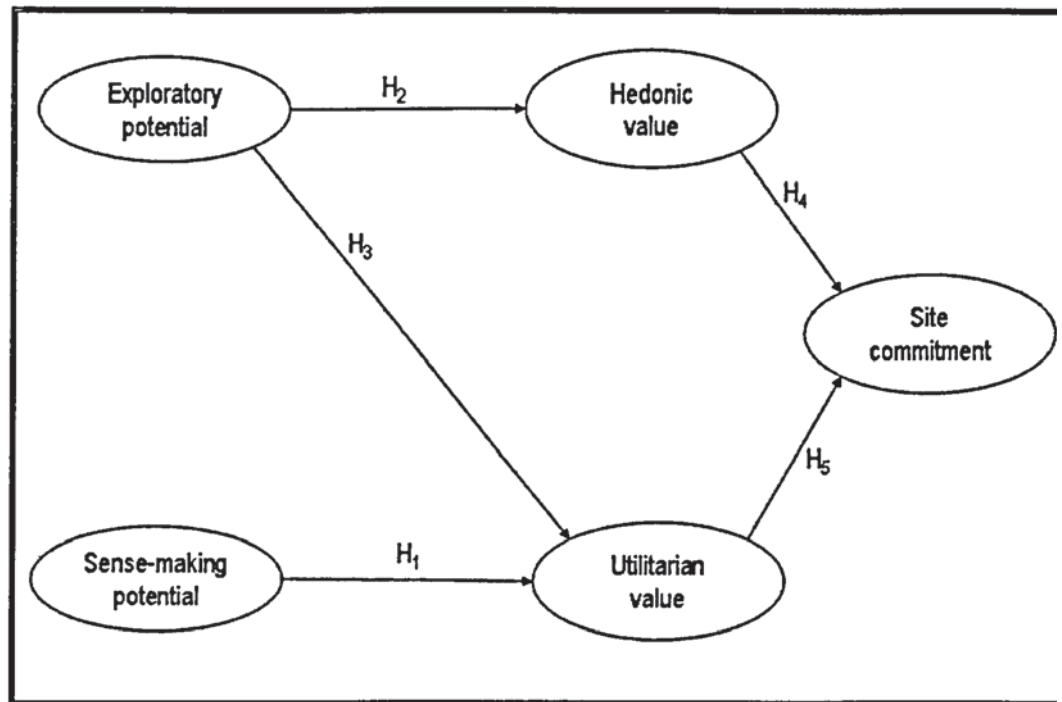
Because shopping value, whether hedonic or utilitarian, is a positive outcome and increases shopper satisfaction (Babin et al. 1994), it is likely to produce approach behaviours. Empirical results suggest that Utilitarian value is related to repatronage intentions, while Hedonic value is related to repatronage anticipation (Jones et al. 2006). Therefore the following hypotheses are formulated:

H4: Hedonic value drawn from navigating an OSE is positively related to Site commitment.

H5: Utilitarian value drawn from navigating an OSE is positively related to Site commitment.

3.2.4 Conceptual model

The five hypotheses derived can be summarised in the conceptual model shown diagrammatically in Figure 3-3 (page 143).

Figure 3-3: Conceptual model, Part II – Consumption reactions to OSEs

3.3 SUMMARY

This chapter, upon reviewing extant typologies of shopping environments, made the case for a gestalt approach to how consumers perceive OSEs. Then, extending Kaplan and Kaplan's (1982) Preference Framework, it identified two key attributes on OSEs and their dimensions, which reflected the need to make sense and the need to explore both the environment and the product-related information. Two propositions were derived, and are represented in Figure 3-2 (page 138). These were then linked, based on the review of the literature carried out in Chapter 2, to consumer responses. In the process, a series of five hypotheses were developed, as summarised in a graphical representation of this research's conceptual model in Figure 3-3. The next part of this thesis deals with the design adopted to test this model (Chapter 4), the development and validation of the model's measures (Chapter 5), the testing of the propositions pertaining to the perceptual attributes of OSEs (Chapter 6), and finally the testing of the nomological network (Chapter 7).

CHAPTER 4: METHODOLOGY

4.0 INTRODUCTION

The last chapter developed a conceptual model and outlined a set of propositions and hypotheses concerning the manner in which consumers perceive and consume online shopping environments (OSEs). They are summarised below in Table 4-1. This chapter outlines the methodology employed to test these. Its main objectives are:

1. to provide an overview of the four studies undertaken and justify the philosophical stance adopted;
2. to outline the data collection strategy;
3. to present and justify the data analysis strategy;
4. to consider the study's main sources of error and limitations.

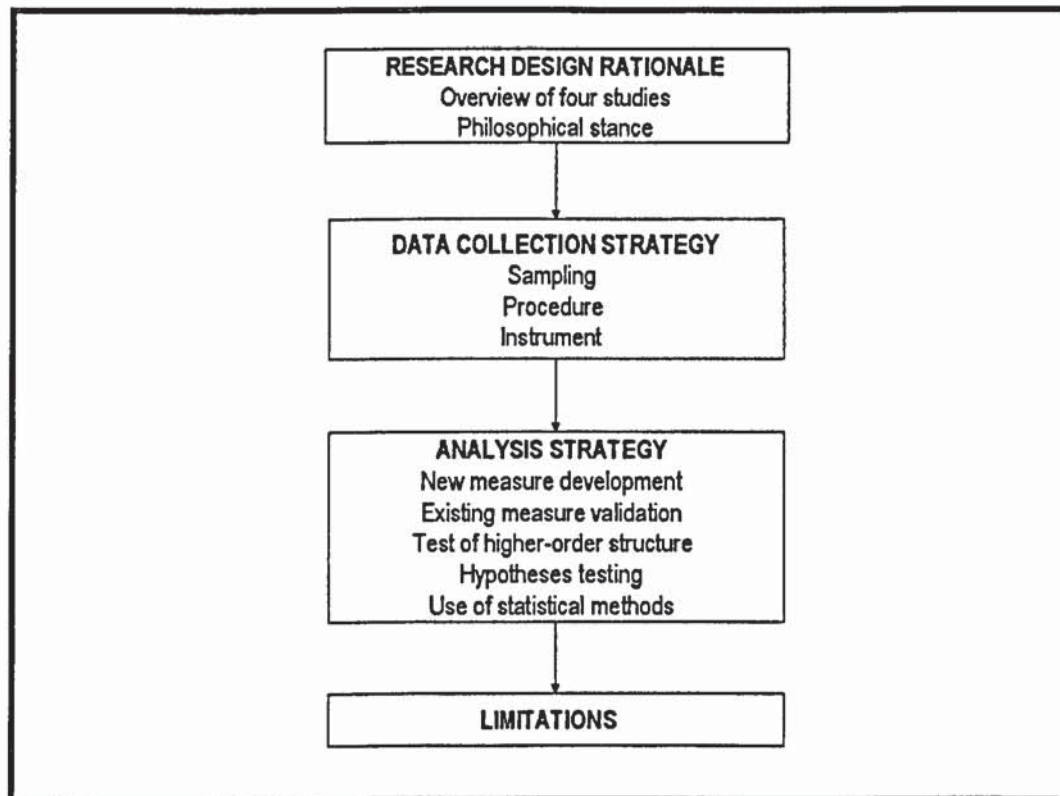
Table 4-1: Summary of the propositions and hypotheses developed for this study

Proposition 1	Perceptions of Page clarity and Site architecture are explained by the Sense-making potential of an OSE.
Proposition 2	Perceptions of Visual impact, Experiential intensity, Marketer informativeness and Non-marketer informativeness are explained by the Exploratory potential of an OSE.
Hypothesis 1	The Sense-making potential of an OSE provides the consumer with Utilitarian value.
Hypothesis 2	The Exploratory potential of an OSE is positively related to the production of Hedonic value.
Hypothesis 3	The Exploratory potential of an OSE is positively related to the production of Utilitarian value.
Hypothesis 4	Hedonic value drawn from navigating an OSE is positively related to Site commitment.
Hypothesis 5	Utilitarian value drawn from navigating an OSE is positively related to Site commitment.

The chapter is organised as follows: Section 4.1 (page 145) presents an overview of the four studies conducted to meet the objectives of this study, before justifying the research's philosophical stance; Section 4.2 (page 152) presents the main study's data collection strategy; Section 4.3 (page 164) details the analysis strategy used to ascertain the validity of the hypotheses; finally, Section 4.4 (page 198) reviews the actions taken to

minimise sources of bias and error, while acknowledging limitations. The organisation of the chapter is summarised in Figure 4-1.

Figure 4-1: Overview of Chapter Four



4.1 RESEARCH DESIGN RATIONALE

4.1.1 Overview of the studies

4.1.1.1 Study 1: *Think alouds and think afters*

Study 1, an exploratory study, consisted of collecting data from 19 informants, who were required to think aloud as they navigated a specific online bookstore (the Bookplace and, when its server was down, the Internet Bookshop) for three segments of 5 minutes each. Following each navigation segment, semi-structured interviews (think afters) took place,

enabling the researcher to probe specific parts of the think alouds and obtain further insights into the informants' feelings and beliefs. Each informant spent about one hour with the researcher. Think alouds enable the capture of both cognition and affect during the activity (Ericsson and Simon 1993), while interviews (which in effect were 'think afters') enable the exploration of meanings and the elaboration on reactions (Branch 2000).

This exploratory study, which captured perceptions of and reactions to OSEs 'in situ', fulfilled two aims. First, it enabled the researcher to triangulate initial hypotheses derived from the study of several literatures, in particular the proposition that OSEs are initially perceived holistically. Second, it provided the researcher with a pool of terminology and situations exemplifying the experience of consumers with OSEs. This material was used for the development of measures for the main study (see Section 4.3.1.1.2, page 170).

4.1.1.2 Study 2: Expert judging – measure development

Study 2 contributed to the development of psychometrically sound measures, by engaging a sample of 9 experts to sort items based on operational definitions of the constructs, and provide feedback on the wording of items. The experts were academics and doctoral students in the field of marketing.

4.1.1.3 Study 3: Pretest

A pretest was run on a convenience sample of 39 students. The pretest consisted of administering a pilot questionnaire to respondents immediately after they had navigated a specific website. On completion of the navigation and the questionnaire, respondents were invited to provide feedback on any aspect of the procedure and the questionnaire. The pretest acted as a 'dress rehearsal' to the main study. It fulfilled two aims: first, to trial the overall administration procedure; and second, to further refine the questionnaire, in particular eliminating or rewording items which displayed poor correlations with other items purported to load on the same factor.

4.1.1.4 Main study

The main study of this project took the form of a survey, consisting of a pen-and-paper questionnaire which respondents were asked to complete immediately after the 8-minute navigation of a specific online bookstore. The sample consisted of 301 online shoppers, who were all students or staff of a British university. The main study's three main aims were:

1. to purify and validate all measures;
2. to test the propositions developed about the existence of a higher-order structure to categorise attributes of OSEs;
3. to test the hypotheses developed concerning the impact of OSE perceptions on shopping value and site commitment.

Studies 1-3 are discussed in more detail as the analysis strategy aim they were carried out for is discussed. Thus, Study 1 is referred to in Section 4.3.1.1.2 (page 170), Study 2 is discussed in Section 4.3.1.1.3 (page 171) and Study 3 is covered in Section 4.3.1.1.4 (page 172). The main study's data collection strategy is covered in more depth in Section 4.2 (page 152). The studies are summarised in Table 4-2 (page 148).

4.1.2 Philosophical stance: Consumer behaviour and paradigms

Paradigms are sets of assumptions about the way things work, which a discipline's scholars of a certain time period tend to share. They constitute a 'perspective' (Foxall 2005). They are important to consider at the start of an enquiry because each paradigm will lead the researcher to give more importance to certain questions, routes of enquiry and explanations, over others. This section identifies the perspective which each of the two main paradigms of psychology, the discipline from which marketing draws to explain the particular kind of human behaviour which is consumer behaviour, would give to the current research enquiry.

Table 4-2: Overview of the studies carried out in the context of this research

Study	Aim	Nature of study, sample size
Study 1: Think alouds and think afters	1. To triangulate hypotheses, developed from the literature 2. To contribute to the development of scale items	Qualitative – think alouds as respondents navigated an OSE, followed by think afters (semi-structured interviews). 19 respondents.
Study 2: Expert judging	To develop measures	Sorting task, allocating items to different constructs. 9 expert judges.
Study 3: Pretest	1. To purify measures 2. To pilot main study's administration procedure	Pre-test survey, following the 5-minute navigation of an OSE. 39 respondents.
Study 4 (main study): Survey	1. To further purify and validate the model's measures 2. To test the research's propositions and hypotheses.	Survey (pen and paper questionnaire) following the 8-minute navigation of an OSE. 301 respondents. [NB: measures were purified on one-half of this sample, and validated on the other half].

In psychology, two main paradigms co-exist: the cognitive and the behaviourist paradigms. Historically, the behaviourist paradigm, best known through the work of Skinner (1953; 1969) was dominant from the 1910s to the 1960s, after which the cognitivist paradigm became the most commonly used perspective with which to explain psychological phenomena. The marketing field has followed the same trend.

The main difference between cognitivist and behaviourist perspectives in consumer behaviour lies in their beliefs of what causes consumers to behave the way they do. For a cognitivist, consumer behaviour can be explained by such intra-organic processes as beliefs, attitudes and intentions going on in the mind of consumers when they are confronted with stimuli and situations. Therefore, it is mental activity which 'drives' behaviour. Convergent with the cognitive perspective is the view that advertising's role is to influence consumers' beliefs and attitudes, so that these in turn can drive the desired behaviour. According to cognitivists, a marketer's main challenge is to act on, and change, attitudes. This view however does not account for why attitudes often only occur *after* behaviour (such as after a product has been purchased and consumed).

On the other hand, for a behaviourist, consumer behaviour is a consequence of past behaviour and the kind of reinforcement it produced: consumers choose to perform a behaviour on the basis on their knowledge of the consequences which that particular behaviour will engender for them, in the form of positive or negative reinforcement. According to behaviourists, a marketer's key challenge is to 'shape' behaviour by reinforcing desirable behaviours. Central to the behaviourist's perspective are the elements outside of the individual consumer, such as the environment, the situation, or past behaviour. For a behaviourist, a marketer's main intervention opportunity therefore lies in the production of stimuli and reinforcements when the behaviour is happening (for example when a consumer is trying a product), with a view to engineering further behaviours, whereas for a cognitivist, marketers needs to intervene prior to consumption (for example when a consumer is deciding whether to purchase a certain kind of product, or which brand to purchase). Behaviourists do not deny the existence of mental processes and activities, but consider them as private events or behaviours themselves. For example, attitudes about a product can be formed as a product is consumed. In fact, they are stronger since behaviour (consumption) provides very reliable information (Stayman and Kardes 1992).

While some may argue that both paradigms are antithetical, others (Nord and Peter 1980; Rothschild and Gaidis 1981) offer the view that each paradigm may be more appropriate to specific situations. For example, Rothschild and Gaidis (1981) suggest that a behaviourist approach may be more suited and more parsimonious in situations of low involvement, when consumers allocate limited mental activity to a consumption situation. On the other hand, a cognitive approach would be more suited in situations of high involvement, when more sophisticated mental activity is likely to exist. Still other authors (e.g. Foxall 2005) argue that one paradigm is altogether more efficient at explaining consumer behaviour, but would gain from being augmented with aspects of the other paradigm.

The point here is to consider the perspective each paradigm would lend to the research problem at hand. The main research aim: to establish how OSE attributes work together holistically to produce desirable consumer responses, appears to have a distinct

behaviourist slant for two reasons: (1) it asks how stimuli external to the consumer can be manipulated to produce a desirable consumer behaviour and (2) it deals with behaviour as a starting point, able to drive further behaviour: by navigating a retail website, consumers are already consuming it, and therefore performing the behaviour. Therefore, using Rothschild and Gaidis' (1981) overview model of learning theory in marketing (reproduced here in Figure 4-2, page 151) the research aim can be conceived to focus on the relationship between R_2 and S_2 with R_2 representing the initial navigation, and S_2 representing the bundle of attributes of the product, i.e. the OSE. From that perspective, the phenomenon under observation can be described as 'What kind of attributes does the initial navigation of an OSE need to have, in order to produce the reinforcements (or satisfaction) which will increase the probability of repeat behaviour in the form of further visits to the site?'

Alternatively, taking now a cognitivist perspective, the same main research aim can be conceived to focus on the kind of organismic responses which would mediate the relationship between the environment's stimuli and behaviour. From that perspective, the phenomenon can be described as 'How are OSEs perceived by consumers as a whole, and in turn, how do these perceptions affect behaviour?' The idea that the nervous system creates an integrated, unified perception of disparate external stimuli, where 'the sum is more than the sum of its parts', was a fundamental element of Gestalt theory (Kohler 1947). From that perspective, the focus moves away from the external, objective stimuli, towards the representation, in the consumer's mind, of the stimuli combined together. The enquiry would subsequently need to establish how this representation (or organismic response) influences consumer responses.

Figure 4-2: Learning theory in a marketing context

Source: Rothschild and Gaidis, 1981

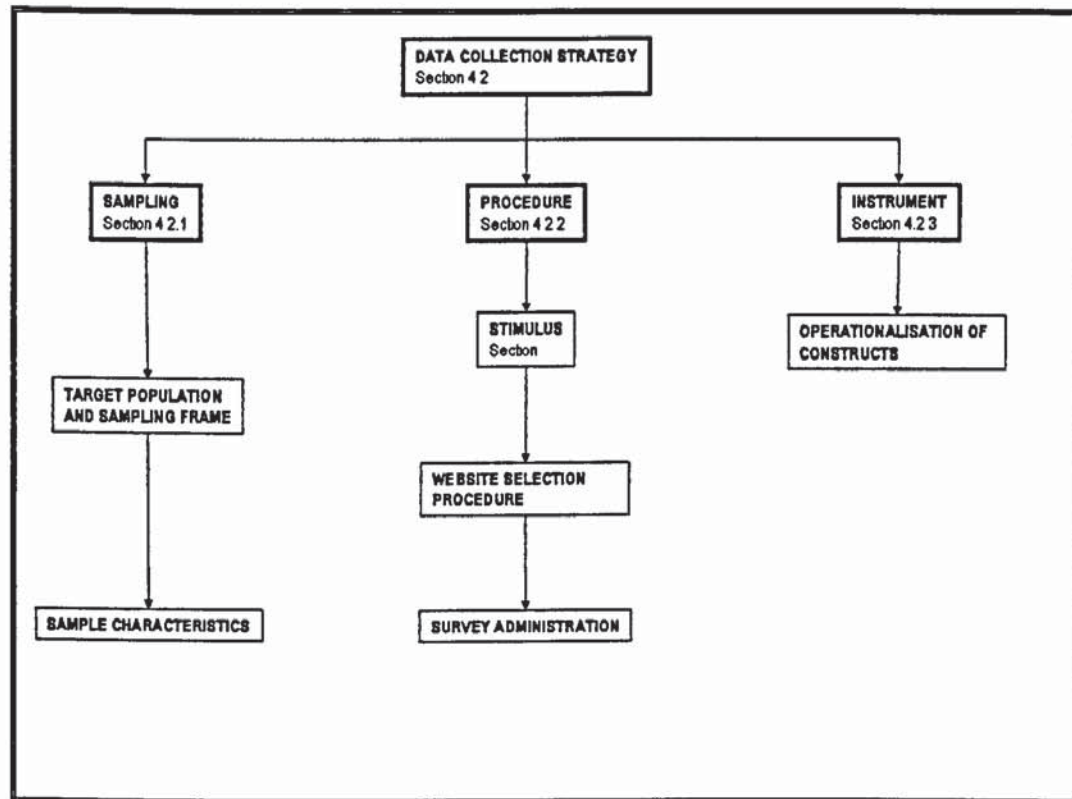
The discussion above has shown that both paradigms offer promising avenues of enquiry to consider the problem. A behaviourist perspective provides a focus on the experience of navigating a site, and the kind of attributes experienced by consumers during the navigation, which can act as either incentives or deterrents to further use. In particular, the behaviourist will be concerned that consumers, left to their own devices online, would not be able to 'produce' the kind of rewards which would entice them back, remembering instead the frustration of a difficult, fruitless or unpleasant navigation. Cognitivists would aim to clarify the holistic perceptions, in consumers' minds, resulting from exposure to the individual cues of the OSE. While the philosophical approaches are different, both appear able to provide opportunities to clarify the characteristics of stimuli, which are either a result of past behaviour (for the behaviourists) or perceptions (for the cognitivists), and consider their impact on future behaviour.

Such a dual approach follows Foxall's (1995) view that broad theories of consumer behaviour rest on both positivist and interpretive pillars. In the instance of radical behaviourism, the positivist pillar supports the search for 'laws' of behaviour within the confines of laboratory settings. The interpretive pillar supports the elaboration of explanation of more complex consumer behaviours in natural settings. In this research, OSEs are natural environments which, being new and different from traditional shopping environments, initially require a more interpretive treatment. Methodological pluralism (Feyerabend 1975) was therefore considered to be a legitimate approach to the task of conceptualising OSEs. This pluralist approach, which is becoming more common in marketing, is akin to a realist standpoint, which accepts the existence of abstract, unmeasurable things, but considers them to exist independently of any individual, including the researcher (Guba and Lincoln 1994).

4.2 DATA COLLECTION STRATEGY – MAIN STUDY

This section outlines the strategies adopted towards the collection of data to test the propositions and hypotheses developed in Chapter 3. It first discusses the strategies adopted regarding sampling (Section 4.2.1, page 153) before reporting the administration procedure (Section 4.2.2, page 158). The following section (Section 4.2.3, page 162) details the process followed to develop the instrument. The overall organisation of this part (Section 4.2) is summarised diagrammatically in Figure 4-3.

Figure 4-3: Data collection strategy adopted for the main study



4.2.1 Sampling

4.2.1.1 Target population and sampling frame

The target population in this study was defined as all online shoppers. All students and staff from a British university were selected as a sampling frame. While it is acknowledged that university students and staff are not fully representative of the target population, they were considered to be an adequate sampling frame for the following reasons:

- Students are among the most avid internet users and shoppers (Marsh, Case and Burns 2000).

- Members of the sampling frame are more computer and internet literate than the average target population. In this respect, they are more representative of tomorrow's consumers than the overall target population.
- Choosing a sample of people who all had access (in the university computer lab or at their workstation) to broadband internet and the same browser, had the significant advantage of holding constant the shopping experience in terms of time to load pages, and page displays – thus controlling for as many important technical extraneous variables as possible.

Respondents were recruited in a number of ways:

- Emails were sent to students of several schools of the university, and to all university staff, inviting them to participate;
- Wall posters were displayed on campus;
- Small leaflets were left at specific points which saw high student passage (e.g. guild shop, photocopying shop, MBA student lounge);
- 'Assistant researchers' were recruited and trained, whose role was to recruit suitable respondents among their social network, and to administer the survey. Assistant researchers were paid a fee of £30 for every 10 completed and usable questionnaires. The assistant researcher who obtained the highest number of respondents also received a mini-iPod.

The names of all respondents were entered into a draw, and the prizes consisted of 3 iPod Shuffles, 3 pashminas and 3 prizes of £20 cash each. The prize winners were announced in an email to all respondents. All prizes were collected.

4.2.1.2 Sample size

Volunteer respondents were recruited until the sample size reached the target 300 sample size level. This target sample size was arrived at based on the following considerations:

- A sample size of 200-500 is usually recommended to be sufficient for data analysis (Hair et al. 1998).
- A ratio of five to ten cases per variable in the model has been advocated (e.g. Malhoutra 1993). The model was originally estimated to contain approximately 40 variables.
- Similar or smaller sample sizes have been used successfully for models of similar or higher complexity (e.g. Bearden, Hardesty and Rose 2001; Gerbing, Hamilton and Freeman 1994; Gounaris 2005).
- Time constraints and cost pressures limited the effort and funds which could be invested in the recruitment of respondents. Furthermore, contrary to more common forms of survey requiring only the completion of a questionnaire, this survey also required respondents to navigate a particular website for 8 minutes. This placed additional constraints and further increased the difficulty of the recruitment process.

A total of 304 responses were collected. Three of these were unusable (see Section 4.4.1.2.1, page 200), and therefore the eventual sample size was 301. As is described later (see Section 4.3.1.2, page 173), the sample was split into two equal halves so that measures could be purified and validated on independent samples. Scales were purified using one half ($n=150$) and validated using the other half ($n=151$). The testing of the propositions and hypotheses was conducted on the full sample.

4.2.1.3 Sample characteristics

This section provides some information on the sample's characteristics, which was gathered during the survey. While no claim is made of full representativeness of the sample, its characteristics are compared to a series of relevant statistics.

4.2.1.3.1 Nationalities

The break-down of respondents by world region is shown in Table 4-3. A large majority (71.4%) of respondents were British. The next largest groups were Asians (15.9%) and other Europeans (8.6%), while the remaining groups (Africans, Americans and Middle Eastern) only total 3.7% of the total sample. These proportions are not totally similar to the proportions of England's inhabitants by country of birth in the 2001 English census (see Table 4-4). In particular, the proportion of Britons is smaller in the sample than it is in the census (71.4% vs. 90.7%), and conversely, the proportion of Asians and other Europeans is higher in the sample than in the census (15.9% vs. 2.91% for Asians and 8.6% vs. 2.89% for other Europeans). These differences can be explained by the fact that the sample was recruited in a university, and that universities tend to have higher percentages of foreign residents who are able to live in the country for the duration of their studies, on a study visa.

Table 4-3: Nationalities of the study's respondents, grouped per world region

Nationality	Frequency	Percent	Cumulative Percent
British	215	71.4	71.4
Asian	48	15.9	87.3
Other European	26	8.6	95.9
American	6	2.0	97.9
Middle Eastern	3	1.0	98.9
African	2	.7	99.6
Unknown	1	.3	100.0
TOTAL	301	100.0	

Table 4-4: 2001 Census, England – Country of birth.

Country of birth	Frequency	Percent	Cumulative Percent
United Kingdom	44,594,817	90.75	90.75
Asian	1,428,850	2.91	93.66
Other European	1,422,085	2.89	96.55
African	798,218	1.62	98.17
American	533,124	1.08	99.25
Middle Eastern	138,148	.28	98.53
Others	223,589	.46	100.00
TOTAL	49,138,831	100.00	

Source: 2001 Census; Key Statistics, Standard Tables

4.2.1.3.2 Internet usage

Respondents had used the internet for periods ranging from 3 to 18 years, the mean number of years of internet use being 7.82.

4.2.1.3.3 Online shopping

Of the total sample, 96.7% of the respondents stated that they shopped online. It can be said therefore that the sample consisted, in its quasi-totality, of online shoppers.

Therefore, the sample consisted of representatives of the target population of all UK-based online shoppers.

4.2.1.3.4 Online purchases

Of the total sample, 94.7% of the respondents stated that they had made purchases online. It can be said therefore that the quasi-totality of the respondents have gone through the motions of the full online purchasing process. They are consummate shoppers, and not just 'browsers'.

4.2.1.3.5 Prior visit to the store

Most respondents (92.3%) had never visited the store which acted as the stimulus the survey was based on. Only 2 respondents (.7%) responded that they visited the store regularly, while 7% had visited the site a few times. It is therefore reasonable to assert that the reactions to the site expressed in the questionnaire were the result of the exposure immediately preceding the answering of the questionnaire, rather than 'stored reactions' to previous exposures, since the quasi-totality of respondents did not have any previous exposure to the site.

4.2.2 Procedure

The survey and its questionnaire were based on the navigation of a specific website, which respondents had to navigate immediately prior to answering the questionnaire. The request that respondents navigate a particular website for 8 minutes before answering the questionnaire made the administration of the survey more cumbersome, and it tested people's willingness to participate. However, several authors have underlined the advantages of capturing perceptions from a situated, quasi-concurrent online shopping experience, in order to avoid halo or memory effects (Chen et al. 1999; Lowrey, Otnes and McGrath 2005; Rettie 2001). Furthermore, certain questions in the survey required respondents to give their level of agreement on very specific aspects of the website (e.g. "This website made it easy for users of its products to exchange information between themselves"; "This website enabled me to click on things to get different views of the products") and it was deemed that responses to these items would be highly unreliable if administered about any recent navigation or even about the respondent's latest navigation, if it was more than a few hours old. Additionally respondents could have also been confused between several websites, since it can be quite difficult to differentiate between websites.

4.2.2.1 Stimulus

The choice of stimulus to which to expose respondents, was made with the aim of surveying consumer perceptions and evaluations of a natural setting. Firstly the product category was chosen based on the following criteria:

- It had to be relevant to respondents, and purchased regularly by them (so as to decrease the level of artificiality of the navigation task given to the respondents – see Section 4.2.2.3 on the survey’s administration, page 161).
- Respondents had to be accustomed to purchasing or at least shopping for that product category online (so as, again, to decrease the level of artificiality of the task required of the respondents).
- Respondents could shop for this product category, with either extrinsic or intrinsic motives. This was important since the research aims to encompass both goal-directed and browsing behaviours.

Books and music were the product categories which fit these requirements best (Harris Interactive 2005; Internet & E - Business Strategies 2000). Many of the respondents carried out the navigation and answered the questionnaire in a lab whose computers were not equipped with speakers. For this reason, online music stores were ruled out since an important part of the product information search process (the playing out of music) would not have been available, and would have biased the results.

4.2.2.2 Website selection procedure

To select a specific site, a search was made on Yahoo of online bookstores whose primary stock was UK titles. Specialist bookstores (Computer Bookshop, Silvermoon, second-hand books) were eliminated since the stimulus needed to potentially have something of interest to all respondents. The remaining websites were checked individually to ensure that they had sufficient content for respondents to be able to make an assessment of the various dimensions of the OSE. Three sites remained in contention

on conclusion of this review: Amazon (www.amazon.co.uk), the UK edition of bol.com (www2.uk.bol.com) and The Bookplace (www.bookplace.co.uk). Amazon was not used since the researcher expected most respondents had already used Amazon. Different levels of prior experience and familiarity with the site, which could not be controlled for, would have likely influenced their perception of the site. The Bookplace had been used during Study 1 (see Section 4.3.1.1.2, page 145) and had proved unreliable, with the server being down for 4 of the 19 navigations undertaken. Furthermore, since some of the scale items had been developed utilising data gathered from respondents as they navigated this site, using these items on a different site increased their external validity.

The chosen stimulus was the UK version of bol.com, at <http://www2.uk.bol.com/>. Screen prints of a section page (travel) and a product page are shown in Figure 4-4 and Figure 4-5 (page 161) respectively³.

Figure 4-4: Screen print of the travel section page, www2.uk.bol.com.



Date accessed: 06.06.07

³ The reader will note that since 2005 when the main study was conducted, the site and the pages have been rebranded as 'Book Giant'. However the general architecture and look and feel of the site have remained identical.

Figure 4-5: Screen print of a product page, www2.uk.bol.com.



Date accessed: 06.06.07

4.2.2.3 Survey administration

The 301 usable responses were collected over a 6-week period in May and June 2005. Respondents could either come along to a lab set up for the survey, or, having been sent the instructions, conduct the navigation and answer the survey from their desk. The instructions given to respondents who visited the lab are shown in Table 4-5 (page 162). The instructions to respondents who did the navigation and survey at their desk were adapted for the different context.

The duration of the navigation had to enable participants to experience enough of the site to feel able to answer the specific questions included in the survey, while being short enough to enable participants to complete the whole survey procedure within a time frame acceptable to both students and staff. This was assessed to be 30 minutes. The navigation duration had been set at 5 minutes for the pilot. Respondent feedback indicated that 5 minutes was not sufficient for respondents to get used to how the site worked, search for and find some products, and go through some of the product information available, all tasks necessary to complete the questionnaire. The navigation

time was increased to 8 minutes for the final survey, so that the overall navigation and questionnaire completion could still take place within 20-30 minutes.

Table 4-5: Instructions given to respondents who visited the lab

<p>WEB NAVIGATION RESEARCH</p> <p>Thank you for coming along. Please follow the following steps:</p> <ol style="list-style-type: none"> 1. Make yourself comfortable. 2. Please complete the form to enter the draw, I will collect it during your navigation. 3. Set the clock on your screen at 8 minutes, and start it by clicking on 'GO!' when you are ready to start the navigation. 4. Immediately go to Favourites, choose 'Bookshop'. 5. Navigate this site for 8 minutes. You can search for books you have in mind to purchase or get more information about, or just browse, or both. Just carry out this navigation as you would normally shop online if you were at home, in an internet cafe or at your desk. Please do not leave this site during the navigation. 6. After 8 minutes, the clock will tell you it's time to stop the navigation. You can then turn to the questionnaire you have been given. Please answer ALL questions. 7. Once you have finished, please bring your questionnaire over to me. 8. You are free again! And thank you so very much! <p>IF YOU HAVE ANY QUESTIONS ON THE PROCESS, PLEASE ASK ME! I'LL BE HERE FOR THE DURATION OF THE EXERCISE.</p>
--

4.2.3 Instrument

The main study's questionnaire consists of a 7-page paper document. A copy of the full questionnaire is shown in Appendix 1 (page 326).

There are 4 main parts to the questionnaire, as described below:

1. **Part One** contains instructions on how to complete the questionnaire, with an example of how to mark the answer.

2. **Part Two** contains two questions to ascertain whether respondents have visited the website before, and if they have, how frequently.
3. **Part Three**, the main part, contains a series of statements based on a 5-point Likert-type scale indicating levels of agreement with the statement. These statements correspond to the items for 22 scales used in the questionnaire. The items are presented in a totally random order, to avoid response bias and the artificial inflation of reliability and convergent validity indicators (Baumgartner and Steenkamp 2001). Ten of these measures are used and reported in this thesis, while the remaining 12 scales are to be used in a future study. The measures of concern here consisted of:
 - Six scales to measure the following dimensions of Exploratory potential and Sense-making potential (the two independent variables): Visual impact, Experiential intensity, Marketer informativeness, Non-marketer informativeness, Page clarity, Site architecture. All six scales were developed for this research.
 - Two scales to measure the mediating variables: Utilitarian value and Hedonic value. Utilitarian value was defined as “*an overall assessment of functional benefits and sacrifices*” (Overby and Lee 2006, p. 1161) and **Hedonic value** as “*an overall assessment of experiential benefits and sacrifices, such as entertainment and escapism*” (p. 1161). Published scales, by Babin et al. (1994), which were developed and validated in the context of offline shopping experiences, were deemed suitable for use in the context of online shopping experiences. The measures, obtained on conclusion of a stringent development and validation process, displayed strong reliabilities, with Cronbach’s alphas of .80 for Utilitarian value and .93 for Hedonic value (Babin et al., 1994).
 - One scale, to measure the dependent variable: Site commitment, which was developed for this research.
 - A scale measuring Social desirability (Richins and Dawson 1992), used to check individual items against a potential social desirability bias.

4. **Part Four** consists of 5 questions, asking respondents how many years they have used the internet, whether they have shopped online before, whether they have purchased online before, their nationality and their name.

Respondents were reminded that their answers were confidential and that their name was only required to avoid duplication. This was deemed necessary since the possibility of two research assistants getting the same person to do the survey could not be discounted.

4.2.3.1 Operationalisation of constructs

Table 4-6 (page 165) details the operationalisation of the constructs featured in the conceptual model. The origin and wording of the measures' items are provided in Appendix 2 (page 334).

4.3 ANALYSIS STRATEGY

This section details the data analysis strategies adopted to test the propositions and hypotheses developed in Chapter 3 and summarised in Table 4-1, page 144. The four main parts of this section constitute the four key steps which were followed to carry out a thorough test of the propositions and hypotheses. They subsequently determine the manner in which the reporting of the findings is organised. Table 4-7 (page 166) summarises each of the steps' main aims, the section detailing the analysis process as well as the chapter in which the results related to that particular step are reported.

Table 4-6: Operationalisation of the constructs used in the research

Variable type	Construct	Definition and origin of items	
Independent variables	Visual impact	Definition	The attention-grabbing, aesthetic visual diversity of individual web pages.
		Origin of items	(Loiacono et al. 2002; Mathwick et al. 2001), Study 1
	Experiential intensity	Definition	The ability of the website to produce an involving shopping experience.
		Origin of items	Study 1
	Marketer informativeness	Definition	The extensiveness of marketer information available on the site.
		Origin of items	(Liu et al. 2001; Loiacono et al. 2002; Park and Kim 2003), Study 1
	Non-marketer informativeness	Definition	The extensiveness of non-marketer information available on the site.
		Origin of items	Study 1
	Page clarity	Definition	"The ease with which one can grasp the organization of the scene" (Kaplan 1992)
		Origin of items	(Aladwani and Palvia 2002), Study 1
	Site architecture	Definition	The shopper's perception of the organisation of the different pages of the website as a coherent, understandable whole.
		Scale utilised	(Venkatesh and Davis 1996)
		Origin of items	(Loiacono et al. 2002; Palmer 2002), Study 1
Mediating variables	Utilitarian value	Definition	"An overall assessment of functional benefits and sacrifices" (Overby and Lee 2006)
		Scale utilised	Utilitarian value dimension of shopping value scale (Babin et al. 1994)
	Hedonic value	Definition	"An overall assessment of experiential benefits and sacrifices" (Overby and Lee 2006)
		Scale utilised	Hedonic value dimension of shopping value scale (Babin et al. 1994)
Dependent variable	Site commitment	Definition	The degree to which the consumer is willing to remain associated with the retail website.
		Origin of items	(Agarwal and Karahanna 2000; Park and Kim 2003), Study 1

Table 4-7: Breakdown of the analysis strategy and reporting of the results

Step	New measure development	Existing measures validation	Testing of higher-order structure among OSE attributes	Testing of the conceptual model
	→	→	→	
Main aims	Measure development, purification and validation	Measure validation	Assessment of alternative models Assessment of relationships between first-order and second-order factors	Assessment of theoretically-derived model Assessment of the strength of relationships between individual constructs
Main statistical methods used	Internal consistency, EFA, CFA	CFA	SEM	SEM
Section in this chapter reporting the analysis strategy	Section 0	Section 4.3.2	Section 4.3.3	Section 4.3.4
Chapter reporting the results	Chapter 5	Chapter 5	Chapter 6	Chapter 7

CFA: Confirmatory Factor Analysis; EFA: Exploratory Factor Analysis; SEM: Structural Equation Modelling

4.3.1 New Measure Development and validation

Accepted procedures (Churchill 1979; DeVellis 1991; Netemeyer et al. 2004) were followed to develop new measures where seminal scales were not available. Each of the steps recommended by Churchill (1979) was followed, and further pre-testing was carried out in the form of expert judging (Study 2) and the pretest (Study 3) of the main study. Furthermore, use was made of the additional power which Confirmatory Factor Analysis provides, to rigorously assess unidimensionality, reliability and validity. This section outlines the strategy used to obtain psychometrically-sound measures. It is summarised in Table 4-8 while Figure 4-6 (page 169) shows the organisation of this section.

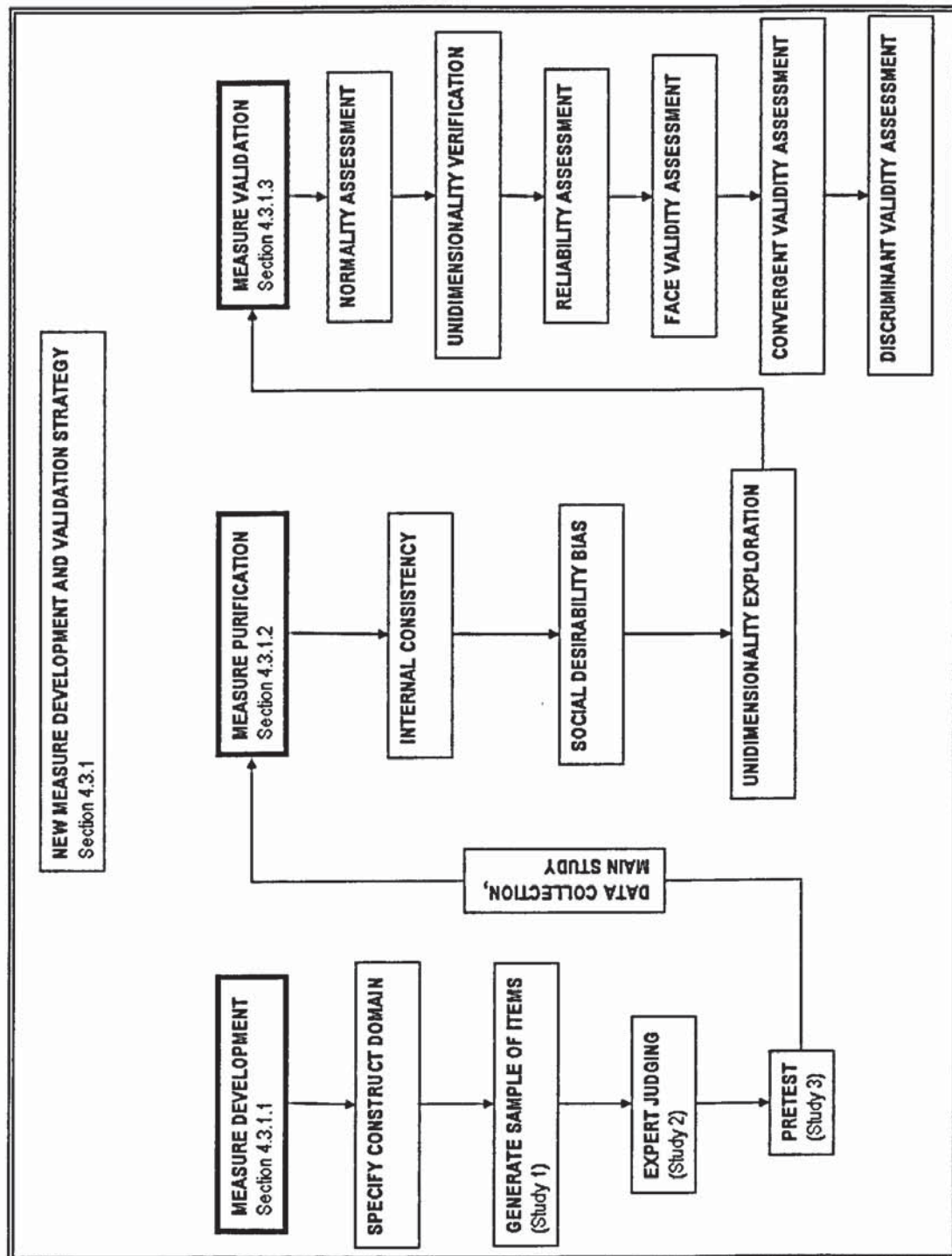
Table 4-8: Data analysis strategy – New measure development and validation

Step	Analytical technique(s) used	Purpose
Specify domain of construct	Literature search Conceptualisation based on extensive exploratory study	To clearly delineate the area of the construct, so as to determine what 'belongs' to the construct and what does not.
Generate sample of items	Review of existing scales Review of exploratory study transcripts Item editing	To generate a large pool of items for each dimension
Expert Judging (9 judges)	Sorting task (asked to allocate items to the dimension they believed it tapped)	To select items with the highest level of agreement among experts
Questionnaire pilot (39 students)	Item-total correlations Inter-item correlations Exploratory Factor Analysis	To weed out items which displayed poor item-total correlations or loaded poorly on the expected factor

(continued next page)

Step	Analytical technique(s) used	Purpose
<i>(continued from previous page)</i>		
Collect data (n=301)		
<i>(on first-half sample, n=150)</i>		
Measure purification - internal consistency - dimensionality exploration - correlation with social desirability bias	Exploratory Factor Analysis Item-total correlations Inter-item correlations Correlation with SDB Exploratory Factor Analysis	To obtain, for each measure, a set of items which are internally consistent, free from correlation with Social Desirability, and which, in EFA, load significantly on the same factor.
<i>(on second-half sample, n=151)</i>		
Measure validation		
Assess normality	Study of kurtosis and skewness	To ensure data suitable for Structural Equation Modelling
Verify unidimensionality	Confirmatory Factor Analysis (examination of residuals)	To weed out any items displaying high residuals with other items on their factor or with items on other factors
Assess reliability	Confirmatory Factor Analysis	Having weeded out items with poor reliability, to ensure that the construct reliability of each factor is acceptable - >.6 (Bagozzi and Yi 1988)
Assess face validity	Related remaining items back to the construct/dimension definition	
Assess convergent validity	Confirmatory Factor Analysis - ensuring that all factor regression coefficients are statistically significant and substantial, in a well-fitting model	
Assess discriminant validity	Confirmatory Factor Analysis - Ensuring the significant difference between nested models for each pair of constructs, where the correlation between constructs is freed, then set to 1.	

Figure 4-6: New measure development and validation strategy



4.3.1.1 Measure development

Measures were developed for each of the six dimensions making up Sense-making potential and Exploratory potential (the independent variables) and for Site commitment (the dependent variable). The decision to develop these rather than using existing ones, stemmed from a consideration of extant scales available, the often different operationalisations (in particular, many of the extant scales relate to websites in general rather than OSEs), and the lack of replication studies which would have enhanced their validity. Instead, items from published scales were augmented with items developed from Study 1, and the measures were developed, purified and validated following a most rigorous process (diagrammatically represented in Table 4-8, page 167). Definitions for the six OSE dimensions and Site commitment were presented in Table 4-6, page 165.

4.3.1.1.1 Specification of the Domain of the Constructs

To specify the domain of the constructs, conceptual definitions were established, and throughout the measure development process, acted as a 'baseline' against which later decisions regarding face validity were made. Each construct was compared and contrasted to similar ones in the literature, and more clearly delineated. The definitions also prompted the development of further items, with the aim of tapping all facets of the construct.

4.3.1.1.2 Generation of sample of items

Once each construct had been clearly defined, a sample of items tapping the construct was developed. The aim of this stage was to capture all facets of a construct, while building some redundancy (DeVellis 1991). The items were sourced in different ways:

- From the literature: items were developed on the basis of discussions in the literature, definitions etc.
- From published scales. These were gathered and individual items were considered for adoption or adaptation.

- From the verbatims of Study 1, which had consisted of collecting data from 19 informants through think-alouds (Ericsson and Simon 1993) while they were navigating an online bookstore, and depth interviews with them. The study's think-alouds enabled the researcher to access the terminology favoured by actual consumers. The navigations also acted as the context of many 'critical incidents' which occurred during the navigations – broken links, illogical returns, lack of clarity, absence of the expected information or functionalities etc. Informants often compared the stimulus site with others they were familiar with – this provided wider material to enter in the item pool.
- From a 'brainstorm' based on the definitions developed – to ensure that all facets had been considered. This process sometimes led to a further clarification of the definition of some dimensions.

Once the item pool was developed, editing took place. DeVellis' (1991) recommendations were followed, concerning item length, reading difficulty, double barrelled items (which convey more than one idea), double negatives etc.

4.3.1.1.3 Expert Judging (Study 2)

In Study 2, the edited list of items developed was submitted to 9 experts, consisting of academics and doctoral students in marketing. They were required to fulfil two main tasks:

- indicate which items they felt should be omitted because of some flaw (and they were invited to provide further information/suggestions about these);
- sort the items based on the definition of each construct. The items were supplied to them in a random sequence.

A copy of the instructions given to the judges is included in Appendix 3 (page 346). On receipt of all 9 responses, the judges' decisions on each item were entered into a spreadsheet, and decisions for inclusion in /exclusion from the pilot questionnaire were

based on commonly-used criteria (Hardesty and Bearden 2004) and the target number of items to include in the pilot. The inter-judge percentage agreement on the items selected for inclusion in the pilot varies from 78% for the lowest to 100% for the highest. These percentages are in line with similar studies (c.f. Hardesty and Bearden 2004 for a review of these). A number of items were reworded for the pilot, based on expert feedback or the necessity of including negatively-worded items in each measure. Appendix 4 (page 348) provides a list of the items retained, together with inter-judge percentage agreement for each item.

4.3.1.1.4 Pretest (Study 3)

The items retained from the Expert judging state, together with a number of published scales, were included in a questionnaire piloted during Study 3, the pretest to the main study. A copy of the pilot questionnaire and the instructions to respondents is included in Appendix 5 (page 351). The questionnaire and the overall procedure were piloted on a convenience sample of 39 students, who visited a lab set up for the research at three specific times, navigated an online bookstore (www.thebookplace.co.uk) for 5 minutes, answered the questionnaire and were invited to provide qualitative feedback on any aspect of the data collection procedure or instrument. Incentives were provided (3 x £25 Marks & Spencer vouchers and 1 x £50 cash).

The qualitative feedback served to:

- adjust the procedure. In particular, the navigation time was increased from 5 to 8 minutes as some respondents commented they had not had enough navigation time to be able to answer certain items.
- reword certain items (some students pointed out which items or even words in items they found confusing).

Reliability analysis (in particular inter-item correlations and item-total correlations) and exploratory factor analysis were used to identify and drop weak items. Finally, the

remaining items were reviewed individually, and a final set of items was identified for the main survey, based on:

- qualitative feedback;
- indications from reliability and exploratory factor analysis (even though the small sample size precluded the drawing of any definitive conclusion about the behaviour of items in a wider population);
- the target number of items for each construct in the questionnaire. Constructs for which pilot items had overall 'behaved' as expected contained fewer items than those where some doubts emerged as to their conceptualisation or how well they were reflected in the items developed. As few as 6 items were included to reflect some dimensions, and as much as 17 to reflect others.

4.3.1.2 Data Collection, main study

The data collection procedure and process were reported in detail in Section 4.2 (page 152). 301 usable responses were obtained. The main study served to:

1. purify and validate all measures;
2. test the propositions developed about the existence of a higher-order structure to categorise attributes of OSEs;
3. test the hypotheses developed concerning the impact of OSE perceptions on shopping value and site commitment.

For the first objective, the sample of 301 responses was split into two half samples, using the random function in SPSS. The first half sample ($n=150$) was used to purify the measures and explore unidimensionality. The second half sample ($n=151$) was used to validate the measures, verifying unidimensionality and assessing reliability and validity. The analysis towards the remaining two objectives was conducted on the full sample of 301 cases.

4.3.1.3 Measure Purification

To purify measures, the conventional methods recommended by Churchill (1979) were used. In a first instance, all items expected to tap the different dimensions of a construct were factor analysed together to either verify that the analysis returned the hypothesised dimensions or, when the items did not load as expected, to “suggest dimensions” (Churchill 1979, p. 69).

Each construct was then treated separately. In this section, the term construct is used to describe the two higher-order constructs of Sense-making potential and Exploratory potential, as well as Site commitment and Hedonic and Shopping value. The term dimension is used to describe the six first-order constructs which are expected to reflect of Sense-making potential and Exploratory potential, namely Page clarity, Site architecture, Visual impact, Experiential intensity, Marketer informativeness and Non-marketer informativeness.

4.3.1.3.1 Internal consistency

Inter-item correlations tables were inspected to identify and delete items with poor inter-item correlations. The domain sampling model rests on the assumption that items which belong to the same domain share the same amount of “common core” (Churchill 1979, p. 68), therefore items which correlate poorly with other items cannot share the same amount of common core and cannot be tapping the same dimension. Similarly, items with a low item-total correlation were candidates for deletion. It was deemed important to use both methods in particular because the item-total correlation method does not account for external consistency (Gerbing and Anderson 1988), and since several constructs were expected to correlate highly, items belonging to several factors may have still displayed high item-total correlations.

Further, item means and variances were studied. A valuable quality of a good scale item is a high variance (so that it can co-vary or not as the case may be) and a mean close to the scale’s mid-point (DeVellis 1991). Items were considered individually as well as in

- relation to the other items of the dimension. Items whose mean was significantly higher or lower than the rest of the items, and which had a low standard deviation, were candidates for deletion.

4.3.1.3.2 Social desirability bias

The items developed for new measures were all correlated with the sum score of a 10-item Social Desirability scale (Richins and Dawson 1992). Items correlating at the .05 level were considered as susceptible to be contaminated with bias, and therefore were further candidates for elimination.

4.3.1.3.3 Unidimensionality exploration

Unidimensionality is a cornerstone of measurement theory: said Hattie (1985, p. 49), “That a set of items forming an instrument all measure just one thing in common is a most critical and basic assumption of measurement theory”. While in the strict sense of the term, Exploratory Factor Analysis (EFA) cannot verify unidimensionality⁴ (Gerbing and Anderson 1988), it can be used as a first-cut test, to identify any items tapping a separate construct.

The items purported to reflect the same construct were factor analysed, factor by factor, to ensure they all loaded on the expected factor. When a second factor was extracted, the items loading on the second factor were studied to decide whether the factor was conceptually meaningful and was to be retained/added to the conceptualisation. When this was not the case, then items loading the highest on the second, unwanted factor, were removed and the analysis was re-run, and the process repeated until it returned a single factor.

⁴ Exploratory Factor Analysis is unable to verify that each item is the estimate of only one construct (given a certain amount of error), as represented in the following equation: $x_i = \lambda_i \xi + \delta_i$, where x_i is the i th indicator from the series of indicators tapping a dimension, λ_i is the factor loading for this indicator, ξ is the factor x_i loads on to and δ_i is the residual (Gerbing and Anderson, 1988).

Once this procedure was applied to all dimensions expected to load on the same construct (Sense-making potential and Exploratory potential), the retained items of all dimensions of each construct were submitted together to another EFA, to ensure that all items loaded on the expected dimension. Items which loaded on several dimensions, or which did not load on any dimension were removed, since these two situations were symptoms of items which do not tap one and only one dimension adequately and therefore prevent the measure from being both unidimensional and internally consistent. Items which loaded on a dimension other than the expected dimension were reviewed alongside the definition of the dimension they loaded on. They were either retained in the 'new' dimension or removed, based on an assessment of their face validity.

4.3.1.4 Measure validation

The validation of the measures was carried out on the half of the main study's sample which was not used during the purification stage. In this manner, the chance of basing decisions purely on a sample's idiosyncracies was reduced. The size of the validation sample was 151.

4.3.1.4.1 Normality assessment

Measure validation was carried out using Confirmatory Factor Analysis (CFA), with LISREL v.8.72 (Joreskog and Sorbom 1993). CFA, as any Structural Equation Modelling technique, assumes normal distributions. While this is usually not achieved in the social sciences (West, Finch and Curran 1995), it is important to ensure that there are no radical departures from normality. For this purpose therefore, the kurtosis and skewness of each item were analysed. These measures are reported in Appendix 8 (page 396), which shows that the data does depart somewhat from a normal distribution. However, the magnitude of these departures is quite common in the social sciences. Further, one must bear in mind that with reasonably large sample, skewness does not make a substantive difference in analysis and that with samples of over 200 observations, the risk of underestimating variance is also reduced (Tabachnick and Fidell 1996). Furthermore, since the maximum

likelihood estimation technique in Structural Equation Modelling fares well in situations where the normality assumption is not grossly violated (Chou and Bentler 1995; Curran, West and Finch 1996; Hoyle 1995), all variables can be used with good levels of confidence as to the validity of their results.

4.3.1.4.2 Unidimensionality verification

As mentioned earlier (see Section 4.3.1.3.3, page 175), there are stricter ways to assess the unidimensionality of a scale than through Exploratory Factor Analysis. Verifying scale unidimensionality can be achieved through the use of Confirmatory Factor Analysis (Gerbing and Anderson 1988), where each observed variable is specified to reflect one and only one latent variable. The overall fit of the model is enough to determine whether a measure is unidimensional or not (Kumar and Dillon 1987).

A model was specified to incorporate all newly-developed measures, and the overall goodness of fit of that model was assessed, before standardised residuals were examined. Standardised residuals reaching a value greater than +2.58 or lower than -2.58 indicate misspecification (Steenkamp and van Trijp 1991). Items which have consistently large residuals with other items on the same scale or with items on other scales, may have been specified to load on the 'wrong' factor or are part of a second, undetected factor. Other items may have large residuals but without a specific pattern and are best deleted (Steenkamp and van Trijp 1991). Items which showed the highest residuals were either re-specified (based on an assessment of face validity) or removed one by one, and the analysis was re-run until all the goodness-of-fit indices and an analysis of standardised residuals confirmed that the unidimensionality of each scale had been achieved.

4.3.1.4.3 Reliability assessment

Once the unidimensionality of each measure had been verified, a new assessment of its reliability or internal consistency could be made. Reliability relates to the ability of a measure to consistently perform in the same manner. The most common type of reliability used in marketing relates to the internal consistency of a scale. For this

purpose, two indicators were used: individual item reliabilities (as indicated by the items' multiple squared correlations – given in the LISREL output as r^2) and composite or construct reliabilities, which were calculated using the formula given in Equation 4-1. As per Bagozzi and Yi's (1988) recommendations, an acceptable Composite reliability threshold was considered to be .6.

Equation 4-1: Composite reliability formula

$\text{Composite Reliability} = \frac{(\sum \text{standardised loadings})^2}{(\sum \text{standardised loadings})^2 + (\sum \text{indicator measurement error})}$
--

4.3.1.4.4 Face validity assessment

Face validity assesses the accuracy and thoroughness with which measures represent the whole of a phenomenon. One way of addressing the danger of poor content validity was to use the results of Study 1 (see Table 4-2, page 148) to surface more manifestations of the constructs, and to assess the way they were perceived by consumers, in their own 'language'. Furthermore, as recommended by Churchill (1979) the remaining sets of items for each dimension were considered again, against the definition of the dimension.

There exists a trade off between higher model fits and reliabilities on the one hand, and face validity on another. It was deemed important to strike a reasonable balance, in order that the remaining items suitably tapped the different facets of the dimension. Hence, while removing further items may have improved the fit of the model or the Composite reliability score, particular items were retained to enhance face validity.

4.3.1.4.5 Convergent validity assessment

Construct validity (of which convergent validity is a component) refers to the closeness of the resemblance between the constructs of the theory being tested, and the measurement of the data collected from a sample: do the data and measurement tools chosen faithfully represent the original constructs? Construct validity is usually assessed

by considering convergent and discriminant validity, criterion and nomological validity. Convergent and discriminant validity are discussed next. A formal criterion validity assessment would have required the administration of too many additional scales with which to compare the measures being developed. An alternative was to study the correlations between factors, to verify that the highest correlations were between the factors expected to load on the same higher-order construct. Nomological validity was assessed when the full structural path model was estimated (whose findings are reported in Chapter 7, page 251).

Convergent validity assesses the extent to which each item 'contributes' to the meaning of the dimension being measured. A weak condition for convergent validity is that the regression coefficient of each item loading on a particular latent variable (or dimension) is statistically significant. A more powerful condition is that these coefficients are substantial. Both conditions need to be met under acceptable model fit (Steenkamp and van Trijp 1991). Items with weak coefficients (and the weakness threshold was set at .3) were removed from further analysis. Additionally, the Average Variance Extracted (AVE) can give an indication of convergent validity (Fornell and Larcker 1981). The AVE, whose formula is given in Equation 4-2, indicates the proportion of variance which all items of a factor have in common. Fornell and Larcker (1981) recommend a minimum threshold of .50 to suggest convergent validity.

Equation 4-2: Average variance extracted formula

$$AVE = \frac{(\Sigma \text{ squared standardised loadings})}{(\Sigma \text{ squared standardised loadings}) + (\Sigma \text{ indicator measurement error})}$$

4.3.1.4.6 Discriminant Validity Assessment

Discriminant validity assesses whether the newly-developed scales measure something different from other scales. Discriminant validity was approached in two ways. First, each dimension was assessed against every other dimension, using a set of nested models. For each pair of dimensions, two LISREL models were tested in succession, where the

correlation between the dimensions was first let free to vary, and then set to 1. Since the two models were nested models (the second being a special case of the first), a Chi-Square difference test could statistically assess whether the correlation between the two constructs is different from 1, i.e. whether there is discriminant validity between the two dimensions.

Second, a confidence interval of ± 2 standard deviations around each correlation was calculated. Any of the confidence intervals containing 1 would have indicated a lack of discriminant validity.

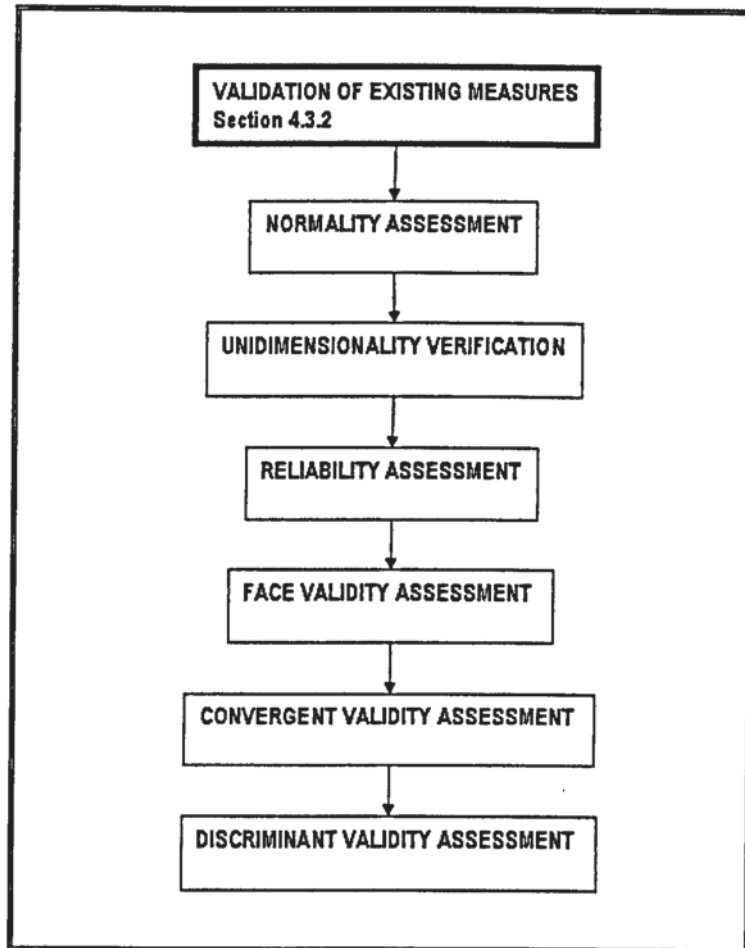
4.3.2 Assessment of existing measures

To measure Utilitarian value and Hedonic value, two existing scales (Babin et al. 1994) were used to test the hypotheses, as explained in Section 4.2.3 on page 163. Their items are listed in Appendix 2 (page 334). Babin et al. (1994) report strong reliabilities for both scales ($\text{Alpha} = .80$ for Utilitarian value, and $\text{Alpha} = .93$ for Hedonic value), and a discriminant validity between them of .16. However, reliability and validity are considered using sample statistics, and therefore they vary from one sample to the next (Peter and Churchill 1986). It is necessary therefore to ensure that previously used measures are indeed reliable (and therefore unidimensional) and valid (Ping 2004). This section describes the process used to assess these qualities. The process followed is described in Table 4-9 (page 181) and Figure 4-7 (page 182).

Table 4-9: Data analysis strategy – Existing measures' validation

Step	Analytical technique(s) used	Purpose
(on full sample, n=301)		
Assess normality	Study of kurtosis and skewness	To ensure data suitable for Structural Equation Modelling
Verify unidimensionality	Confirmatory Factor Analysis	Search for items displaying high residuals with other items on their factor or with items on other factors, which threaten the unidimensionality of the scale.
Assess reliability	Composite reliability	To ensure internal consistency
Assess convergent validity	Confirmatory Factor Analysis - ensuring that all factor regression coefficients are statistically significant and substantial, in a well-fitting model	
Assess discriminant validity	Confirmatory Factor Analysis – Ensuring the significant difference between nested models for each pair of constructs, where the correlation between constructs is freed, then set to 1.	

Figure 4-7: Summary of the process used to validate existing measures



4.3.2.1 Normality assessment

Item skewness and kurtosis were assessed in the same manner as previously described (see Section 4.3.2.1, page 176) in order to verify that the items did not exhibit a strong departure from a normal distribution.

4.3.2.2 Unidimensionality verification

To assess the unidimensionality of existing measures, a confirmatory factor analysis was conducted, where each item was specified to load on to the factor it represented in previous studies. Overall fit was assessed, and residuals were studied, together with modification indices. While previously-published scales should preferably be used in their integrity, they need to be unidimensional. Yet many older scales are not (Gerbing and Anderson 1988). Reference was made to other studies using these scales, which had removed items, presumably to meet the unidimensionality criterion. Where necessary therefore, items were removed until unidimensionality could be claimed.

4.3.2.3 Reliability assessment

The reliability was assessed in the same manner as the reliability of newly-developed measures, using item reliabilities and composite reliabilities (see Section 4.3.1.4.3, page 177).

4.3.2.4 Convergent validity assessment

To assess convergent validity, the same methods as for newly-developed measures (see Section 4.3.1.4.5, page 178) were used.

4.3.2.5 Discriminant validity assessment

The discriminant validity of existing measures was assessed in the same manner as the discriminant validity of newly-developed measures (see Section 4.3.1.4.6, page 179), through a series of nested models for each pair of measures, and by ensuring that a confidence interval built around each correlation coefficient did not include 1.

4.3.3 Assessment of the existence of a higher-order structure among OSE attributes

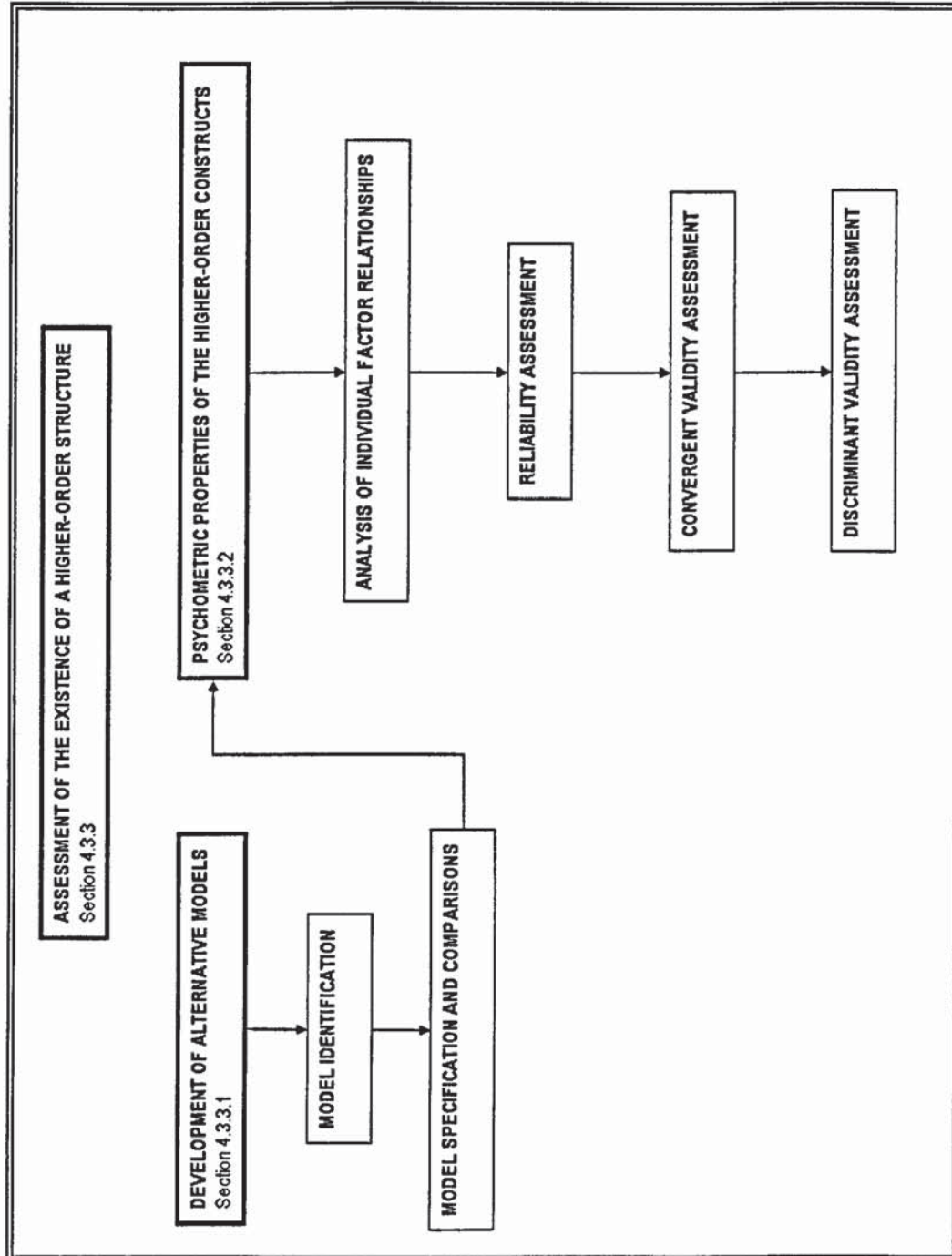
The first part of Chapter 3 resulted in propositions stating that a second-order structure reflected the attributes of OSEs. This section presents the steps followed to test these propositions. They are summarised in Table 4-10, while Figure 4-8 (page 185) shows the organisation of this section. The two main tasks were:

1. to consider the fit of the proposed model in relation to alternative models;
2. to assess the psychometric properties of the two higher-order constructs (Sense-making potential and Exploratory potential).

Table 4-10: Data analysis strategy – Assessment of the existence of a higher-order structure

Step	Analytical technique(s) used	Purpose
(on full sample)		
Development of alternative theoretically-based models	Literature review Exploratory Study Hypothesis Development	
Verification of model identification		
Structural path models specification and comparison	Second-order Confirmatory Factor Analysis (evaluation of overall goodness of fit of alternative models)	To identify the model which best fits the data and achieves parsimony.
Evaluation of the psychometric properties of the higher-order constructs	Structural Equation Modelling (parameter estimates, significance levels, assessment of reliability and validity)	To assess the reliability and validity of the higher-order constructs, and draw conclusions on the existence of empirical support to the hypothesis of a second-order structure.

Figure 4-8: Summary of the process used to test the existence of a higher-order structure



4.3.3.1 *Development of alternative models*

Because at best a good fit between a model and the data indicates that the model is a possible explanation of a phenomenon, it is advisable to test several models in order to zero in on the best of those. Consequently, several models were developed, based on alternative theoretical insights. The theoretical rationale for these alternative models is explained in Chapter 6, Section 6.1.1, page 237)

4.3.3.1.1 Model identification

The identification of each model was verified by ensuring that each part of the model (one part linking first-order factors to second-order factors, the other linking observed variables to first order factors) was identified (Rindskopf and Rose 1988).

4.3.3.1.2 Model specification and comparisons

The theoretically-based models were then specified in the structural path 'language', and path diagrammes were drawn for each model.

The models were evaluated using a range of goodness-of-fit indices. There is no one commonly accepted way to assess goodness of fit, but rather a series of indices which, when combined, enable the researcher to form an overall idea, from a variety of perspectives, of how well the hypothesised model fits the data, in the context of the fit of competing models. A number of indices were selected, based on the manner in which they assess fit, in order to obtain a compound view of the model's fit. Table 4-11 (page 187) provides an overview of the fit indices selected, what they measure and their interpretation.

Table 4-11: Description, interpretation and criteria of selected goodness-of-fit indices

Index	Description	Interpretation
Absolute fit indices		
Normal theory weighted least squares Chi-square	Tests the hypothesis that the model perfectly fits (within the limits of sampling error)	The obtained chi-square value should be less than the chi-square value for the given number of degrees of freedom
RMSEA (root mean square error of approximation) (Steiger 1990)	Estimates how well the fitted model approximates the population covariance matrix per degree of freedom.	Value below .05 indicates good model fit (Schumacker and Lomax 2004) (Browne and Cudeck 1993; Schumacker and Lomax 2004). Hu and Bentler (1999) recommend a cut-off value of .06.
GFI (goodness of fit index) (Joreskog and Sorbom 1993)	Proportion of the variances and covariances in S accounted for by the fitted model.	Values greater than .9 are sometimes deemed acceptable, and those greater than .95 are deemed good (Joreskog and Sorbom 1993)
Standardised RMR (Joreskog and Sorbom 1993)	Measures the average size of residuals between the fitted and sample covariance matrices.	Values below .05 suggest acceptable fit (Diamantopoulos and Siguaw 2000). Hu and Bentler (1995) recommend a cut-off value close to .08.
ECVI (expected cross-validation Index) (Browne and Cudeck 1993)	The difference between the population covariance matrix and the model fitted to the sample.	The measure gives an indication of how well the model is likely to cross-validate across samples of the same size from the same population. The value is compared against the value of other models (independence, saturated models). The model with the smallest value is chosen (Kelloway 1998).
Critical N	Shows "the size that a sample must reach in order to accept the fit of a given model on a statistical basis" (Hoelter 1983)	Diamantopoulos and Siguaw (2000) recommend a minimum value of 200.
<i>(continued next page)</i>		

Index	Description	Interpretation
<i>(continued from previous page)</i>		
Relative fit indices		
CFI (comparative fit index) (Bentler 1990; Browne and Cudeck 1993)	Measure of the proportionate improvement in fit as one moves from the baseline to the target model.	Hu and Bentler (1995) recommend a cutoff value of .95.
NFI (normed fit index) (Bentler and NBonnett 1980)	Indicates the percentage improvement in fit over the baseline independence model.	Value greater than .90 indicate good fit (Bentler and NBonnett 1980)
NNFI (non-normed fit index, or Tucker Lewis Index) (Tucker and Lewis 1973)	Measure of the proportionate improvement in fit as one moves from the baseline to the target model, per degree of freedom.	Value close to .95 indicates good model fit (Hu and Bentler 1999; Schumacker and Lomax 2004)
Parsimonious indices		
CAIC	Based on information theory, used for testing competing models	Compares values in several models – the model with the smallest CAIC is chosen (Akaike 1987; Bozdogan 1987)
PFI (parsimonious fit index) (James, Mulaik and Brett 1982)	Adaptation of the NFI which takes account of parsimony, and can be used to compare models with different degrees of freedom	Compares values in several models – the model with the highest PFI is chosen (James et al. 1982).
PGFI (parsimonious goodness of fit index)	Adaptation of the GFI, adjusting for loss of degrees of freedom by multiplying by the parsimony index.	Can be used to compare models. The model with the highest PGFI is chosen (Kelloway 1998).
PNFI (parsimonious normed fit index) (James et al. 1982)	Adaptation of the NFI, adjusting for loss of degrees of freedom, by multiplying by the parsimony index.	Can be used to compare models. The model with the highest PNFI is chosen (Kelloway 1998)

There are three general categories of fit indices: *absolute fit* indices, which indicate how well the model reproduces the observed variables' covariance matrix (Hair et al. 1998); *relative fit* indices, which indicate how well the model being tested fares in comparison to other models, especially the full independence model (where no relationships is hypothesised between any of the variables) and the saturated model (where every item is hypothesised to correlate with every other item); and *parsimonious fit* indices, which take account of the overall complexity of the model – since one should strive for the useful

parsimony of simpler models even though they are able to explain less variance than more complex models (Kelloway 1998). Based on the combined picture of a series of goodness of fit indices and the specific aim of parsimony in hypothesising a higher-order structure, an assessment was made of the best fitting model.

It must be noted that while the Chi-Square is reported systematically for each of the LISREL analyses carried out, it is used purely as an indication of goodness of fit rather than as a statistical test of the fit of the model. Indeed, besides assuming that the model perfectly fits the population (which is an unrealistic assumption in all the social sciences) the Chi-square statistic is sensitive to departures from multivariate normality and sample size (Diamantopoulos and Siguaw 2000). Chi-square differences however were used statistically to compare nested models.

The relationship between observed variables and their first-order latent variable was examined and conclusions were drawn during the first part of the analysis (see Section 0, page 167). The task at this stage was to examine the relationships between first-order and second-order latent variables, and between the second-order latent variables themselves, in order to address any possible misspecifications. Finally, on conclusion of the process, the goodness-of-fit indices were considered to ensure they were within the ranges indicative of well-fitting models.

4.3.3.2 Psychometric properties of the higher-order constructs

4.3.3.2.1 Analysis of individual factor relationships

The statistical significance and magnitude of the parameter estimates of the paths linking first-order to second-order factors were examined to assess whether the data supported the proposed relationships.

4.3.3.2.2 Reliability assessment

Reliability was assessed by calculating the second-order constructs' composite reliability, using the formula given in Equation 6-1.

Equation 4-3: Higher-order construct – Composite reliability formula

$$CR = \frac{(\Sigma \text{ standardised loadings of 1st-order on 2nd-order construct})^2}{(\Sigma \text{ standardised loadings of 1st-order on 2nd-order construct})^2 + (\Sigma \text{ 1st-order construct error variance})}$$

4.3.3.2.3 Convergent validity assessment

The convergent validity of the two second-order factors was verified by ensuring that the standardised factor loadings were both statistically significant and substantial.

Additionally, the average variance extracted (calculated using the formula given in Equation 4-4) was considered, Fornell and Larcker (1981) suggesting that a value of .50 and over is an indication of convergent validity.

Equation 4-4: Higher-order construct – Average variance extracted formula

$$AVE = \frac{\Sigma (\text{standardised loadings of 1st-order on 2nd-order construct})^2}{\Sigma (\text{standardised loadings of 1st-order on 2nd-order construct})^2 + (\Sigma \text{ 1st-order construct error variance})}$$

4.3.3.2.4 Discriminant validity assessment

Discriminant validity between the two second-order factors was verified in two manners. First, the final model was tested against a nested model where the correlation between the two second-order factors was set to 1, to ensure the difference between the two models' Chi-squares was significant. Second, a confidence interval of +/- 2 standard deviations was built around the correlation coefficient, to ensure it did not contain 1.

4.3.4 Assessment of the structural equation model

Having verified the existence of a higher-order structure, the final step in the analysis consisted in the assessment of the full structural equation model. In view of the staged approach adopted, the main focus of this step was the assessment of the relationships between latent variables. While the measurement model provides an indication of convergent and discriminant validity, the structural equation model provides an indication of nomological validity (Anderson and Gerbing 1988). The same steps described in Section 4.3 (page 184) were used to specify, estimate, evaluate and modify the model and are therefore only summarised here in Table 4-12.

Table 4-12: Data analysis strategy – Assessment of the structural equation model

Step	Analytical technique(s) used	Purpose
(on full sample)		
Development of a theoretically based model	Literature review Exploratory study Hypothesis development	
Specify a structural path model		
Estimate the model		
Evaluate the model	Structural Equation Modelling (evaluation of goodness-of-fit indices, residuals and modification indices)	To identify the model best describing the data, and within that model, areas which are mis-specified.
Modify the model	Structural Equation Modelling (respecification)	To obtain a theoretically-grounded model with an acceptable fit.
Final model results		

4.3.5 Considerations on the use of Exploratory Factor Analysis and Structural Equation Modelling – assumptions and criteria

This section outlines the assumptions made and the choices accompanying the use of the Exploratory Factor Analysis and Structural Equation Modelling methods.

4.3.5.1 Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) was used during the measure purification stage (see Section 4.3.1.3, page 174), to explore the factorial relationship between items purported to measure dimensions of the same construct. EFAs were run to ensure that all hypothesised dimensions of a construct emerged as separate factors, each measured by items loading solely on that factor. This section details the rules used to obtain and interpret the EFA results. Throughout the study, EFA was conducted with the SPSS software package.

4.3.5.1.1 Factor extraction

Factor extraction only makes conceptual sense when the correlations between individual items are high enough to justify the reduction of data to a smaller number of factors (Hair et al. 1998). Two tests are commonly used to assess the appropriateness of factor analysis: the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO), an index which reaches 1 when all variables are totally predicted by other variables, and the Bartlett's test of sphericity, which tests for the presence of correlations between variables. It is generally considered that factor extraction is possible for KMO values of .7 and above, and when the Bartlett's test of sphericity is significant, i.e. its significance value is .05 or less (Hair et al. 1998). The KMO value and the significance of the Bartlett's test of sphericity are reported alongside all factor extraction and rotation results (see Appendices 6 and 7, on pages 362 and 391 respectively). Once the suitability of factor extraction had been ascertained, the next decision concerned the number of factors to extract. There are three main 'rules' in usage in marketing to ascertain how many factors to extract. They

are: (1) number of Eigenvalues greater than 1; (2) number of factors before a 'scree' or sudden drop, shown on a scree plot as an 'elbow', occurs in the difference between Eigenvalues; (3) Horn's parallel analysis, where only the Eigenvalues obtained from the analysis which are higher than Eigenvalues produced by a set of random data are retained. The three rules rarely concord, but there is some evidence that the Parallel method is accurate more often than the scree method, while most of the time, the first 'Eigenvalues' rule overestimates the number of components (Zwick and Velicer 1986). While Horn's parallel analysis results were given priority, all three criteria were reviewed, and where they produced no clear consensus, analyses with a different number of factors to extract were run, and the most interpretable solution was retained.

4.3.5.1.2 Factor rotation

Oblique rotation (oblimin) was selected in preference to orthogonal rotation since the dimensions of a construct were expected to be correlated (Hair et al. 1998). To ease interpretation, only loadings greater than .45 were requested and displayed in all rotation results.

4.3.5.2 Structural Equation Modelling – Choices and assumptions

This section outlines the assumptions and choices made in relation to the Structural Equation Modelling (SEM) method employed to validate measures and test the thesis' propositions and hypotheses.

4.3.5.2.1 SEM vs. regression

All SEM techniques share two main traits: (1) they estimate several interrelated dependence relationships and (2) the relationships can include unobserved phenomena, for which measurement error is taken into account during the estimation (Hair et al. 1998). The latter trait gives SEM the advantage over multiple regression, because by not taking account of measurement error, regression estimates are likely to be biased.

Furthermore, the multiple regression method allows for the estimation of direct effects on only one dependent variable at a time, whereas with SEM the researcher can estimate relationships between several independent and several dependent variables simultaneously (Hoyle 1995). These two points are of particular importance for this study, since the conceptual model consists of unobserved constructs (including two higher-order constructs which, in essence, are two steps removed from being observed variables), and that three of these (Utilitarian value, Hedonic value and Site commitment) are mediating or dependent variables. SEM therefore was chosen over multiple regression because it enables a more rigorous and stringent testing of the entire nomological network in one, simultaneous estimation.

4.3.5.2.2 SEM assumptions

The use of SEM relies on a number of assumptions: (1) independent observations, (2) linearity of all relationships (Hair et al. 1998), (3) distributional normality of the data and (4) continuous data. These assumptions are now reviewed in the context of the study. First, the assumption of independent observations was respected since the design of the study precluded the collection of more than one questionnaire per respondent. While some respondents were friends, their answering of the questionnaire was individual and silent, therefore all observations can be considered to be independent from one another. Second, much of marketing research is based on the assumption of linear relationships. Some relationships used in marketing clearly are not linear, such as for example the relationship between arousal and hedonic value (Berlyne 1974); however in the absence of evidence to the contrary, marketing researchers commonly assume that the relationships they hypothesise are linear. The same assumption is made here. Third, normality assumptions were considered, testing in particular for the skewness and kurtosis of each of the variables in the structural equation (Baumgartner and Steenkamp 1996; Byrne, Shavelson and Muthen 1989). The results of these tests (reported in Appendix 8, page 396) show that while there were some departures from normality, these were within a range commonly found in the social sciences (Curran et al. 1996). Fourth, while strictly speaking, Likert scales (which were the only measures used to test the model) are ordinal and therefore cannot be continuous, they are assumed to be categorised reflections of an underlying continuous variable (Jöreskog and Sörbom 1996).

Ordinal variables with at least five categories which do not depart widely from normality have been found to be suitable for Structural Equation Modelling (West et al. 1995).

4.3.5.2.3 Estimation method

The Maximum Likelihood method was selected for each stage of the analysis. It is the most common estimation method (Bollen 1989) in view of its reliance on sample sizes in the 200-400 region (as opposed to the larger sample sizes required by other estimation methods), and its reliability in situations of mild departures from distribution normality (Gerbing and Anderson 1985).

4.3.5.2.4 Handling of missing data

Missing values can affect the input data matrix (correlation or covariance matrix) used by SEM to estimate models. Missing data is usually dealt with through either imputation (replacing missing data with a value chosen by the researcher), or pairwise or listwise deletion (removing the cases for which some data is missing from some or all of the analysis). Missing data were scrutinised to ensure they were not organised into any particular pattern. In view of the small percentage of missing data (which ranged from 0 to 1.3%) and its apparent randomness, it was decided to choose imputation rather than any deletion method, in order to preserve the sample size and avoid the estimation problems often associated with the use of matrices of different sizes generated by pairwise deletions. Multiple imputation using the Expectation-Maximisation (EM) algorithm available with LISREL was selected since it is thought to produce unbiased estimates (Dempster, Laird and Rubin 1977; Newman 2003).

4.3.5.2.5 Two-step method

While strictly speaking LISREL allows for both measurement and path models to be tested (and re-specified) at once, many authors have advocated and used a two-step approach (e.g. Anderson and Gerbing 1988; Diamantopoulos and Siguaw 2000; Joreskog and Sorbom 1993). The first reason is the compelling theoretical argument made by Joreskog and Sorbom (1993): "The testing of the structural model, i.e. the testing of the

initially specified theory, may be meaningless unless it is first established that the measurement model holds. If the chosen indicators for a construct do not measure that construct, the specified theory must be modified before it can be tested. Therefore, the measurement model should be tested before the structural relationships are tested” (page 113). The second reason stems from the manner in which LISREL models are assessed. Since most of the relationships estimated in a LISREL model are those leading from an observed variable to a latent variable (i.e. the measurement part of the model) rather than the relationships linking latent variables (i.e. the structural part of the model), the measurement part of the model plays a larger role than the structural part in the overall fit of the model (Mulaik et al. 1989), and therefore misspecifications in the measurement model are best addressed and minimised before the path model’s fit is estimated.

The two-step method was deemed most suitable for this study, which involved the initial development and validation of scales. A degree of misspecification was expected, therefore testing the whole model at once would have inevitably led to poor fit indices. The overall size of the model would have made it difficult to trace the source of the main misspecifications.

4.3.5.2.6 The role of respecification in the confirmatory context of SEM

While structural equation modelling is a *confirmatory* method aiming to test strong theoretical assumptions, it also provides cues for further exploration. LISREL gives the researcher information on specification errors and suggestions on the existence of further relationships within the model. Specification errors are detected through the study of residuals, which represent the differences in coefficients between the observed and the estimated correlation or covariance matrix. With LISREL v. 7 and later, residual values less than -2.58 and greater than 2.58 are statistically significant at the .05 level (Hair et al. 1998; Steenkamp and van Trijp 1991). Significant residuals indicate an estimation error between a pair of indicators. These are used to identify troublesome indicators, and residual patterns can also inform the researcher of specific ‘goings on’ in the data. For example, items which have consistently large residuals with other items on the same scale or with items on other scales, may have been specified to load on the ‘wrong’ factor or are part of a second, undetected factor (Steenkamp and van Trijp 1991).

LISREL also provides the researcher with indications of other relationships within the data, which the initial, theoretical model did not hypothesise. Modification indices, which are calculated for each of the relationships which are not estimated, approximate the Chi-square decrease which would result from the estimation of the relationship, therefore values of 3.84 and above signify that adding the relationship to the model would yield a statistically superior model. During the testing of a measurement model, modification indices can point to items which, by 'wanting' to load on several factors, violate the unidimensionality principles of classic measurement theory, or to other sets of items whose error terms 'want' to correlate, again going against the principles of classic measurement theory. Such items are best deleted.

During the testing of the nomological network, modification indices can be used to identify additional relationships between latent variables. Adding these relationships to obtain a better fitting model however should only be done when the relationships can be theoretically argued. Further, adding relationships purely on the basis of one sample's data exposes one to the danger of 'overfitting the data', and to the threat of lack of replicability in another sample (Diamantopoulos 1994; MacCallum, Roznowski and Necowitz 1992). Additionally, theory aims to be parsimonious, and diminishing returns are associated with the addition of further relationships to a model.

During this study, LISREL's respecification tools described above were used primarily during the measure validation stage. In particular, higher levels of concurrent reliability, validity and parsimony were achieved by removing some items which displayed several high residuals, whose modification indices suggested they loaded on more than one variable, or whose error term correlated with the error term of another item, thus violating measurement theory's unidimensionality assumption (Gerbing and Anderson 1988). Respecification of the path model was not warranted in view of the absence of large modification indices, and the dangers of overfitting the data.

4.4 LIMITATIONS

4.4.1 Consideration of bias and error during data collection

Bias and error threaten the reliability and validity of research. They lead the researcher to drawing spurious conclusions. Using Black's (1999) error typology, this section reviews the main types of possible error, and the actions taken to guard against them. It also identifies potential sources of bias and acknowledges them as limitations.

4.4.1.1 Researcher error

The research can be the source of errors such as *myopia* (gathering the wrong data because the problem has not been defined well), *inappropriate analysis* (omitting to conduct relevant analysis, or conducting analysis in an inappropriate manner, or with data not suited to this type of analysis), *misinterpretation* (misunderstanding the implications of the research, or being influenced by strong a priori ideas), or *communication* (translating results in a manner which can be misunderstood, or cannot be verified).

Steps taken to guard against these errors included:

- An extensive review of the online and offline consumer behaviour literature;
- An extensive multi-disciplinary review of the literature, which resulted in the uncovering of a high level of convergence between phenomena, supporting the structure of the conceptual model;
- The presentation of the conceptual model at several fora, to solicit reviewer and participant feedback and suggestions. This led to the discovery of other relevant parts of the literature, and to the search for additional support to the development of the hypotheses in Chapter 3;
- The undertaking of an extensive exploratory study (Study 1), in order to seek to understand meanings during consumers' interactions with OSEs;

- The provision of a full account of the data collection and analysis strategy, detailing the measures taken to ensure methods were used in an appropriate manner;
- The provision of a full account of the results obtained and of the tests carried out, to enable readers to make their own assessment of the reliability and validity of the results and conclusions drawn from these (Ping 2004).

4.4.1.2 Sampling error

Sampling errors may be due to the choice of sampling frame (which may include irrelevant people or may not include certain types of respondents who are representative of a part of the population of interest), the process used to select respondents, and the response rate (which can affect the representativeness of the sample).

It was acknowledged (see Section 4.2.1.3, page 156) that the sampling frame is not fully representative of the target population, and in this sense it is a conduit for sampling error. In particular, the sampling frame, which consists of university students and staff, is more educated and younger overall than the target population, which consists of all online shoppers. Age may have an impact on how people interact with an online environment. Younger people have been exposed to such environments for a larger proportion of their life, whereas mediated environments may appear a lot less intuitive to older people. The higher education level of the sampling frame may also impact on the level of competence with which people interact with the website, since their average exposure to information technology is probably higher than the average population. These potential sources of error mean that any generalisation of the results to the overall target population needs to take account of these elements.

By using a selection process reliant on volunteers, it is possible that certain groups among the sampling frame are over-represented, while others are under-represented. For example, it is possible that those staff and students who find shopping online very frustrating would have shied away from volunteering, knowing they would have to

navigate a website to give their impressions of the experience. It is possible also that people with a low level of self-confidence with regard to IT or the internet felt intimidated and did not volunteer to participate. These additional possible sources of error need to be borne in mind when results are interpreted.

However, since one had to err when sampling, it was deemed more appropriate to err towards an over-representation of people whose characteristics (usage of IT, the internet, habit of shopping online, IT education) would be typical of the average consumer of the future. In this manner, while the results may not be generalisable to the current target population, they may provide valuable insights about what is, in effect, a future target population.

4.4.1.2.1 Measurement process

Measurement process errors may be due to conditioning (respondents may behave differently from usual when their attention is drawn to a topic, and they may over-elaborate); *process bias* (when respondents choose to answer questions in a manner which is different from their true opinion); or *recording* (when the wrong answer is recorded).

Errors due to conditioning are harder to detect and correct or attenuate, and to some extent all social sciences are subject to this source of error. On the other hand, process bias and recording error situations are easier to detect. Steps taken to guard against these errors included a consideration of individual cases of possible process or recording bias, specifically:

- in one questionnaire, the last two pages contained '3' answers on the Likert scale for all items. Next to his name the respondent had made the statement "Sorry I just don't feel like doing this today". This case was removed from the analysis.
- in one questionnaire, the respondent had systematically circled numbers between 1 and 5 so as to form a symmetrical pattern on every page. This was classified as a case of process bias and was removed from the analysis.

- one questionnaire contained missing values for all the items of one whole page. The respondent had evidently missed a page. This was classified as a case of recording error, and since the questionnaire would have contained too many missing values to use imputation, it was removed from the analysis.

4.4.1.2.2 Instrument bias

Instrument bias is caused by individual questions (which can be ambiguous, difficult to understand, confusing) or by the instrument and in particular the order of the items.

To minimise the sources of instrument bias in individual items, the following measures were adopted:

- The items were developed using guidelines provided in the literature (e.g. DeVellis 1991) about the wording of items.
- The wording of certain items from existing scales was adjusted, in particular when these items contains 'Americanisms' which have little currency in the UK.
- To guard against bias introduced by certain types of response styles (see later Section 4.4.1.3, page 202), some items were worded negatively. However, double negatives were avoided as much as possible.
- Where possible and applicable, the items developed used the verbatims obtained from the exploratory study (Study 1) so as to ensure that the terminology used was part of the consumers' common language.
- Items written for scales developed in this study were submitted to 9 expert judges (Study 2), and one of the tasks required of them was to suggest which items should be omitted for being unclear or containing other flaws which would limit their validity.
- The very rigorous scale development and validation process would also have screened out further confusing items, when the confusion led to inconsistent

answers, as these would have inevitably resulted in low item-to-total correlation (Churchill 1979).

- Conscious of the possibility that respondents can be 'led' to answer in a specific way when items of scales are presented in the same order as the sequencing of the hypothesised relationships, items from all scales were presented in a random order, with no two items from the same scale presented one after the other.

4.4.1.3 Respondent error

Respondent error may be due to *response styles*, which are "tendencies to respond systematically to questionnaire items on some basis other than what the items were specifically designed to measure" (Paulhus 1991), or *response error* (which may include uncertainty when respondents are unsure about their real opinion, inarticulation or mistakes). Response styles can contaminate respondents' answers, and in the process jeopardize the validity of conclusions drawn about the validity of new measures or the relationships between measures (Baumgartner and Steenkamp 2001). Of particular concern are social desirability and acquiescence and disacquiescence response styles.

Social desirability was considered to be a threat since among the conditions which foster social desirability bias are: research designs with self-report measures (Zerbe and Paulhus 1987) and younger populations: Park and Lessig (1977) indicate that the temptation of social desirability decreases with age. King and Bruner (2000) state that "Research involving self-reports of the behavioural aspects of consumers or marketers in conjunction with multi-item, summated scales should be suspect with respect to Social desirability bias, and hence it is appropriate to investigate for Social desirability bias effects" (p. 85). Social desirability bias can also help identify items which have been worded in a manner which elicits a socially desirable response whether respondents have a tendency to respond in a socially desirable manner or not. The manner in which Social desirability bias was tested for was explained in Section 4.3.1.3.2 (page 175).

To deal with acquiescence and disacquiescence bias, as per Paulhus' (1991) recommendation, it was ensured that each scale included both positively- and negatively-worded items. This precaution was also taken for existing scales, where a number of items were re-worded negatively if the original scale only contained positively-worded ones.

4.4.2 Considerations of validity, reliability and generalisability

Any scholarly study begs consideration of its integrity, acceptability and rigour, as well as its value in informing further situations. These issues were an integral part (and aim) of the design of the research. This section reviews the steps taken to minimise the possible sources of bias and error in the design of the research, and during the analysis phase.

4.4.3 Reliability considerations

Reliability deals with the consistency of the research work. In essence, it relates to the consistency of the researcher's decision-making where data is concerned, and it can be enhanced by checking the consistency of decisions over time and across cases. With quantitative tools, the aim is to reduce random error by ensuring that the measurement tools behave consistently and that the analysis is applied to the data consistently. Activities such as categorising answers to open-ended questions, making assumptions about non-answers in a questionnaire are particularly sensitive to reliability. To ensure and provide evidence of reliability, intermediary results and the basis of decisions are recorded in the findings chapters, to enable the reader to assess the consistency of the decision-making.

A further consideration concerning reliability is the potential for Type I or Type II errors as one draws conclusions from statistical results. Type I errors involve the rejection of a model or hypothesis even though these were correct, while Type II errors involve the non-rejection of a model or hypothesis which in reality are incorrect (see Table 4-13, page 204). Type II error is of particular concern in this study since at several stages in the

analysis, models were said to have a reasonable goodness of fit even though the chi-square statistic was significant. However, this situation is common in view of the sensitivity of the Chi-square to sample sizes, with larger sample sizes and departures from normality magnifying the effect of relatively small specification errors (Diamantopoulos and Siguaw 2000). For this reason, other goodness of fit indices were used at each stage to reduce the likelihood of a Type II error occurring.

Table 4-13: Errors in model testing

		Situation in population	
		Model is correct	Model is incorrect
Decision made	Do not reject model	Correct decision	Type II error
	Reject model	Type I error	Correct decision

4.4.4 Validity considerations

At stake in any quantitative study is the ability to demonstrate that the results of the research have been obtained through rigorous and logically acceptable means, and can be generalised to other situations (external validity). In other words, it concerns the ability to demonstrate that the 'artificial' measurement and the net of relationships between measures are a true representation of the concepts and theory under consideration. The manner in which several types of validity (face validity, convergent, discriminant and nomological validity) were assessed, is discussed throughout Section 4.3 (page 164) on the Analysis strategy:

The reliability and validity of the results of any study is also reliant on the competent use of analytical techniques and softwares to arrive at these results. Section 4.3.5 (page 192) reviews and justifies a number of considerations and protocols followed during the use of Exploratory Factor Analysis with SPSS and Structural Equation Modelling with LISREL 8.72 (Joreskog and Sorbom 1993).

4.4.5 External validity considerations

The last and arguably most important type of validity is external validity, or the ability to generalise the results of this study to other settings. The ultimate aim of external validity is to extend the meaning of the results and underlying theory to further persons, settings and times.

External validity may be strived for through the selection of a sample which is statistically representative of a wider population. Due to cost and time imperatives, the sample used in this research could be not statistically representative of the target population. The generalisability of results to the whole target population in the strictest sense of the term is therefore not possible, and the limitation has been acknowledged. However, it was argued that the sample population represented tomorrow's consumers, and therefore the study results are valuable as an insight into future consumer behaviour.

Concerning the analysis, the sample size and the model specification used in modelling the structural equations to test the hypotheses provided the analysis with strong power, as evidenced in the number of degrees of freedom of the model. The method took account of and corrected for measurement error. These methods, combined with acceptable fit, makes the results obtained from the one sample more generalisable (Calder, Phillips and Tybout 1982; Hair et al. 1998).

Further, the research relied on four studies using different samples and methodologies (qualitative and quantitative), and therefore, in the process of validating the results across all studies, opportunities for falsification (Popper 1959) were sought and external validity enhanced.

4.5 SUMMARY

This chapter outlined the methodological decisions made to test the set of propositions and hypotheses which had been developed in Chapter 3. It justified the choice of a realist

approach, and provided an overview of the four studies undertaken and their purpose. Then, for the main study, it reported the sampling decisions, before detailing the procedure used to collect data, in terms of the choice of stimulus, the administration and the instrument. The four main steps of the analysis were then explained, together with a discussion of the assumptions and criteria associated with the main statistical methods used. A summary of the strategies used to fulfil the objectives of the research is presented in Table 4-14 (page 207). Finally, limitations were considered and acknowledged, as the steps followed to minimise sources of error and bias during the data collection and analysis were outlined.

The next part of this thesis consists in the reporting of the results of the analysis, which is organised in three chapters. The first of these (next chapter) reports the development and validation of the model's measures.

Table 4-14: Summary of the study's objectives, methods employed and main analysis

Objective	Method	Sample size	Analysis
Measures development	Study 1: qualitative study of think alouds during OSE navigation and think afters	n=19	Protocol analysis
	Study 2: expert judging	n=9	Select best items based on inter-judge agreement
	Study 3: pretest	n=39	Select items based on qualitative feedback, inter-item correlations and exploratory factor analysis
Measures purification	Main study: Survey following 8-minute OSE navigation	n=150 (half of main study's sample)	Retain items based on internal consistency, social-desirability bias assessment, exploratory factor analysis
Measures validation	Main study: Survey following 8-minute OSE navigation	n=151 (the other half of the main study's sample)	Finalise measures using confirmatory factor analysis, and assessing their reliability and validity.
Testing of Propositions 1 and 2	Main study: Survey following 8-minute OSE navigation	n=301	Second-order confirmatory factor analysis. Assessment of overall fit. Examination of individual parameters.
Testing of Hypotheses 1-5	Main study: Survey following 8-minute OSE navigation	n=301	Structural equation modelling. Assessment of overall fit. Examination of individual parameters.

CHAPTER 5:

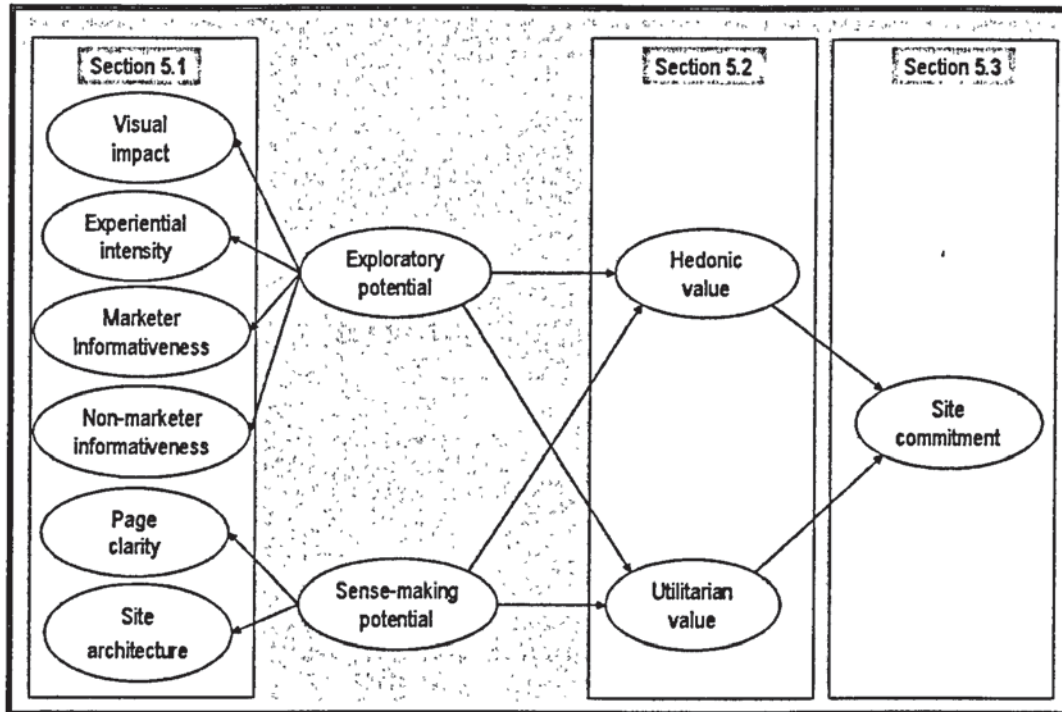
MEASURE DEVELOPMENT AND VALIDATION

5.0 INTRODUCTION

The aims of this chapter are: (1) to present the measures used in the main study, including their main stages of development and validation; (2) to report the steps used to validate existing measures and (3) to demonstrate the psychometric strength of all measures. The chapter presents each group of measures in the order of their ‘appearance’ in the model, i.e. independent variables are presented first, followed by mediating variables and finally the dependent variable. Thus, this chapter consists of three main sections, followed by a summary of the key measure statistics. Section 5.1 (page 210) presents the development and validation of independent variables: OSE attributes dimensions, namely Page clarity, Site architecture, Visual impact, Experiential intensity, Marketer informativeness and Non-marketer informativeness⁵. Section 5.2 (page 224) reports on the validation of the two previously-published scales used to measure the mediating variables, Utilitarian Value and Hedonic Value (Babin et al. 1994). Section 5.3 (page 228) presents the steps and results of the development and validation of the dependent variable of the model: Site commitment. The conceptual model of the thesis is reproduced in Figure 5-1 (page 209, and the focal area of each section has been superimposed. Note that Sense-making potential and Exploratory potential are not discussed in this chapter because they are conceptualised as second-order factors, measured by their first order factors rather than individual observed items.

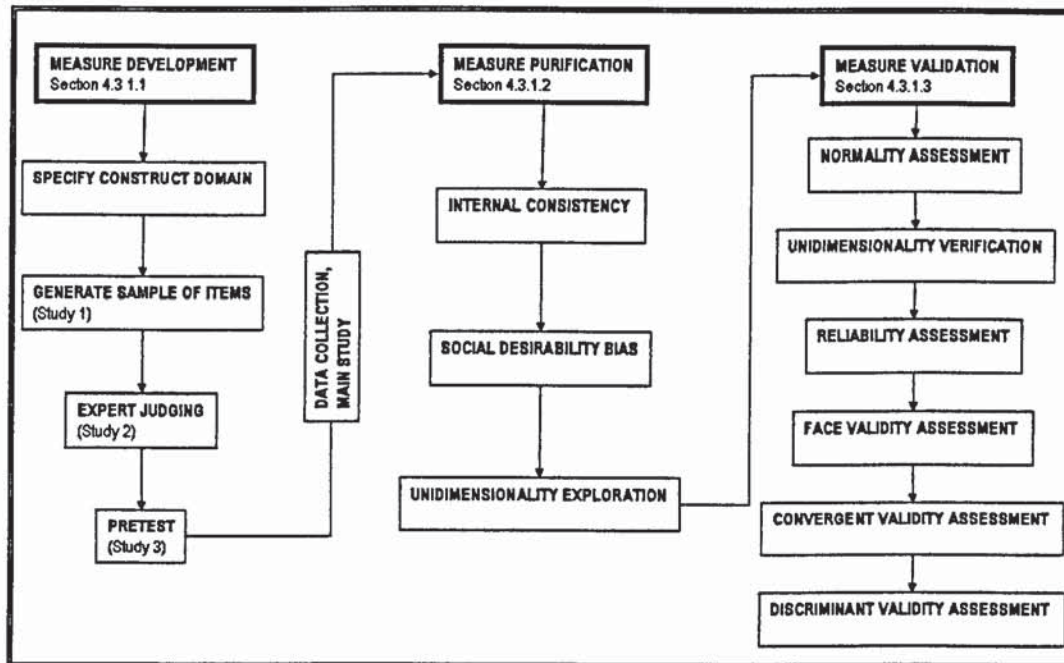
⁵ : Strictly speaking, the OSE attribute dimensions are conceptualised to be measures of two higher-order constructs (Sense-making potential and Exploratory potential), and therefore they are endogenous variables, being ‘caused’ by the higher-order constructs. However, so as not to further complicate the terminology, they are called ‘independent variables’ in this chapter.

Figure 5-1: Overview of Chapter Five



As detailed in the last chapter (see Section 4.3.1, page 167) and shown in Figure 5-2 (page 210), the analysis strategy to develop new measures concerning the development of new measures consisted of three distinct phases: development, purification and validation. The main stages of the development process (items sample generation and expert judging) are reported in Appendices 2 (page 334) and 4 (page 348). Measure Purification (consisting of internal consistency assessment, social desirability bias assessment and unidimensionality exploration) are reported in Appendices 6 (page 362) and 7 (page 391). The measures as they stood on conclusion of the purification stage, and indices of their internal consistencies and variance explained, are summarised at the start of the next section and serve as the input to the validation stage.

Figure 5-2: Measure development and validation strategy adopted in the research



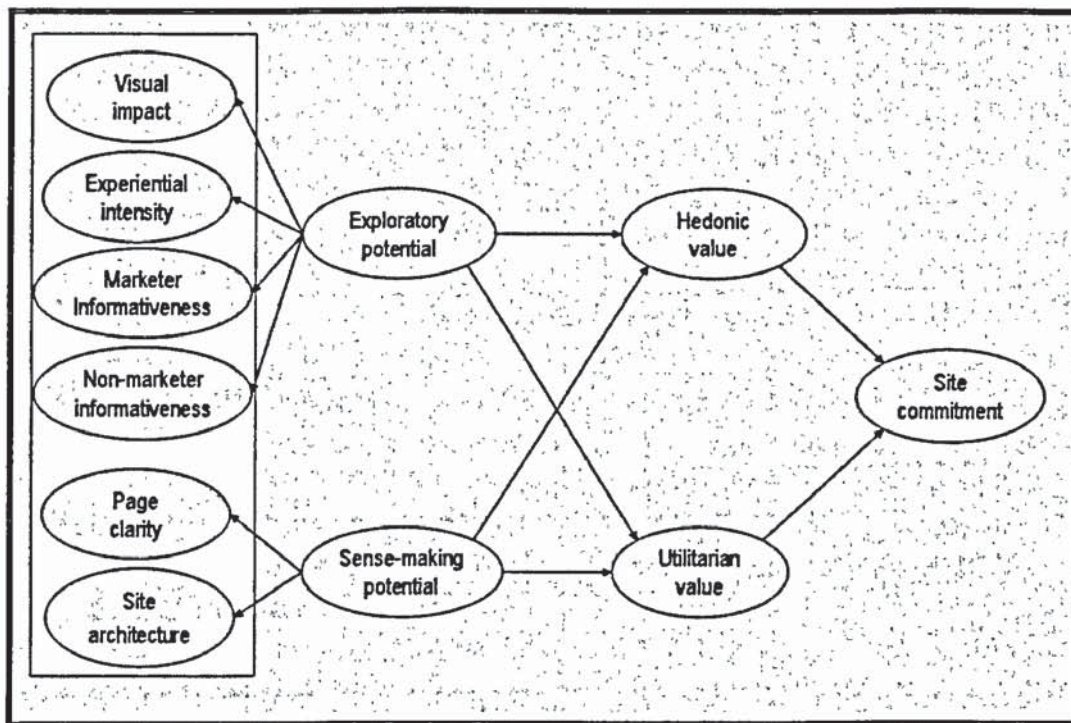
5.1 INDEPENDENT VARIABLES – OSE ATTRIBUTES

This section deals with the model's independent variables, as highlighted in Figure 5-3 (page 211), whose definitions are reproduced in Table 5-1.

Table 5-1: Definitions of the OSE attributes

Construct	Definition used in this thesis
Visual impact	the attention-grabbing, aesthetic visual diversity of individual web pages
Experiential intensity	the ability of the website to produce an involving shopping experience
Marketer informativeness	the extensiveness of marketer information available on the site
Non-marketer informativeness	the extensiveness of product information on the site, which originates from non-marketer sources
Page clarity	"the ease with which one can grasp the organisation of the scene" (Kaplan 1992)
Site architecture	the shoppers' perception of the organisation of the different pages of the website as a coherent, understandable whole

Figure 5-3: The model's independent variables (in white box)



5.1.1 Measure purification

A step-by-step report of the scale purification process is provided in Appendix 6 (page 362). The steps consisted of assessing internal consistency, inspecting mean and standard deviation, checking for Social desirability bias and exploring the dimensionality of each dimension. This phase of the analysis used a sample of 150 respondents. Table 5-2 (page 212) presents the statistics of the items on conclusion of the measure purification stage, together with scale statistics.

The process resulted in six purified measures with strong indications of reliability and validity. The measures' Cronbach's Alphas range from .774 (for Experiential intensity) to .882 (for Visual impact). They are all above the recommended cut-off point of .7 (Nunnally 1978) and five of the six Alphas are above the .8 mark. The measures are therefore reliable. The Total Variance Explained by the measures varies from 51.596% (for Marketer informativeness) to 68.277% (for Visual impact), indicating that each of

the factors represents at least half of the variance of the individual items. The next part of this section describes the stringent validation process the measures were taken through.

Table 5-2: OSE attributes - Statistics on conclusion of measure purification stage

Scale item	Factor loading	Mean	Standard deviation
Visual impact Cronbach's Alpha: .882; Total Variance Explained: 68.277%			
VI3 The website had a visually pleasing design	.884	3.25	1.037
VI4 The website was aesthetically appealing	.800	3.18	.997
VI7 This website was dull visually	.872	3.25	1.106
VI8 This site had no visual impact	.769	3.43	1.096
VI9 The graphics elements of this site were boring	.800	2.85	1.108
Experiential intensity Cronbach's Alpha: .774; Total Variance Explained: 53.110%			
EF4-This site replicated the kind of experience I have when I shop	.732	2.46	1.156
EF5 - This website was incapable of reproducing the excitement of shopping	.683	2.56	1.223
EF6-When I navigated this website I felt I was shopping for real	.780	2.54	1.185
EF7- This site felt more like reading a text than being in a shop	.636	2.87	1.160
EF8-The experience of shopping was not there when I navigated on this site	.800	2.86	1.068
Marketer informativeness Cronbach's Alpha: .865; Total Variance Explained: 51.596%			
I1 - This site had insufficient product information	.736	3.28	1.081
I2 - This website provided complete product description	.638	3.41	.957
I3 - This website adequately met my information needs	.786	3.26	1.126
I6 - There was enough information on this site to assess the products	.705	3.37	.958
I7 - I could learn a lot about the products	.752	3.25	.969
I8 - There wasn't enough information on this website to make a purchase decision	.760	3.47	1.041
R1 The information on this website was helpful	.701	3.75	.882
IQ5- the information on this website was useful	.655	3.53	.857
<i>(continued next page)</i>			

Scale item	Factor loading	Mean	Standard deviation
<i>(continued from previous page)</i>			
Non-marketer informativeness 64.536%	Cronbach's Alpha: .812; Total Variance Explained:		
NMI1: This website only gave me its own product information, and not other users' impressions	.812	3.39	1.203
NMI2: This site had customer reviews of products	.891	3.59	1.205
NMI3: From this site it was impossible to see what other users thought of the products	.828	3.24	1.374
NMI4: I could access product reviews on this site	.666	3.52	1.208
Page clarity 56.872%	Cronbach's Alpha: .870; Total Variance Explained:		
IL2 There was too much text on the screen	.817	3.35	1.074
IL4 There was an awful lot of things on every page	.723	3.25	1.118
IL6 The web pages were easy to read	.730	3.91	.843
IL8 The pages of this website were too crowded	.828	3.33	1.168
PO1 The content on the website was clear	.765	3.84	.824
PO4 The organization of the information onscreen was confusing	.674	3.72	1.024
PO7 The content on this site was well organized	.731	3.75	.884
Site architecture 56.116%	Cronbach's Alpha: .838; Total Variance Explained:		
CO1: During the navigation, I felt confused	.726	3.87	1.038
CO5: I felt in charge of my navigation with the site	.775	3.75	.861
CO6: I felt lost on this website	.850	3.98	.993
CO7: I felt I could understand how the website worked	.642	3.83	.886
CO8: I felt as though the website was controlling me rather than me controlling it	.759	3.67	1.223
EOU2: My interaction with this website is clear & understandable	.728	3.78	.940

5.1.2 Measure validation

As reported in Section 4.3.1.2 of Chapter 4 (page 173), the validation of the measures was carried out on a sample of 151 respondents independent from the sample used during the purification stage. Reliability and validity assessments were made using

Confirmatory Factor Analysis, using LISREL 8.72 (Joreskog and Sorbom 1993).

Contrary to Exploratory Factor Analysis which ‘uncovers’ patterns in data, Confirmatory Factor Analysis confirms or refutes hypothesised patterns in data. It is therefore suited to this phase of the process. Prior to these assessments, several alternative models are specified and reviewed in order to ensure the hypothesised measurement structure is the best fitting.

5.1.2.1 Assessment of competing models

This section reviews the process followed to develop and assess a range of competing models.

5.1.2.1.1 Specification of alternative models

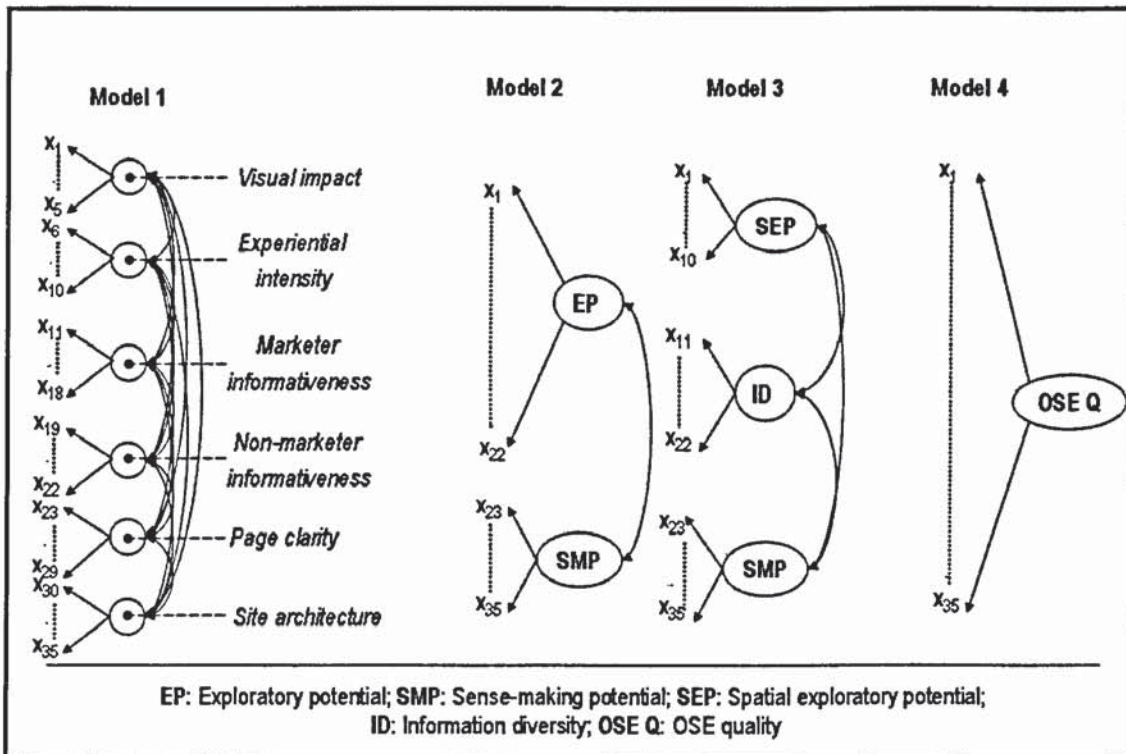
The first step in Structural Equation Modelling is to specify a model, which consists of stating the set of relationships between variables (observed and latent) which are submitted to the test. The purpose here is to test the strength of the relationships between individual items and the dimensions they have been developed for. The model, called Model 1, is shown in Figure 5-4 (page 215).

Since a well-fitting structural equation model can at best be thought of as one of several possible ways of explaining the data’s behaviour, it is recommended to always compare the hypothesised model with other conceivable models. Several alternative models could be rationally developed. In the first alternative (Model 2), one could conceive that the two constructs of Exploratory potential and Sense-making potential are first-order constructs, i.e. they can be measured directly by items tapping different facets of the constructs. Thus, in Model 2, the individual measured items are linked directly to these two constructs.

The second alternative (Model 3) could be based on the argument that the spatial qualities (Visual impact and Experiential intensity) and the informational qualities

(Marketer informativeness and Non-marketer informativeness) of Exploratory potential are actually two distinct constructs. Thus, in Model 3, the observed items could be linked to three distinct constructs: Spatial exploratory potential, Information diversity and Sense-making potential. A final alternative model (Model 4), could conceive that all items are reflective of a single, OSE quality construct. Thus, in Model 4, all the individual observed variables would be linked to a single first-order construct, OSE quality. The hypothesised model (Model 1) and the three alternative models (Models 2-4) are represented graphically in Figure 5-4.

Figure 5-4: Alternative measurement models tested



5.1.2.1.2 Evaluation of model fits

Models are called nested when one is but a restricted condition of another. Thus, Model 2 is nested in Model 1 because it is Model 1 when the correlations between Visual impact, Experiential intensity, Marketer informativeness and Non-marketer informativeness on the one hand, and between Page clarity and Site architecture on the

other hand, are set to 1. Model 3 is also nested in Model 1 because it is Model 1 when the correlations between Page clarity and Site architecture; between Visual impact and Experiential intensity; and between Marketer informativeness and Non-marketer informativeness are set to 1. Finally, Model 4 is similarly nested in Model 1, since it represents Model 1 where all correlations between the six dimensions have been set to 1.

The relative fit of nested models can be assessed statistically, through a Chi-square difference test. All four models were estimated using LISREL 8.72 (Joreskog and Sorbom 1993), once relative normality had been verified (see Appendix 8, page 396). The Chi-squares of the four models tested are shown in Table 5-3, and the Chi-square differences between models are presented in Table 5-4. Clearly, Model 1, the Hypothesised Model, has a much better fit than any of the alternative models, the Chi-square differences being, with Model 2, 730.67 with 14 degrees of freedom, with Model 3, 373.18 for 12 degrees of freedom, and with Model 4, 1,212.62 for 15 degrees of freedom. All these differences are significant at the .001 level. Other indices (RMSEA, CFI and PGFI) all paint a similar picture, Model 1 being the only one with indices within or close to an acceptable range.

Table 5-3: Goodness-of-fit indices of alternative measurement models

Model	χ^2	Degrees of freedom	RMSEA	CFI	PGFI
1 (6 factors)	978.89	545	.073	.95	.63
2 (2 factors)	1,709.56	559	.12	.89	.54
3 (3 factors)	1,352.07	557	.098	.91	.58
4 (1 factor)	2,191.51	560	.14	.86	.48

Table 5-4: Chi-square differences between models

Model comparisons	$\Delta\chi^2$	$\Delta d.f.$
1-2	730.67**	14
1-3	373.18**	12
1-4	1,212.62**	15

** : Significant at the .05 level.

5.1.2.2 Overall goodness of fit of chosen model

Having established that Model 1 fits the data far better than the three alternative models tested, its overall goodness of fit is now assessed. There is no one commonly accepted way to assess goodness of fit, but rather a series of indices which, when combined, enable the researcher to form an overall idea of how well the hypothesised model fits the data. Table 5-5 reports a series of fit indices, across the three general categories of fit indices (absolute, comparative and parsimonious), together with the acceptability criteria of each fit index.

Table 5-5: Fit indices of hypothesised measurement model (Model 1)

	χ^2	d.f.	p	RMSEA	GFI	SRMR	CFI	NFI	NNFI
Index type	Absolute				Comparative				Parsimonious
Criteria			>.05	<.05	≥.90	<.08	≥.90	≥.90	≥.95
Initial Model index	978.9	545	.00	.073	.73	.074	.95	.89	.94
Accept'ity			x	x	x	x	✓	Close	Close

Several indices meet the acceptability criteria (CFI, IFI, CAIC) while others (RMSEA, AGFI, χ^2) fall short of these. A study of modification indices, residuals and item reliabilities suggested that, provided these made conceptual sense, a number of modifications would increase the fit of the model to within an acceptable range.

5.1.2.3 Model modification

Model modification was carried out based on the following indications: weak item reliabilities, weak loading on the specified factor, patterns among residuals and modification indices which suggested certain items may load better on alternate factors. Each indication and concerned item was reviewed in turn, assessed as to the conceptual meaning of the indication, and either removed from the analysis or re-specified.

Items were removed one at a time, in order to study the individual effect of their removal or respecification. Upon removal of nine items and the respecification of four others, the resulting, modified model yielded better fit indices, as shown in Table 5-6. These are, overall, indicative of excellent fit between the sample's data and the model.

Table 5-6: Fit indices of the final measurement model

	χ^2	d.f.	p	RMSEA	GFI	SRMR	CFI	NFI	NNFI
Index type	Absolute			Comparative			Parsimonious		
Criteria			>.05	<.05	\geq .90	<.08	\geq .90	\geq .90	>.95
Initial Model index	978.9	545	.00	.073	.73	.074	.95	.89	.94
Final Model index	368.5	284	.00	.045	.84	.057	.97	.92	.97
Acceptability			x	✓	x	✓	✓	✓	✓

5.1.2.4 Interpretation

Having achieved a very good model fit, it is now possible to examine the individual indicators produced by LISREL for each of the model's free parameters: the standardised factor loading, its standard error, the relevant t-values and its reliability. These are presented in Table 5-7 (page 219).

Table 5-7: OSE attributes – Item parameters of the validated measures

Item	Standardised factor loading (t-value)	Item reliab.	Meas. error (t-value)
Visual impact. 4 items. Average Variance Extracted: .64; Composite Reliability: .88			
VI3 The website had a visually pleasing design	.84** (9.00)	.70	.30** (6.28)
VI4 The website was aesthetically appealing	.84** (9.04)	.71	.29** (6.17)
VI7 This website was dull visually	.84** (8.98)	.70	.30** (6.32)
VI8 This site had no visual impact	.68 (1)	.46	.54** (7.83)
Experiential Intensity. 5 items. Average Variance Extracted: .48; Composite Reliability: .82			
EF4-This website replicated the kind of experience I have when I shop	.70** (8.46)	.49	.51** (7.21)
EF5 - This website was incapable of reproducing the excitement of shopping	.64** (7.59)	.41	.60** (7.66)
EF6-When I navigated this website I felt I was shopping for real	.70** (8.46)	.49	.51** (7.21)
EF7- This site felt more like reading a text than being in a shop	.64** (7.60)	.41	.59** (7.65)
EF8-The experience of shopping was not there when I navigated on this site	.79 (1)	.63	.37** (6.16)
Marketer informativeness. 5 items. Average Variance Extracted: .47; Composite Reliability: .82			
I2 - This website provided complete product description	.63** (6.87)	.39	.60** (7.65)
I6 - There was enough information on this website to assess the products	.66** (7.09)	.39	.57** (7.51)
I7 - I could learn a lot about the products	.72** (7.64)	.50	.49** (7.06)
R1 The information on this website was helpful	.74** (7.81)	.57	.46** (6.87)
IQ5- The information on this website was useful	.69 (1)	.48	.52** (7.27)
Non-marketer Informativeness.3 items. Average Variance Extracted: .57; Composite Reliability: .79			
NMI1: This website only gave me its own product information, and not other users' impressions	.87** (6.87)	.78	.24* (2.96)
NMI2: This site had customer reviews of products	.76** (6.91)	.56	.43** (5.60)
NMI3: From this site it was impossible to see what other users thought of the products	.61 (1)	.37	.63** (7.53)

(continued next page)

Item	Standardised factor loading (t-value)	Item reliab.	Meas. error (t-value)
<i>(continued from previous page)</i>			
Site architecture. 6 items. Average Variance Extracted: .48; Composite Reliability: .85			
CO1: During the navigation, I felt confused	.74** (7.23)	.55	.45** (7.20)
CO6: I felt lost on this website	.60** (6.12)	.36	.65** (8.01)
EOU2: My interaction with this website is clear and understandable	.79** (7.55)	.63	.37** (6.66)
IL6 The web pages were easy to read	.65** (6.52)	.42	.58** (7.82)
PO4 The organization of the information presented on the screen was confusing	.74** (7.22)	.55	.45** (7.21)
PO7 The content on this site was well organized	.62 (1)	.38	.62** (7.93)
Page clarity. 3 items. Average Variance Extracted: .67; Composite Reliability: .86			
IL2 There was too much text on the screen	.88** (11.09)	.77	.23** (4.45)
IL4 There was an awful lot of things on every page	.76** (9.71)	.57	.43** (6.96)
IL8 The pages of this website were too crowded	.81 (1)	.65	.35** (6.13)
1: the metric for each scale was established by fixing one of the construct indicators to 1.00			
*: significant at the .005			
**: significant at the .001 level			

The factor loadings of the 26 items retained are all significant at the .005 or .001 level. They are also fairly high, ranging from .60 to .88, thus more than meeting the minimum criterion of .40 (Ford, MacCallum and Tait 1986) and indicating a reasonably high fit between the 6 dimensions and the individual items used to measure them. Item reliabilities ranged from .36 to .78 and averaged .46, indicating acceptable levels of reliability (Hair et al. 1998). The Composite reliabilities range from .79 (for Non-marketer informativeness) to .88 (for Visual impact), well above Bagozzi and Yi's (Bagozzi and Yi 1988) minimum criterion of .60. The Average variances extracted range from .48 (for Site architecture) to .66 (for Visual impact and Page clarity). Three of the Average variances extracted are well above the recommended threshold of .50 (Bagozzi and Yi 1988), while Marketer informativeness, Experiential intensity and Site architecture are within just 2 and 3 decimal points of the threshold. This means that for these three scales, the variance is split nearly equally between error and construct variance. However, measures with AVE results lower than .5 have been used reliably in the past (e.g. Netemeyer et al. 1997).

5.1.2.5 Reliability assessment

Table 5-7 in the last section (page 219) shows item and construct reliabilities. Item reliabilities range from .36 (CO6) to .78 (NMI1) and average .535. Composite reliabilities range from .80 (Non-marketer informativeness) to .88 (Visual impact) and therefore are all well above the .60 recommended cutoff point (Bagozzi and Yi 1988). This indicates that both the items and each of the dimensions retained are reliable.

5.1.2.6 Convergent validity assessment

A first estimation of convergent validity consisted in ensuring in the measurement model that each indicator's estimated factor loading on its designated construct was significant (Anderson and Gerbing 1988; Peter 1981). Indeed all lambdas were significant at the .005 or .001 level, the t-values ranging from 6.12 (CO6) to 11.09 (IL2). Furthermore, the Average variance extracted of all 6 dimensions is either within three digits or above the minimum criterion of .5, which Fornell and Larcker (1981) argue is further evidence of convergent validity.

5.1.2.7 Discriminant validity assessment

Discriminant validity was assessed in two ways. Firstly, a confidence interval of plus or minus two standard errors was built around each correlation. None included 1 as Table 5-8 (page 222) shows, suggesting that all constructs have discriminant validity.

Table 5-8: OSE attributes, inter-factor correlations and standard errors

	1	2	3	4	5	6
Visual impact (1)	1.00					
Experiential intensity (2)	.64 (.08)	1.00				
Marketer informativeness (3)	.61 (.07)	.60 (.08)	1.00			
Non-marketer informativeness (4)	.32 (.06)	.19 (.07)	.39 (.06)	1.00		
Page clarity (5)	.38 (.07)	.43 (.09)	.21 (.05)	.00 (.04)	1.00	
Site architecture (6)	.57 (.05)	.44 (.05)	.61 (.07)	.26 (.07)	.63 (.06)	1.00

Secondly, for each set of two dimensions, pairs of nested two-factor models were tested, where the correlation between the two factors was set free (Model 1), then set to equality (Model 2). Since for each pair, the latter model is nested into the first, the Chi-square difference indicates whether the two models are statistically different, i.e. whether the two constructs are indeed distinct or not. All Chi-square differences were significant at the .005 level (see Table 5-9, page 223), implying all constructs are statistically distinct, and therefore have discriminant validity.

Table 5-9: Discriminant validity assessment, using nested models for each factor pair

	1	2	3	4	5	6
Visual impact (1)						
Experiential intensity (2)	10.20*					
Marketer informativeness (3)	16.52**	20.75**				
Non-marketer informativeness (4)	17.35**	20.62**	19.62**			
Page clarity (5)	20.17**	15.48**	29.54**	29.41**		
Site architecture (6)	16.63**	24.07**	21.06**	30.83**	18.08**	

Figures are Chi-square differences between models, when correlation between the pair of factors is set to unity, then set free. The difference in degrees of freedom between the two models of each pair is 1.

*: significant at the .005 level

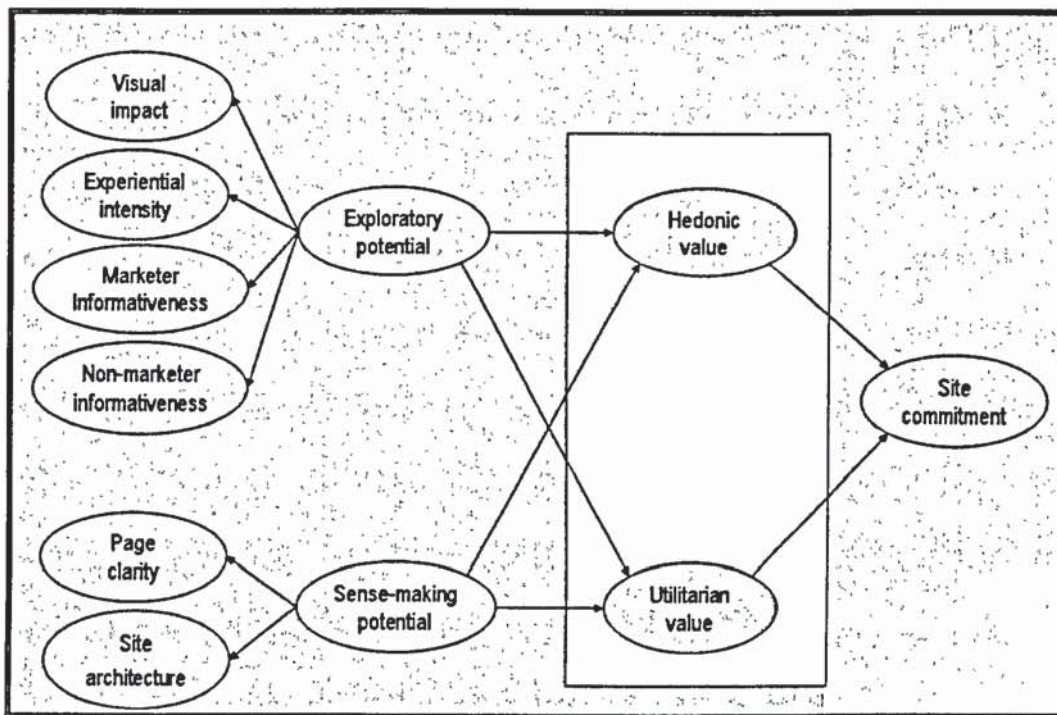
**: significant at the .001 level

In summary, this section has reported the results from the measure development, purification and validation process which the independent variables (the OSE attributes), were taken through. In a first stage, the measures were purified through a consideration of internal consistency, social desirability bias and unidimensionality exploration. The individual dimensions of each construct were factor analysed together for further refinement. During the validation stage, the items were taken through Confirmatory Factor Analysis. The resulting six scales (Visual impact, Experiential intensity, Marketer informativeness, Non-Marketer informativeness, Page clarity and Site architecture), consisting of a total of 26 items (see Table 5-7, page 219). They displayed sound reliabilities and variances extracted. They are the result of an extremely rigorous process, and can be used for the testing of hypotheses with confidence. The results from this process are reported in Chapter 6, while the rest of this chapter deals with the mediating and dependent variables.

5.2 MEDIATING VARIABLES – UTILITARIAN AND HEDONIC VALUE

This section deals with the model's mediating variables, as highlighted in Figure 5-5. It reports the validation stages of these published scales. The discriminant validity of the two scales is discussed in a later section, dealing with discriminant validity assessments of all the model's scales (see Section 5.3.3, page 232).

Figure 5-5: The model's mediating variables (in white box)



5.2.1 Utilitarian value: Scale validation

The Utilitarian value measure used is Babin et al.'s (1994) utilitarian dimension of the 'Shopping value' measure, consisting of four items (see Appendix 2, page 341). Babin et al. (1994) report a Cronbach's Alpha of .80 for this dimension. Prior to conducting a Confirmatory Factor Analysis, the kurtosis and skewness were inspected (to confirm that

the normality assumption was not grossly violated) and are reported in Appendix 8, page 396.

A Confirmatory Factor Analysis model was specified, with each item loading on to the Utilitarian value factor. The results are shown in Table 5-10, and are indicative of an excellent fit, which confirms the unidimensionality of the scale.

Table 5-10: Fit indices of hypothesised Utilitarian value measurement model

	χ^2	df	P	RMSEA	GFI	SRMR	CFI	NFI	NNFI
Criteria			>.05	<.05	\geq .90	<.08	\geq .90	\geq .90	\geq .95
Model index	1.86	2	.39	.0	1.00	.013	1.00	1.00	1.00
Acceptability	✓		✓	✓	✓	✓	✓	✓	✓

5.2.1.1 Reliability assessment

Table 5-11 (page 226) shows that the factor loadings of all four items are significant at the .001 level, and high, ranging from .48 to .81, well above the minimum criterion of .40 (Ford et al. 1986), and indicative of a good fit between the dimension and each of the items. Item reliabilities average .49, which is rather low. This low average is attributable to the .23 reliability of item UV4. The item however was retained since it was known to have performed well previously (e.g. Babin et al. 1994), and it does not bring Composite reliability or Average variance extracted down to dangerous levels. The Composite reliability (.79) is well above Bagozzi and Yi's (Bagozzi and Yi 1988) minimum criterion of .60. The Average variance extracted, at .49, is within a decimal point of the recommended threshold of .50 (Bagozzi and Yi 1988). Therefore, both items and scale are reliable.

Table 5-11: Utilitarian value – Item parameters

	Standardised factor loading (t-value)	Item reliab.	Meas. Error (t- value)
Composite Reliability: .79; Average Variance Extracted: .49			
UV1: I accomplished just what I wanted to on this navigation	.73 (')	.54	.46** (8.85)
UV2: I couldn't find what I really needed on this website	.81** (11.41)	.65	.35** (6.75)
UV3: While shopping I found just the item(s) I was looking for	.74** (11.03)	.55	.45** (8.71)
UV4: I was disappointed because I would have to go to another site to complete my shopping	.48** (7.50)	.23	.77** (11.41)

': fixed items do not have a t-value.

**': Significant at the .001 level

5.2.1.2 Convergent validity

The first indication of convergent validity is that each indicator's estimated factor loading is significant (Anderson and Gerbing 1988; Peter 1981) at the .001 level, the t-values ranging from 7.50 to 11.41. Secondly, the Average variance extracted is within a digit of the minimum criterion of .50, which Fornell and Larcker (1981) argue is further evidence of convergent validity.

5.2.2 Hedonic value: scale validation

The Hedonic value measure used is Babin et al.'s (1994) hedonic dimension of the 'Shopping value' measure, consisting of 11 items (see Appendix 2, page 341). Babin et al. (1994) report a Cronbach's Alpha of .93 for this dimension. Prior to conducting a Confirmatory Factor Analysis, the kurtosis and skewness of the items were inspected, and are reported in Appendix 8 (page 396).

A Confirmatory Factor Analysis model was specified, with each item loading on to the Hedonic value factor. The model displayed poor fit ($\chi^2=168.35$; d.f.=44; RMSEA=.097; GFI=.91), suggesting the measure is not unidimensional (Kumar and Dillon 1987). Other studies have similarly used the Hedonic value scale in a reduced format (e.g. Babin

et al. 2004). It was at this point decided to reduce the scale until it met the unidimensionality criteria necessary for the use of Structural Equation Modelling to test the hypotheses developed in Chapter 3. Five items were removed in this manner. The resulting scale, consisting of 6 items, provides an excellent fit, as shown in Table 5-12, thus confirming the unidimensionality of the scale.

Table 5-12: Fit indices of hypothesised Hedonic value measurement model

	χ^2	df	P	RMSEA	GFI	SRMR	CFI	NFI	NNFI
Criteria			>.05	<.05	≥.90	≤.080	≥.90	≥.90	≥.95
Model index	12.98	9	.163	.038	.99	.020	1.00	.99	.99
Acceptability	✓		✓	✓	✓	✓	✓	✓	✓

5.2.2.1 Reliability assessment

Table 5-13 (page 228) shows that the factor loadings of all six items are significant at the .001 level, and high, ranging from .65 to .79, well above the minimum criterion of .40 (Ford et al. 1986), and indicative of a good fit between the dimension and each of the items. Item reliabilities average .55. The Composite reliability (.88) is well above Bagozzi and Yi's (Bagozzi and Yi 1988) minimum criterion of .60. The Average variance extracted, at .55, is also above the recommended threshold of .50 (Bagozzi and Yi 1988). Therefore, both items and scale are reliable.

5.2.2.2 Convergent validity

The first indication of convergent validity is that each indicator's estimated factor loading is significant (Anderson and Gerbing 1988; Peter 1981) at the .001 level, the t-values ranging from 11.11 to 13.59. Secondly, the Average variance extracted (.55) is above the minimum criterion of .50, which Fornell and Larcker (1981) argue is further evidence of convergent validity.

Table 5-13: Hedonic value – Item parameters

	Standardised factor loading (t-value)	Item reliab.	Error variance (t-value)
Composite Reliability: .88; Average Variance Extracted: .55			
HV1: The navigation on this website was truly a joy	.76 (1)	.58	.42 (9.98)
HV3: Shopping on this website truly felt like an escape.	.79** (13.59)	.62	.38 (9.60)
HV6: I enjoyed this navigation for its own sake, not just for the items I may have purchased	.65** (11.11)	.43	.57 (11.05)
HV7: I had a good time on this website because I was able to act on "the spur of the moment".	.72** (12.28)	.51	.49 (10.54)
HV8: During the navigation I felt the excitement of the hunt	.75** (12.87)	.56	.44 (10.18)
HV10: While shopping on this site I felt a sense of adventure	.78** (13.53)	.61	.39 (9.65)

1: fixed items do not have a t-value.

** : significant at the .001 level

5.3 DEPENDENT VARIABLE – SITE COMMITMENT

This section deals with the model's dependent variable, as highlighted in Figure 5-6 (page 236). Site commitment was defined as: the degree to which the consumer is willing to remain associated with the retail website.

5.3.1 Scale development and purification

The scale for the dependent variable, Site commitment, was developed, purified and validated in the same manner as the scales measuring the independent variables in Section 5.1 of this chapter (page 210). The process followed is shown in Figure 5-2 (page 210), and reported in detail in Appendix 7 (page 391). On conclusion of the purification stage, a total of 9 items were retained. Their statistics are shown in Table 5-14 (page 229).

The Cronbach's Alpha (.919) and the Total variance explained (62.398%) are indicative of a strong scale.

Figure 5-6: The model's dependent variable (in white box)

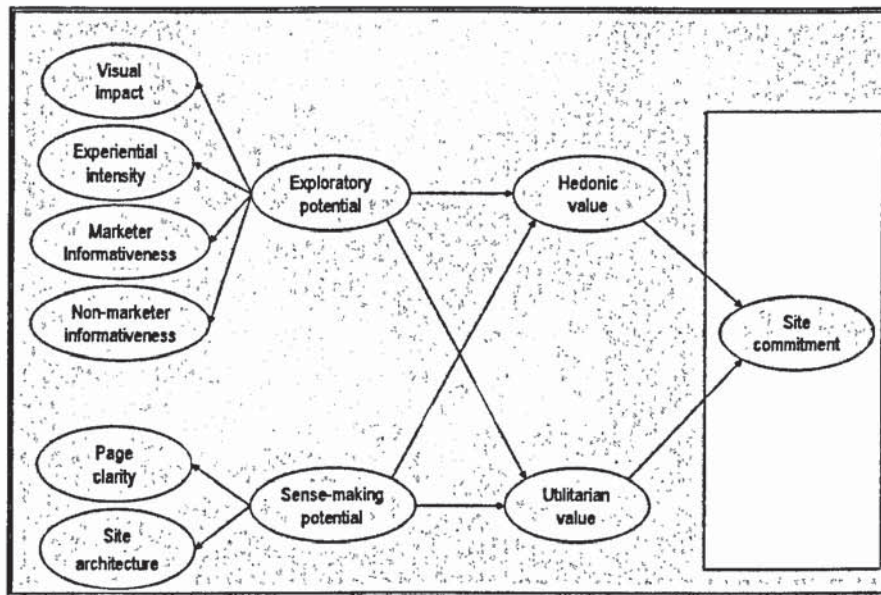


Table 5-14: Site commitment – Statistics on conclusion of the purification stage

Item	Factor loading	Mean	Standard Deviation
Measure's Cronbach's Alpha: .919; Total Variance Explained: 62.398%			
IR3: I will visit this site first when I want to buy books	.857	2.25	1.135
IR4: I plan to use this website in the future	.901	2.61	1.203
IR5: I intend to continue using this website in the future.	.917	2.50	1.186
IR6: I expect my use of this website to continue in the future	.917	2.42	1.191
IR7: I am unlikely to use this website again	.781	2.75	1.249
IR8: I will use a website other than the one I just visited next time I need a book	.513	2.34	1.122
WOM1: I will recommend this site to other people	.820	2.77	1.155
WOM5: I would have only good things to say about this website	.679	2.79	1.046
REL2: I would refuse to let this website contact me for special offers or promotions	.618	2.50	1.340

5.3.2 Scale validation

The next phase of the process in developing a psychometrically valid Site commitment scale was to verify its unidimensionality and assess its reliability and validity. This section

reports on the series of analyses and tests carried out to validate the scale, with the use of Confirmatory Factor Analysis. The model tested consisted of 9 observed variables, all specified to load on to the Site commitment latent variable. Prior to running the analysis in LISREL, analyses of normality were carried out to ensure that LISREL's assumption of normality was not grossly violated. It is reported in Appendix 8 (page 400).

5.3.2.1 Overall goodness of fit of model

Once the model was specified and run in LISREL, the parameters were checked and the solution was found to be free from offending estimates. The goodness-of-fit indices were then examined (see Table 5-15, page 230). While the fit indices of this initial model are generally promising, a consideration of the residuals and modification indices revealed possibilities for improving the fit.

Table 5-15: Fit indices of initial hypothesised model

	χ^2	df	P	RMSEA	GFI	SRMR	CFI	NFI	NNFI
Criteria			>.05	<.05	>.90	< .08	≥.90	≥.90	≥.95
Model index	43.39	27	.02386	.064	.94	.034	.99	.98	.99
Acceptability	✓		X	x	✓	✓	✓	✓	✓

5.3.2.2 Model modification

Based on LISREL's respecification indications, two items were removed and the final resulting model displayed excellent fit indices (see Table 5-16, page 230).

Table 5-16: Fit indices of final hypothesised model

	χ^2	df	P	RMSEA	GFI	SRMR	CFI	NFI	NNFI
Criteria			>.05	<.05	>.90	< .08	≥.90	≥.90	≥.95
Model index	18.28	14	.194	.045	.97	.019	1.00	1.00	1.00
Acceptability	✓		✓	✓	✓	✓	✓	✓	✓

5.3.2.3 Interpretation

The indicators produced by LISREL for each of the model's free parameters are presented in Table 5-17 (page 231). The Composite reliability is an excellent .949, while the Average variance extracted is also very strong: .729.

Table 5-17: Site commitment – CFA results

	Standardised factor loading (t-value)	Item reliab.	Error variance (t-value)
Average Variance Extracted: .73; Composite Reliability: .95			
IR3: I will visit this site first when I want to buy books	.77 (1)	.60	.40** (8.20)
IR4: I plan to use this website in the future	.91** (12.67)	.82	.18** (7.18)
IR5: I intend to continue using this website in the future	.96** (13.67)	.92	.08** (5.06)
IR6: I expect my use of this website to continue in the future	.91** (12.80)	.83	.17** (7.05)
IR7: I am unlikely to use this website again	.79** (10.60)	.62	.38** (8.14)
WOM1: I will recommend this site to other people	.86** (11.74)	.73	.27** (7.80)
WOM5: I would have only good things to say about this website	.76** (10.13)	.58	.42** (8.23)

1: fixed items do not have a t-value.

** : significant at the .001 level

5.3.2.4 Reliability assessment

Table 5-17 also shows item and construct reliabilities. Item reliabilities range from .58 (WOM5) to .92 (IR5) and average .728. The composite reliability (.95) is well above the .60 recommended cut-off point (Bagozzi and Yi 1988). This indicates that both the individual items and the measure itself are reliable.

5.3.2.5 Convergent validity

Each indicator's estimated factor loading on its designated construct is significant at the .001 level, the t-values ranging from 10.13 (WOM5) to 13.67 (IR5). This in itself suggests

convergent validity (Anderson and Gerbing 1988; Peter 1981). Furthermore, the Average variance extracted is well above the minimum criterion of .5, which Fornell and Larcker (1981) argue is further evidence of convergent validity.

5.3.3 Discriminant validity of the model's variables

Discriminant validity between all the measures of the model was assessed in two ways. Firstly, a confidence interval of plus or minus two standard errors was built around each correlation. None included 1 as Table 5-18 shows, suggesting that all constructs have discriminant validity.

Table 5-18: Measurement model – Correlations and their standard errors

	1	2	3	4	5	6	7	8	9
Visual impact (1)	1.00								
Experiential intensity (2)	.64 (.08)	1.00							
Marketer informativeness (3)	.61 (.07)	.60 (.08)	1.00						
Non-marketer informativeness (4)	.32 (.06)	.19 (.07)	.39 (.06)	1.00					
Page clarity (5)	.38 (.07)	.43 (.09)	.21 (.05)	.00 (.04)	1.00				
Site architecture (6)	.57 (.05)	.44 (.05)	.61 (.07)	.26 (.07)	.63 (.06)	1.00			
Utilitarian value (7)	.52 (.06)	.65 (.08)	.76 (.07)	.25 (.05)	.50 (.04)	.25 (.06)	1.00		
Hedonic value (8)	.58 (.07)	.80 (.09)	.62 (.07)	.10 (.05)	.29 (.04)	.22 (.07)	.70 (.07)	1.00	
Site commitment (9)	.61 (.07)	.63 (.08)	.65 (.07)	.23 (.06)	.39 (.04)	.28 (.07)	.79 (.08)	.72 (.08)	1.00

Secondly, for each set of two dimensions, pairs of nested two-factor models were tested, where the correlation between the two factors was set free (Model 1) then set to equality

(Model 2). Since for each pair, the latter model is nested into the first, the Chi-square difference indicates whether the two models are statistically different, i.e. whether the two constructs are indeed distinct or not. All Chi-square differences were significant at the .005 level (see Table 5-9, page 223), implying all constructs are statistically distinct, and therefore have discriminant validity.

Table 5-19: Discriminant validity assessment, using nested models for each factor pair

	1	2	3	4	5	6	7	8	9
Visual impact (1)									
Experiential intensity (2)	10.20*								
Marketer informativeness (3)	16.52**	20.75**							
Non-marketer informativeness (4)	17.35**	20.62**	19.62**						
Page clarity (5)	20.17**	15.48**	29.54**	29.41**					
Site architecture (6)	16.63**	24.07**	21.06**	30.83**	18.08**				
Utilitarian value (7)	20.36**	16.52**	16.34**	18.65**	24.07**	20.83**			
Hedonic value (8)	15.57**	15.12**	25.48**	37.13**	44.17**	33.40**	15.88**		
Site commitment (9)	10.86**	14.07**	16.14**	19.98**	21.32**	19.57**	8.82*	16.44**	

Figures are Chi-square differences between models, when correlation between the pair of factors is set to unity, then set free. The difference in degrees of freedom between the two models of each pair is 1.

*: significant at the .005 level

** : significant at the .001 level

5.4 SUMMARY

This chapter has reported the rigorous process followed to develop, purify and validate the scales to be used in the testing of the hypotheses developed in Chapter 3. A total of 6 scales characterising OSE attributes (independent variables) were developed with the help of three studies, then purified and validated on two different samples. Similarly, a scale measuring Site commitment (dependent variable) was developed and validated. All seven scales display strong psychometric properties. Two scales developed in previous research, Utilitarian value and Hedonic value (mediating variables), were validated. Utilitarian value shows strong psychometric properties, while it was necessary to reduce Hedonic value to 6 items from the original 11 in order to meet the unidimensionality requirement.

These nine scales, whose main properties are summarised in Table 5-20, can now be used within a structural equation model, to test the propositions and hypotheses. This stage is reported in Chapters 6 and 7.

Table 5-20: Summary of the model scales' key statistics

Scale	Number of items	Composite reliability	Average variance extracted
Visual impact	4	.88	.64
Experiential intensity	5	.82	.48
Marketer informativeness	5	.82	.47
Non-marketer informativeness	3	.79	.57
Page clarity	3	.86	.67
Site architecture	6	.85	.48
Utilitarian value	4	.79	.49
Hedonic value	6	.88	.55
Site commitment	7	.95	.73

CHAPTER 6: FINDINGS I – TEST OF PROPOSITIONS

A GESTALT APPROACH TO PERCEPTIONS OF ONLINE SHOPPING ENVIRONMENTS

6.0 INTRODUCTION

The study's findings are presented over two chapters. Chapter 6 addresses the testing of a set of propositions developed to explain how consumers perceive online shopping environments (OSEs). Chapter 7 tests a set of hypotheses concerning consumer reactions to OSEs.

This chapter's objective is to empirically consider the value of the set of propositions developed in Chapter 3, as follows:

P1: Perceptions of Page clarity and Site architecture are explained by the Sense-making potential of an OSE.

P2: Perceptions of Visual impact, Experiential intensity, Marketer informativeness and Non-marketer informativeness are explained by the Exploratory potential of an OSE.

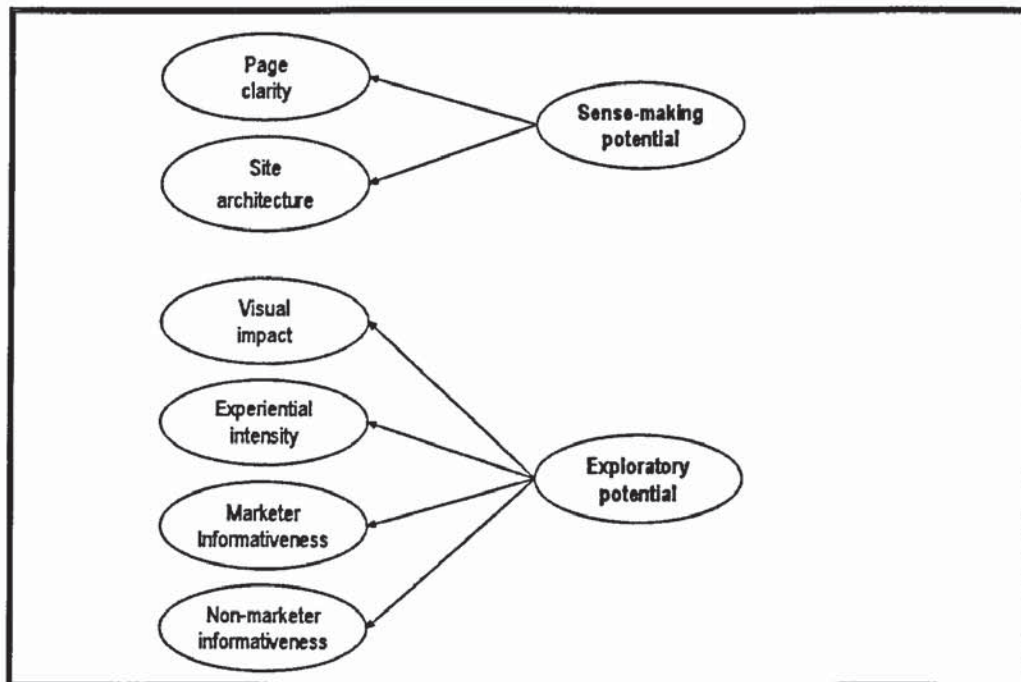
It tests a higher-order factor model linking Sense-making potential and Exploratory potential to individual dimensions. The development and testing of alternative models describing a second-order structure is reported in Section 6.1, which concludes that the hypothesised model is a valid one to explain how consumers perceive OSEs. Section 6.2 (page 247) evaluates and interprets the model, and assesses the psychometric properties of the higher-order constructs.

6.1 A SECOND-ORDER APPROACH TO OSE ATTRIBUTES

Chapter 3 developed the theoretical rationale for the possible existence of a higher-order structure which would explain the covariances between attributes of the OSE. In essence, a higher-order factor structure consists of placing some theoretically-driven constraints on the relationships between factors. Instead of all factors freely correlating with one another, the correlation between factors is explained through their relationship with higher-order constructs. The main advantage of a higher-order structure is its parsimony in explaining the relationships between variables.

A conceptual model was developed, which is reproduced in Figure 6-1. It was proposed that Sense-making potential explained much of the variance of Page clarity and Site architecture; and that Exploratory potential explained much of the variance of four attributes: Visual impact, Experiential intensity, Marketer informativeness and Non-marketer informativeness.

Figure 6-1: Conceptual framework – Higher order structure of OSE attributes



Initial empirical support is obtained from a study of correlations between attributes of the OSE. These were reported in Chapter 5, Section 5.1.2.7 (page 221), and the inter-factor correlations are reproduced here in Table 6-1. In most cases, the strongest correlations are between factors hypothesised to load onto the same higher-order construct. In particular, the strongest correlations for Visual impact, Experiential intensity, Non-marketer informativeness are with other attributes hypothesised to load on to Exploratory potential, while the strongest correlation for Page clarity and Site architecture is with the other of the attributes hypothesised to load on to Sense-making potential. The pattern of correlations therefore supports the possible existence of a hierarchical structure. The next stage was to test the proposition of a hierarchical relationship.

Table 6-1: Inter-factor correlations among attributes of the OSE

	1	2	3	4	5	6
Visual impact (1)	1.00					
Experiential intensity (2)	.64	1.00				
Marketer informativeness (3)	.61	.60	1.00			
Non-marketer informativeness (4)	.32	.19	.39	1.00		
Page clarity (5)	.38	.43	.21	.00	1.00	
Site architecture (6)	.57	.44	.61	.26	.63	1.00

6.1.1 Development of alternative models

In essence, a test of second-order factors is an application of Structural Equation Modelling, which estimates relationships between two sets of unobserved variables: first-order factors and second-order factors (Marsh and Hocevar 1985). The process was described and justified in detail in Chapter 4, Section 4.3.3 (page 184). A summary of the main steps is shown in Table 6-2.

Table 6-2: Data analysis strategy – Testing for the existence of a higher-order structure among OSE attributes

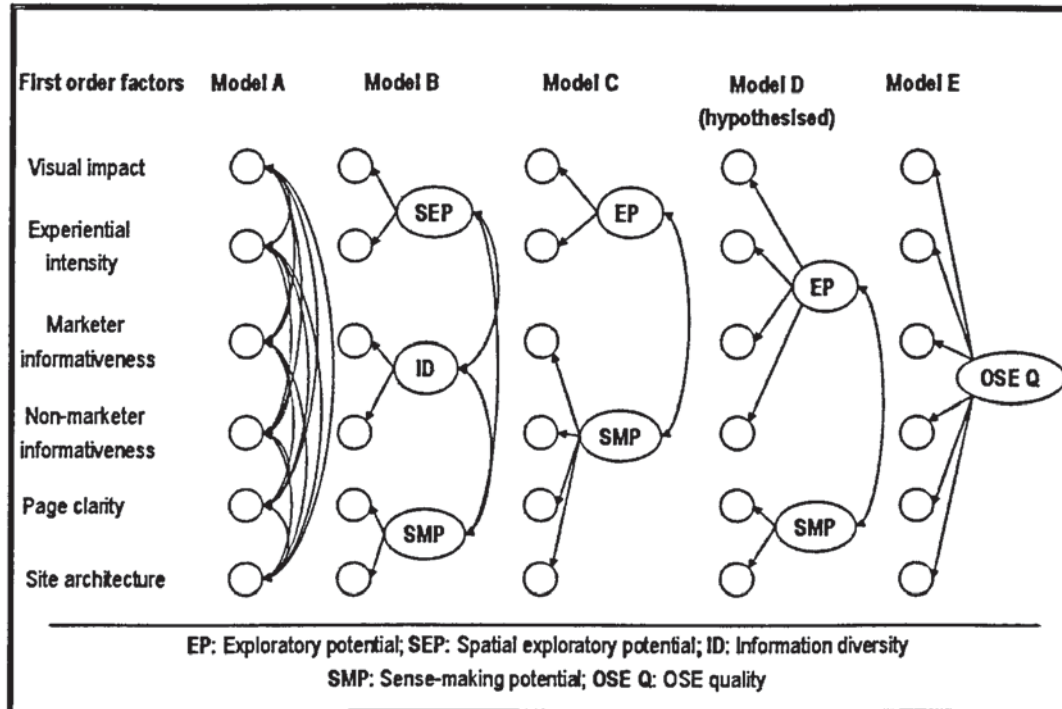
Step	Analytical technique(s) used	Purpose
(on full sample)		
Development of a Series of Theoretically Based Models	Literature review Exploratory study Hypothesis development	
Structural Path Models Specification and Comparison	Second-order Confirmatory Factor Analysis (evaluation of overall goodness of fit of alternative models)	To identify the model which best fits the data and achieves parsimony.
Best-Fitting Model Modification	Structural Equation Modelling (evaluation of goodness-of-fit indices, residuals and modification indices)	To identify areas which are mis-specified and where appropriate, test modified models.
Final Model Evaluation and Interpretation	Structural Equation Modelling (parameter estimates, significance levels, assessment of reliability and validity)	To assess the reliability and validity of the higher-order constructs, and draw conclusions on the existence of empirical support to the hypothesis of a second-order structure.

To assess the fit of the hypothesised model, a series of four other models was developed, following alternative conceptual rationales. The alternative relationships between first- and second-order factors are described in more detail next, and shown graphically in Figure 6-2 (page 239).

6.1.1.1 Model A

Model A consists of the six first-order factors identified in the conceptual work, with all correlations between factors set free. This model assumes that correlations between factors are not caused by any higher-order construct. It corresponds to the measurement model tested in Chapter 5.

Figure 6-2: Factor structures of Models A to E



6.1.1.2 Model B

Model B supposes that three higher-order constructs can explain some of the covariances between first-order factors. Since the discussion leading to the conceptual framework identified a distinction between spatial exploration and product-related information exploration (see Section 3.1.4.2, page 135), one can suppose that Visual impact and Experiential intensity are caused by one higher-order construct, which is labelled 'Spatial exploratory potential'; that Marketer and Non-marketer informativeness are caused by a higher-order construct which concerns the quantity of product-related information and which is labelled 'Information diversity'; and that Page clarity and Site architecture perceptions are caused by the Sense-making potential of the site.

6.1.1.3 Model C

Model C supposes the existence of the hypothesised two higher-order constructs, Exploratory potential and Sense-making potential, but suggests that the variance of Marketer informativeness and Non-marketer informativeness could be explained by variations in perceived Sense-making potential. Indeed, one could assume that information, rather than being primarily used for exploration, is the basic element consumers use, to make sense of the shopping environment and the products which form part of the environment. Model C is a restricted condition of Model B, where the correlation between Informativeness and Sense-making potential is set to 1. It is nested in Model B, and has two fewer degrees of freedom.

6.1.1.4 Model D (hypothesised model)

Model D is the model proposed in Chapter 3 (see Figure 6-1, page 236). It is a restricted condition of Model B, where the correlation between Spatial exploratory potential and Information diversity is set to 1. It is nested in Model B, and has 2 fewer degrees of freedom. It is an alternative to Model C, where Marketer informativeness and Non-marketer informativeness are set to load on a different higher-order construct. There is no difference in degrees of freedom between Models C and D.

6.1.1.5 Model E

Model E supposes that there is a single construct labelled OSE quality which causes the six first-order factors to co-vary. Indeed, one could envisage that OSE quality might cause perceptions of all attributes. Model E is a restricted condition of Models B, C and D, where the correlation between the higher-order constructs is set to 1. It has one fewer degree of freedom than Models C and D, into which it is nested, and three fewer degrees of freedom than Model B, into which it is also nested.

6.1.2 Model identification

A second-order factor model is identified if:

- the measurement model is identified;
- the structural model linking first-order and second-order factors is identified (Rindskopf and Rose 1988).

Chapter 5 on measure development and validation has shown that the measurement model (Model A) was identified. The structural part of Models B, C and D is over-identified since there are at least two higher-order factors, and each is defined by at least two first-order factors. The structural part of Model E is identified since the higher-order factor is defined by more than three first-order factors. All models therefore are identified.

6.1.3 Model specification and result comparisons

The models were tested using LISREL 8.72 (Joreskog and Sorbom 1993). The Chi-square results obtained for each model are shown in Table 6-3 (page 242). There is unfortunately not one single way of assessing the fit of a particular model, nor of assessing the relative ‘worth’ of different models unless they are nested, and as a result a variety of indices are in use (Hair et al. 1998; Hu and Bentler 1999; Schumacker and Lomax 2004). The literature recommends the use of several sources and criteria so that the fit of different models can be considered from a variety of perspectives (Byrne 1998). Alternative models can be chosen based on their theoretical plausibility (as detailed in Section 6.1.1, page 237), their parsimony or, if they are nested, a statistical test of the difference (Rindskopf and Rose 1988).

Table 6-3: Chi-square results for Model A to E

Model Index	A	B	C	D	E
Minimum fit Chi square	433.30	467.20	510.47	472.53	517.64
Degrees of freedom	285	291	293	293	294
P	0.00	0.00	0.00	0.00	0.00

Note: All indices as produced by LISREL 8.72.

Based on these considerations, the following assessment strategy was adopted:

- Consideration of the statistical differences between nested models, so as to identify the models which are most consistent with the data. This is discussed in Section 6.1.3.1 (page 242).
- Assessment of the models' absolute and relative fits, so as to identify the models which constitute an acceptable fit for the data, and to identify the most suitable of the models. This is discussed in Section 6.1.3.2 (page 243).
- Assessment of the model's parsimonious fit, in order to identify the models which provide the most parsimonious explanation. This is covered in Section 6.1.3.3 (page 245).
- Overall assessment of the models, based on the first three steps and in light of the study's purpose. This is covered in Section 6.1.3.4 (page 246).

6.1.3.1 Statistical tests of differences

As discussed in Section 6.1.1, Models B to E consist of a series of nested models. As such, it is possible to statistically test their difference, by considering the difference of Chi-squares in relation to the difference in degrees of freedom. Table 6-4 shows the Chi-square differences between nested models (Models B-E). The results suggest that the most suitable model is Model D (the hypothesised model): chi-squares difference tests between Model D and all other models (apart from Model A with which there is no

'nesting' relationship) all suggest that Model D fits the data better and more parsimoniously. In particular, there is no statistically significant difference (at the .05 level) between Model B and Model D, which suggests that, in Model B, the correlation between Spatial exploratory potential and Information diversity is not statistically different from 1, and therefore that correlations between factors can be explained more parsimoniously with just two higher-order factors: Exploratory potential and Sense-making potential. The results also show Models C and E to be weaker models.

Table 6-4: Chi-square differences of nested Models B to E

Nested model comparison	Chi-square difference	Difference in d.f.	Model to retain
B-C	43.27	2	Significant → B
B-D	05.33	2	Not significant → D
B-E	50.44	3	Significant → B
C-D	-37.94	0	Significant → D
C-E	07.17	1	Significant → C
D-E	45.11	1	Significant → D

NB: there is no 'nesting relationship' between Model A and Models B-E, therefore their difference of fit cannot be tested statistically.

Significance is assessed at the .05 level.

6.1.3.2 Assessment of absolute and relative fits

To assess absolute and relative fits, use was made of the indices produced by LISREL. Absolute fit indices for Models A to E are shown in Table 6-5 (page 244), while their relative fit indices are shown in Table 6-6 (page 245). Absolute fit indices assess how closely the covariances derived from the parameter estimates of a model match the sample's covariances (Gerbing and Anderson 1993), while relative fit indices measure fit improvement in comparison to another, baseline model (Hu and Bentler 1995).

Table 6-5: Absolute fit indices for Models A to E

Model \ Index	A	B	C	D	E	Best per index
RMSEA	.042	.045	.051	.045	.051	A
90 % confidence interval for RMSEA	.034-.050	.037-.052	.044-.058	.038-.053	.043-.058	
P-value for test of close fit (RMSEA<.05)	.95	.87	.41	.86	.44	
GFI (Goodness of Fit Index)	.90	.89	.88	.89	.88	A
Standardized RMR	.046	.055	.067	.056	.067	A
ECVI	1.90	1.95	2.12	1.96	2.11	A
90 % confidence interval for ECVI	1.73-2.10	1.77-2.16	1.92-2.35	1.78-2.17	1.91-2.34	
ECVI saturated model			2.34			
ECVI independence model			29.68			
Critical N	238.04	225.77	208.01	224.63	205.78	A

Note: All indices as produced by LISREL 8.72.

The first observation from Table 6-5 has to be that all Models fit the data quite well. For example, the RMSEA of all models is equal to or below .051, where .050 is considered as the cut-off point between good and reasonable fit (Browne and Cudeck 1993). Similarly, the GFI (goodness of fit index) of all models is .9 or close to .9, which is sometimes deemed to be the desirability threshold (Diamantopoulos and Siguaw 2000; Kelloway 1998). The Critical N measure, which indicates the size a sample needs to have before the fit of a model can be accepted statistically, is between 205.78 (Model E) and 238.04 (Model A). It therefore fulfills the suggested requirement (Hoelter 1983) that $N > 200$. The Standardised Root Mean Square Residuals (SRMR), which are summary measures of the size of the standardised residuals, vary between .046 (for Model A) and .067 (for Models C and E), and are all below the Hu and Bentler's (1999) recommended cutoff value of .08.

The second observation from Table 6-5 is that Model A seems to fare marginally better than the other models, that Models B and D also show acceptable fits, and that again models C and E seem to fare slightly worse. However, a consideration of the confidence intervals for the RMSEA and ECVI of Models A, B and D reveals that they overlap to

such an extent that any conclusion must be qualified by the acceptance that the differences of fit between Models A, B and D may be due to the sample data's idiosyncrasies.

This possibility is further supported by the Relative Fit indices reported in Table 6-6: the Comparative Fit index, the Non-normed Fit index and the Normed Fit index are highest and identical for Models A, B and D.

Table 6-6: Relative fit indices for Models A to E

Model Index	A	B	C	D	E	Best as per index
CFI (Comparative fit index)	.98	.98	.97	.98	.97	A, B, D
NNFI (Non- normed fit index)	.98	.98	.97	.98	.97	A, B, D
NFI (Normed fit index)	.95	.95	.94	.95	.94	A, B, D

Note: All indices as produced by LISREL 8.72.

6.1.3.3 Assessment of parsimony

A separate assessment of the models' fit from the perspective of parsimony is important, since parsimony is a major motive behind the development of theory. However, many of the most common fit indices such as NFI, GFI, AGFI and AIC fail to assess parsimony (Mulaik et al. 1989). There exist indices however, which take account of a model's parsimony in their assessment. Several of these are reported in Table 6-7 (page 246). It can now be observed that when taking account of parsimony, Model D is the better model, while models B, C and E also perform well, and Model A performs the least well of all models.

Table 6-7: Parsimonious fit indices for Models A to E

Index \ Model	A	B	C	D	E	Best as per index
Model CAIC	881.39	868.65	909.69	861.30	901.90	D
Saturated CAIC	2354.20					
Independence CAIC	9025.51					
PFI (Parsimonious Fit Index) ⁶	.83	.85	.85	.86	.85	D
PGFI (Parsimony Goodness of Fit Index)	.73	.74	.74	.74	.74	B, C, D, E
PNFI (Parsimony normed fit index)	.83	.85	.85	.85	.85	B, C, D, E

Note: All indices except PFI as produced by LISREL 8.72. PFI was calculated as follows: $PFI = (df_{proposed}/df_{nfit}) \times NFI$

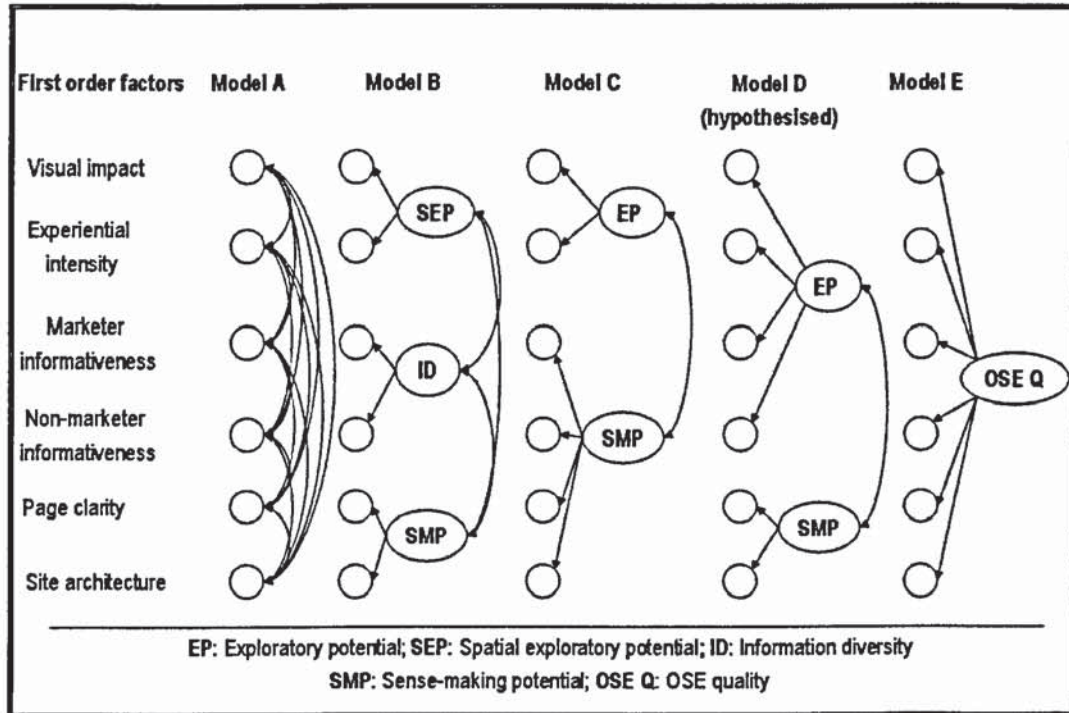
6.1.3.4 Overall model assessment

Based on the three assessment stages followed above, the following conclusions are drawn (The factor structures of Models A – E are reproduced as Figure 6-3, page 247, for ease of reference):

- All models tested have performed reasonably well, returning acceptable fit indices.
- While Model A performs well in terms of absolute fit, an all-round assessment which takes account of parsimony clearly favours D.
- In view of the aim of this research, parsimony is a critical consideration, and therefore Model D (the hypothesized model) is a suitable and well-fitting model to explain how consumers perceive OSEs.

⁶ The Parsimonious Fit Index is not included in LISREL output. Proposed by James, Mulaik and Brett (James, L.R., S.A. Mulaik, and J.M. Brett. 1982. *Causal Analysis: Assumptions, models, and data*. Beverly Hills, CA: Sage.), it is an adaptation of the NFI which takes account of parsimony, and can be used to compare models with different degrees of freedom. It is calculated as follows: $PFI = (df_{proposed}/df_{nfit}) \times NFI$.

Figure 6-3: Factor structures of Models A to E



It is concluded therefore that the data supports the earlier proposition that the two higher-order constructs, Sense-making potential and Exploratory potential, explain an important proportion of the correlations between attributes. The next step consists of further evaluating the model and its individual parameters.

6.2 PSYCHOMETRIC PROPERTIES OF THE HIGHER ORDER CONSTRUCTS

Having scrutinised the hypothesised and four rival models from a variety of perspectives, and having ascertained that the hypothesised model produced a good, parsimonious fit to the sample's data, the next step is to consider any theoretically justifiable modification to the model, before turning to a consideration of the statistical significance and magnitude of the model's individual parameters (Schumacker and Lomax 2004). A perusal of the modification indices relating to the relationships between first-order and second-order

factors did not reveal any major misspecification, and therefore the model was not modified.

6.2.1 Analysis of individual factor relationships

All proposed factor relationships were significant, as indicated by the fact that all parameters' t-values were above the value of 1.96, the smallest being 4.12. The magnitude of these relationships is shown in Figure 6-4 (page 249). The gammas, which represent the loadings of the attributes onto the higher-order constructs, are all significant at the 05 level, and range from .36 (for Non-marketer informativeness on Exploratory Potential) to .92 (for Site architecture on Sense-making potential). Apart from the rather low loading of Non-marketer informativeness on Exploratory potential, all other loadings are sizeable, averaging .768. The two higher-order constructs therefore explain a considerable part of the variances of each of the six attributes.

6.2.2 Reliability assessment

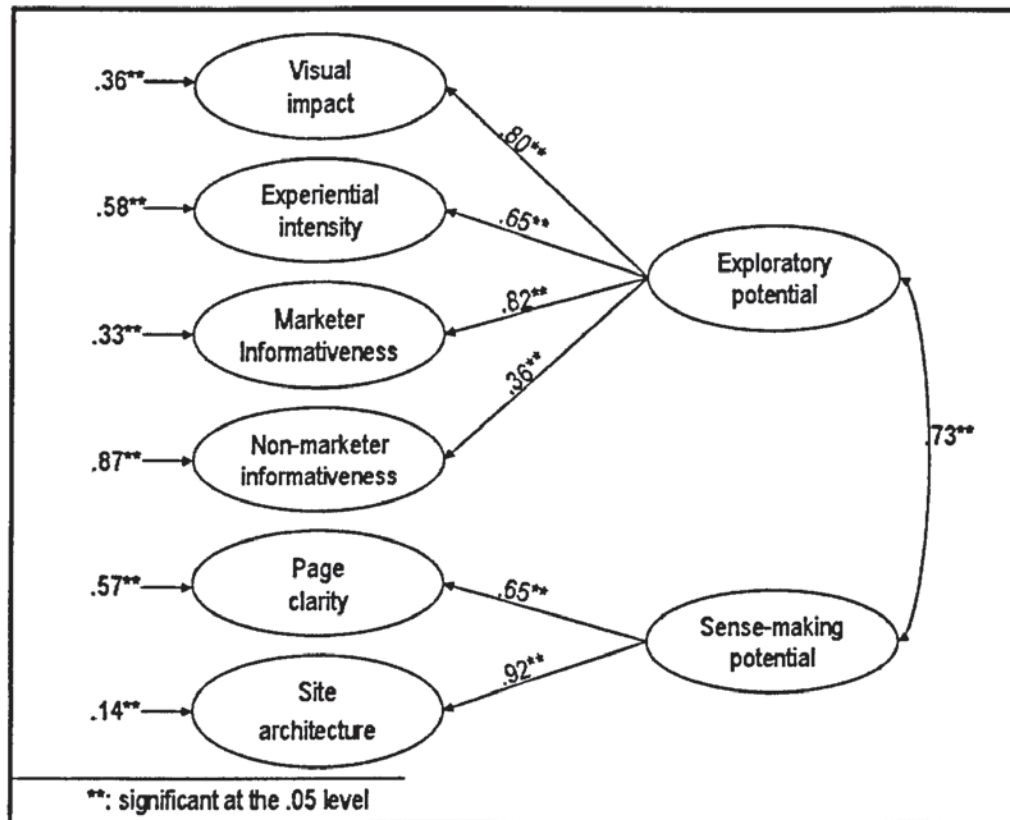
The composite reliability of the two higher-order factors was calculated using the formula in Equation 6-1. The formula is similar to that used to obtain the composite reliability of first-order factors, where the lambdas and the theta-deltas are replaced by the gammas and the psis respectively.

Equation 6-1: Higher-order constructs – Composite reliability formula

$$\frac{(\sum \text{standardised loadings of 1st-order construct on 2nd-order construct})^2}{(\sum \text{standardised loadings of 1st-order construct on 2nd-order construct})^2 + (\sum \text{1st-order construct error variance})}$$

Both higher order constructs displayed strong composite reliabilities (.76 for Exploratory potential and .78 for Sense-making potential), well above the .60 recommended cutoff point (Bagozzi and Yi 1988).

Figure 6-4: Second-order factor analysis – Parameter estimates



6.2.3 Convergent validity

Convergent validity was assessed by checking that each attribute's estimated loading on its designated higher-order construct was significant (Anderson and Gerbing 1988; Peter 1981). Indeed all gammas were significant at the .05 level, the t-values ranging from 4.44 (Experiential intensity) to 7.69 (Site architecture). The Average variance extracted (AVE) was also calculated, as per Equation 6-2 (page 250). The AVE of Exploratory Potential is .47 while the AVE of Sense-making potential is .64. For both higher order constructs therefore the AVE is either within three digits or above the minimum criterion of .5, which Fornell and Larcker (1981) argue is further evidence of convergent validity.

Equation 6-2: Higher-order constructs – Average variance extracted formula

$$(\Sigma \text{ squared standardised loadings of 1}^{\text{st}}\text{-order on 2}^{\text{nd}}\text{-order construct})$$

$$(\Sigma \text{ squared standardised loadings of 1}^{\text{st}}\text{-order on 2}^{\text{nd}}\text{-order construct}) + (\Sigma \text{ 1}^{\text{st}}\text{-order construct error variance})$$
6.2.4 Discriminant validity

The correlation between Exploratory potential and Sense-making potential is quite high, at .73. However, discriminant validity was verified in two ways. Firstly, one of the models tested in Section 6.1.3 (page 241) was equivalent to the model where the correlation between Exploratory potential and Sense-making potential is set to 1. Model E (see Figure 6-2, page 239) consists of one second-order factor, OSE quality, onto which all six attributes load. There was a statistically significant difference in Chi-squares between the hypothesised model and Model E, suggesting that both second-order factors are useful and therefore should be retained. Secondly, a confidence interval of plus or minus two standard errors built around the correlation spanned from .65 to .81. It did not include 1, again suggesting that the constructs have discriminant validity.

6.3 SUMMARY

In this chapter, a gestalt of consumer perceptions of OSEs was tested using structural equation modelling. Using a rigorous process, the proposed model was tested against another four theoretically-developed competing models. The results supported the proposition that consumers perceive OSEs in terms of their Sense-making and Exploratory potentials. In turn, Exploratory potential is perceived in terms of Visual impact, Experiential intensity, Marketer informativeness and Non-marketer informativeness, and Sense-making potential is perceived as Page clarity and Site architecture. Both higher-order constructs displayed strong psychometric properties. It is now possible to proceed to the next step and incorporate these higher-order constructs within a full structural path model, in order to test the five hypotheses developed in Chapter 3. These findings are reported next, in Chapter 7.

CHAPTER 7:

FINDINGS II – TEST OF HYPOTHESES

THE IMPACT OF PERCEPTIONS OF

ONLINE SHOPPING ENVIRONMENT ATTRIBUTES

ON CONSUMER RESPONSES

7.0 INTRODUCTION

The last chapter reported a first series of results addressing the proposition that online shopping environment (OSE) attributes were explained by two higher-order constructs: Sense-making potential and Exploratory potential. The results supported this view. This chapter follows on and tests the five hypotheses developed in Chapter 3 (page 115). It aims to:

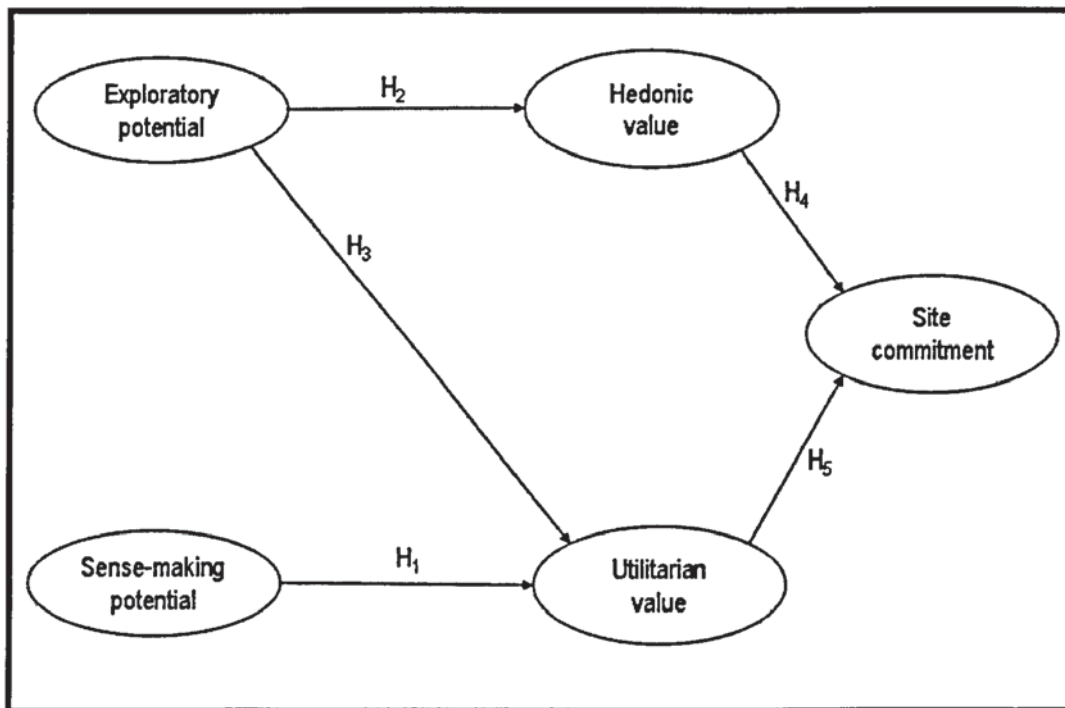
1. present model testing results;
2. review each hypothesis in light of the results.

Section 7.1, which follows, reports the model's specification, estimation, evaluation and subsequent modification. The results of the final model are presented in Section 7.2 (page 258), where the individual hypotheses are also discussed.

7.1 CONSUMER REACTIONS TO OSES – HYPOTHESIS TESTING

Chapter 3 developed the theoretical rationale for the existence of relationships between the attributes of OSEs, two kinds of Shopping value (Hedonic value and Utilitarian value), and the outcome variable of Site commitment. The conceptual model developed is reproduced in Figure 7-1.

Figure 7-1: Conceptual framework – OSE Attributes and their consequences on Value and Site commitment



It was hypothesised that Sense-making potential is an antecedent to Utilitarian value (H₁), that there is a positive relationship linking Exploratory potential and Hedonic value (H₂) and Utilitarian value (H₃), and finally that both Hedonic value (H₄) and Utilitarian value (H₅) contribute to Site commitment.

The process followed to test the hypotheses was described and justified in detail in Section 4.3.4 of Chapter 4 (page 191). A summary of the main steps is shown in Table 7-1.

Table 7-1: Structural model – Analysis strategy

Step	Analytical technique(s) used	Purpose
(on full sample)		
Development of a Theoretically Based Model	Literature review Exploratory Study Hypothesis Development	
Specify a Structural Path Model		
Evaluate and Interpret the Model	Structural Equation Modelling (evaluation of goodness-of-fit indices, residuals and modification indices)	To identify the model best describing the data, and within that model, areas which are mis-specified.
Modify the Model	Structural Equation Modelling (respecification)	To obtain a theoretically-grounded model with an acceptable fit.
Evaluate and Interpret the Final Model	Structural Equation Modelling (evaluation of goodness-of-fit indices, path coefficients, t-values)	To draw conclusions on the existence of empirical support of the hypotheses

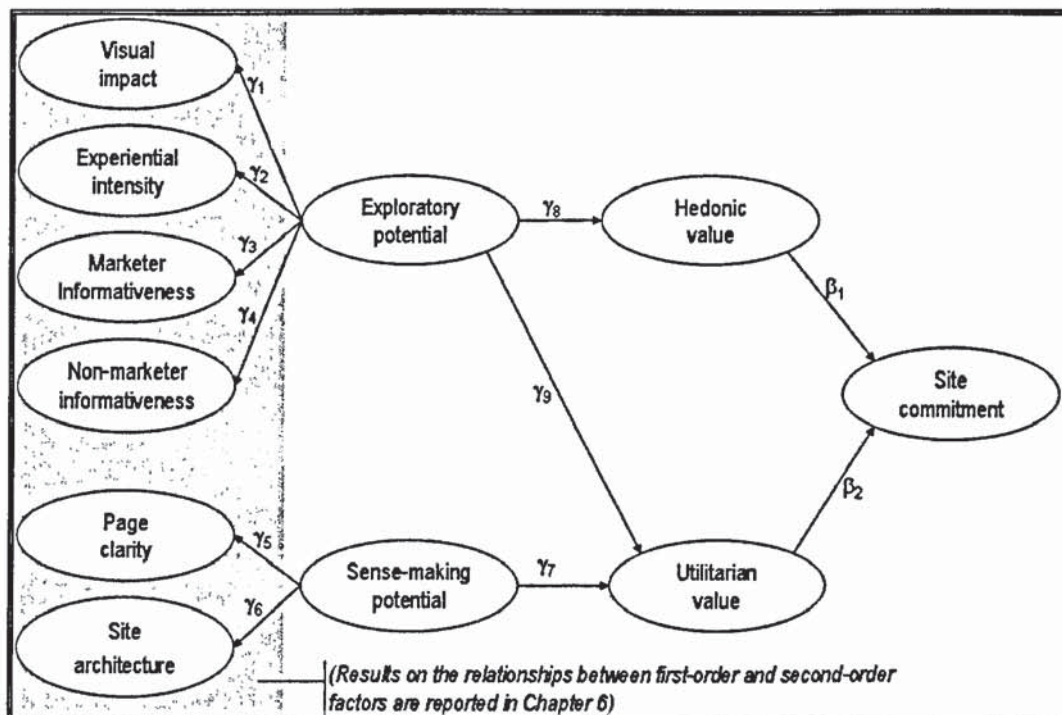
7.1.1 Model specification

Structural equation modelling, which can study several relationships simultaneously in a confirmatory mode (Hair et al. 1998), was the method best suited for the questions researched. The model was specified in LISREL language (Joreskog and Sorbom 1993). The variance-covariance matrix was used as input data. The hypotheses which were tested each represent a path. These are shown in Table 7-2 and Figure 7-2 (next page).

Table 7-2: Hypotheses and the corresponding LISREL paths and relationships

Hypothesis	Path	Relationship
H ₁	γ_7	Sense-making potential \rightarrow Utilitarian value
H ₂	γ_8	Exploratory potential \rightarrow Hedonic value
H ₃	γ_9	Exploratory potential \rightarrow Utilitarian value
H ₄	β_1	Hedonic value \rightarrow Site commitment
H ₅	β_2	Utilitarian value \rightarrow Site commitment

Figure 7-2: Structural path model



Identification was verified as follows:

- the order condition is met since there are more cells in the variance-covariance matrix than there are parameters to estimate – resulting in 849 degrees of freedom
- to ascertain whether the rank condition was met, the following heuristics were applied to the three parts of the model:

- the first, measurement part of the model is identified since all latent variables are measured by at least 2 items
- the second part of the model, which consists of the relationships between first-order and second-order factors, is identified since each second-order factor is linked to at least two first-order factors
- the third, structural part of the model is a recursive model, therefore it is identified (Bollen 1989).

7.1.2 Model estimation

As reported in Chapter 5 where the model's measures were developed and validated, all observed variables have a distribution which does not significantly depart from normal. In view of this fact, and the size of the sample ($n=301$), the maximum likelihood estimation method was chosen, since it is efficient and performs well under conditions of multivariate normality (Hair et al. 1998).

7.1.3 Model evaluation

The model was tested and produced the goodness-of-fit indices reported in Table 7-3 (page 256). These indices indicate a good level of fit. In particular, the RMSEA, at .049, is below the cut-off point of .05 (Browne and Cudeck 1993); the CFI, NFI and NNFI are all greater or equal to .95, i.e. well above the .90 cut-off point (Hair et al. 1998); the GFI, although lower than the recommended cut-off, is a healthy .81; the SRMR, at .067, is well below Hu and Bentler's (1995) recommended cut-off value of .08; the critical N, at 205.63, is above the cut-off point of 200 (Hoelter 1983); finally, the model's CAIC is below both the independence and the saturated CAIC.

Table 7-3: Structural path model – Goodness-of-fit

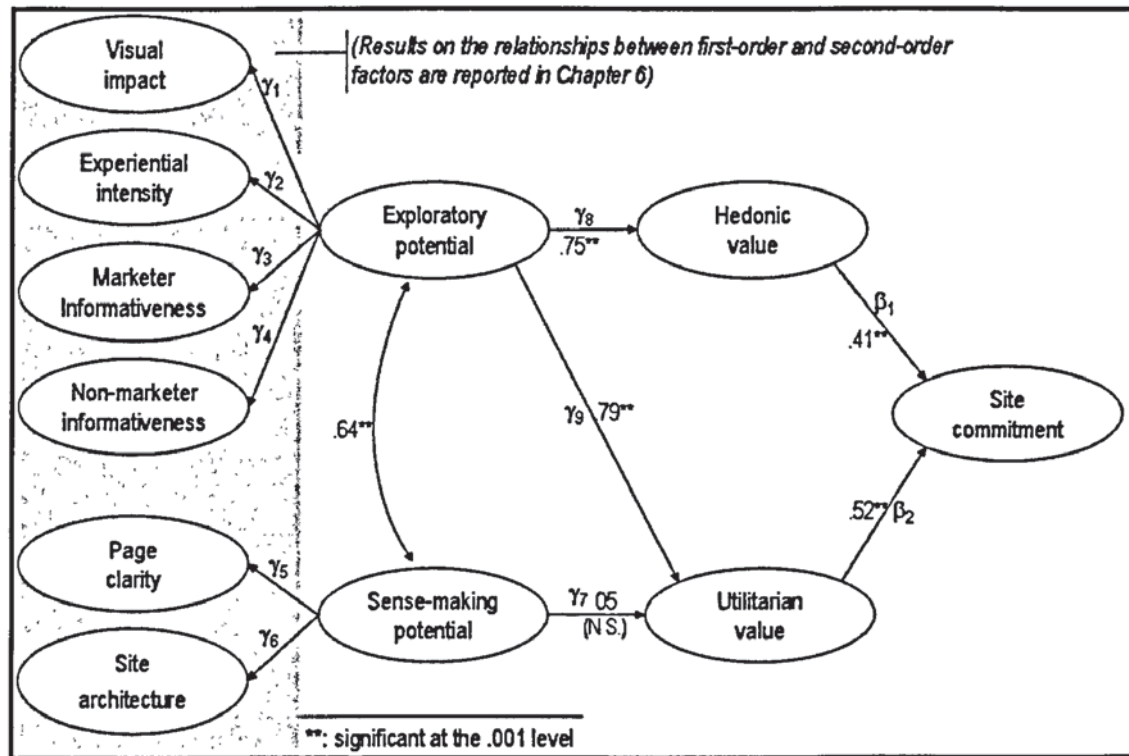
Index	Value
Normal theory chi square	1,467.95
P	0.00
Degrees of freedom	849
RMSEA	.049
90 percent confidence interval for RMSEA	.045-.054
P-value for test of close fit (RMSEA<.05)	.60
GFI (goodness of fit index)	.81
Standardised RMR	.067
CFI (Comparative fit index)	.98
NFI (Normed fit index)	.95
NNFI (Non-normed fit index)	.98
Independence CAIC	30,359.73
Model CAIC	2,118.54
Saturated CAIC	6,344.93
Critical N	201.63

The path coefficients and significance levels were then considered. They are reported in Table 7-4 and Figure 7-3 (both page 256). Four out of the five paths estimated (outside the paths between second-order and first-order factors, whose results were discussed in Chapter 6) are significant at the .001 level and have strong values. One path though, γ_4 , is not significant at the .05 level, with a coefficient of .05 and a t-value of .62.

Table 7-4: Structural path model – Estimates and t-values

Path	Estimate	t-value
γ_7	.05	.65
γ_8	.75	8.76**
γ_9	.79	6.09**
β_1	.41	6.58**
β_2	.52	6.34**
**: significant at the .001 level		

Figure 7-3: Structural path model results – Structural path estimates



7.1.4 Model modification

Standardised residuals and modification indices were perused for possible misspecifications. The model changes suggested by modification indices and residuals could not be justified theoretically. The only model modification made therefore was to remove one non-significant path (γ_7 between Sense-making potential and Utilitarian value). The final results are reported in the next section.

7.2 FINAL MODEL RESULTS

7.2.1 Goodness-of-fit

The final model consisted of the same model as hypothesised, minus the path between Sense-making potential and Utilitarian value (γ_1), which was revealed to be not significant. This, however, means that Exploratory potential mediates the relationship between Sense-making potential and Utilitarian value; thus, Sense-making potential is an antecedent to Exploratory potential. The structural path model was re-specified to take account of these changes, and is shown in Figure 7-4 (page 258). The final model has one additional degree of freedom (since the path from Sense-making potential and Utilitarian value is set to zero). Its overall goodness-of-fit indices are reported in Table 7-5 (page 259). The indices are practically the same as those obtained in the initial model (reported in Table 7-3, page 256), which indicated an excellent fit. The individual path coefficients are then examined, in the context of analysing the individual hypotheses.

Figure 7-4: Final structural path model

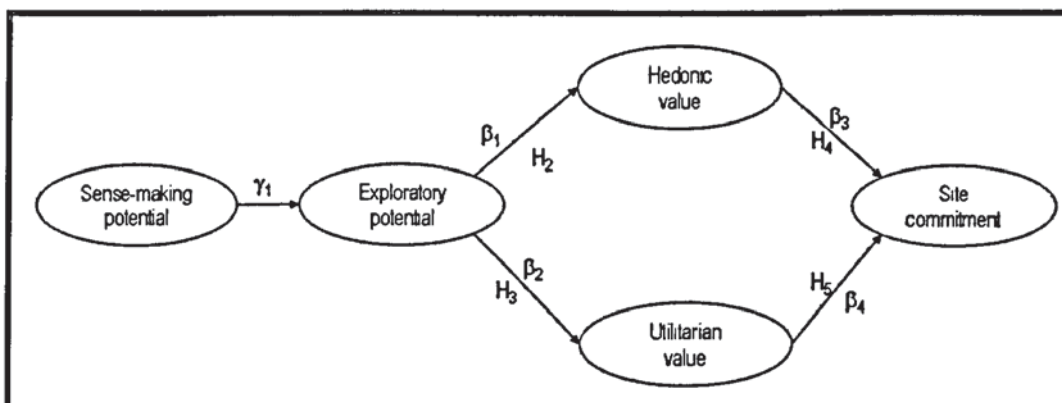


Table 7-5: Final model – Goodness-of-fit

Index	
Normal theory chi square	1,467.80
p	0.00
Degrees of freedom	850
RMSEA	.049
90 percent confidence interval for RMSEA	.045-.053
P-value for test of close fit (RMSEA<.05)	.61
GFI (goodness of fit index)	.81
Standardised RMR	.067
CFI (Comparative fit index)	.98
NFI (Normed fit index)	.95
NNFI (Non-normed fit index)	.98
Independence CAIC	30,359.73
Model CAIC	2,111.69
Saturated CAIC	6,344.93
Critical N	201.80

7.2.2 Analysis of individual hypotheses

The last section established that the structural model specified reproduces the observed covariance matrix well. In order to test the hypotheses developed in Chapter 3, the parameter estimates and their t-values are considered. These are presented in Table 7-6 (page 260) and appear in Figure 7-5 (page 262), and the hypotheses are discussed in more detail below.

Table 7-6: Hypotheses, estimates and t-values

Hypothesis	Path	Relationship	Estimate	t-value	Decision
H ₁		Sense-making potential → Utilitarian value	Path was removed as returned as non-significant.		Rejected
H ₂	β_1	Exploratory potential → Hedonic value	.74**	8.11	Supported
H ₃	β_2	Exploratory potential → Utilitarian value	.83**	6.66	Supported
H ₄	β_3	Hedonic value → Site commitment	.41**	6.56	Supported
H ₅	β_4	Utilitarian value → Site commitment	.52**	6.33	Supported
(resulted from rejection of H ₁)	γ_1	Sense-making potential → Exploratory potential	.65**	6.51	Supported

** : significant at the .001 level

7.2.2.1 Hypotheses concerning Sense-making potential

Hypothesis H₁ suggested that Sense-making potential is an antecedent of Utilitarian value. The path's estimate was found to be not significant. Hypothesis H₁ therefore was rejected. As a result, the model was re-specified with Exploratory potential mediating the relationship between Sense-making potential and Utilitarian value. The path's estimate between Sense-making potential and Exploratory potential is .65 and the t-value is 6.51. It appears therefore that higher perceptions of the site's Sense-making potential lead to higher perceptions of the site's Exploratory potential. This finding goes in the same direction as recent studies which found a similar antecedent-consequence relationship between Ease of use and Usefulness (Henderson and Divertt 2003; Karahanna and Straub 1999).

Note however that the model tested is equivalent to a model hypothesising a correlation between Sense-making potential and Exploratory potential. Further research therefore is needed to verify the nature of the relationship between the two constructs. Nevertheless,

an alternative model was specified, which inversed the hypothesised relationship between the two constructs (i.e. Exploratory potential was specified as an antecedent to Sense-making potential, which in turn was specified as an antecedent to both Hedonic value and Sense-making value). The model did not converge, a fact which lent some further empirical support to the direction of the assumed antecedent-consequence relationship between Sense-making potential and Exploratory potential.

The lack of support for hypothesis H_1 was an unexpected, yet most interesting finding. It is further discussed in Chapter 8, but suffice to state here that the entirety of the effect of Sense-making potential on Utilitarian value is mediated by Exploratory potential (see also Section 7.2.2.2 below). Consumers therefore do not appear to draw any value from Sense-making attributes if they do not use them to explore the site. Sense-making potential may be a necessary condition for consumers to be able to explore a site, but it is not sufficient for them to draw value from their visit or form a commitment.

7.2.2.2 Hypotheses concerning Exploratory potential

Hypothesis H_2 suggested a positive relationship between Exploratory potential and Hedonic value. The path's estimate, β_1 , is .74, and its t-value is 8.11. The relationship therefore is statistically significant at the .001 level and the hypothesis is supported. When consumers are on a shopping website which has exploratory potential, they draw hedonic value from it.

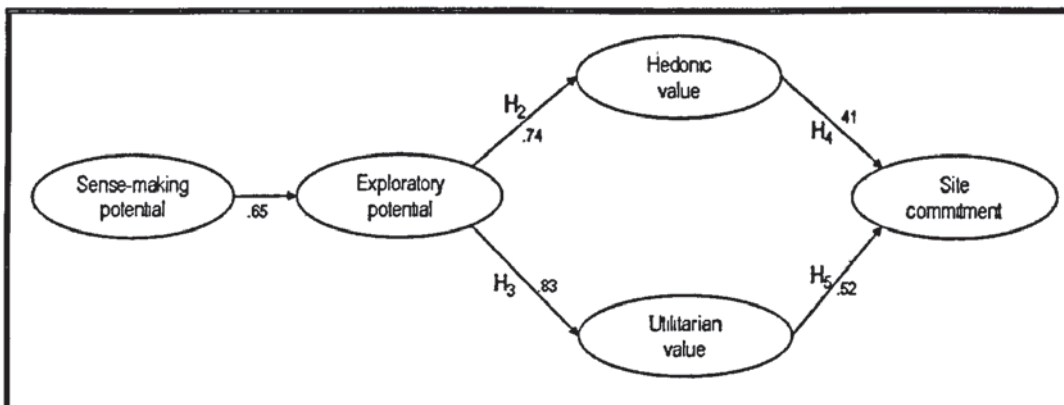
Hypothesis H_3 posited a positive relationship between Exploratory potential and Utilitarian value. The path's estimate, β_2 , is .83, and the t-value is 6.66. It is significant at the .001 level. The hypothesis is therefore supported. This supports the argument developed in Chapter 3 that when consumers navigate a site which has potential for exploration, they gain utilitarian value, possibly because the site's exploratory attributes enable them to achieve such shopping objectives as purchasing the most suitable item, being able to compare between several products, or being able to inspect products, perhaps by clicking on them etc.

The strength of the relationship between Exploratory potential and Utilitarian value (.83), and the absence of a direct relationship between Sense-making potential and Utilitarian value suggest that Exploratory attributes are necessary for consumers to draw utilitarian value from their navigation. This indicates the crucial importance of exploratory attributes in OSEs.

7.2.2.3 Hypotheses concerning Site commitment

Hypothesis H_4 posited a positive relationship between Hedonic value and Site commitment. The path's estimate, β_3 , is .41, and the t-value is 6.56. It is significant at the .001 level. The hypothesis is therefore supported. Similarly, H_5 , which posited a positive relationship between Utilitarian value and Site commitment, is supported, with a path estimate, β_4 , of .52, and a t-value of 6.33. It is significant at the .001 level. These results suggest that consumers form a commitment to a site based on both kinds of value, but Utilitarian value has slightly more impact on that commitment than Hedonic value.

Figure 7-5: Final model and path coefficients



7.2.2.4 Model strength

A way of ascertaining the explanatory strength of the overall model (and therefore the strength of the theory it describes) is to consider the amount of variance in endogenous

variables which is explained by the exogenous variables (Sharma 1996), which is indicated by the R^2 values given among the LISREL results (see Table 7-7). Site commitment, Utilitarian value and Hedonic value all have strong R^2 (above .50), which suggests that the model and theory explain a significant proportion of their variance. The interpretation of the variance of Exploratory potential, whose R^2 is .42, needs to factor in the fact that, being a higher-order factor, it is explained by both its antecedent (Sense-making potential) and its first-order factors (Visual impact, Experiential intensity, Marketer informativeness and Non-marketer informativeness).

Table 7-7: R^2 values of the final model's endogenous variables

Endogenous variable	R^2
Site commitment	.70
Utilitarian value	.68
Hedonic value	.55
Exploratory potential	.42

The theory developed therefore can be said to contain a number of highly relevant constructs which are able to explain a sizeable proportion of the variance of the endogenous variables.

7.3 SUMMARY

This chapter presented the second part of the findings, where the structural path model was tested and evaluated. Following a discussion of the process followed and a justification of the methodological decisions taken, the model specified produced strong fit. One non-significant path was removed, to arrive at the final model. Four out of the five original hypotheses developed in Chapter 3 were supported. The lack of support for one of the hypotheses has revealed the importance of Exploratory potential. Indeed, the results suggest that Exploratory potential plays a central role in facilitating the production of Shopping value, and leading consumers to form a commitment to the site. The next chapter discusses these findings and those from the last chapter in more depth, and considers their implications, theoretical and managerial.

CHAPTER 8: DISCUSSION

8.0 INTRODUCTION

This chapter returns to the research's original hypotheses, before summarising the main findings (Section 8.1), so as to provide a context within which implications can be drawn, both theoretical (Section 8.2, page 265) and managerial (Section 8.3, page 273).

8.1 SUMMARY OF THE KEY FINDINGS

On the basis of a multi-disciplinary review of the literature, a conceptual framework was developed, expressed in terms of two propositions and five hypotheses, which are summarised in Table 8-1.

Table 8-1: Summary of the propositions and hypotheses developed for this study

Proposition 1	Perceptions of page clarity and site architecture are explained by the sense-making potential of an OSE.
Proposition 2	Perceptions of visual impact, experiential intensity, marketer informativeness and non-marketer informativeness are explained by the exploratory potential of an OSE.
Hypothesis 1	The sense-making potential of an OSE provides the consumer with utilitarian value.
Hypothesis 2	The exploratory potential of an OSE is positively related to the production of hedonic value.
Hypothesis 3	The exploratory potential of an OSE is positively related to the production of utilitarian value.
Hypothesis 4	Hedonic value drawn from navigating an OSE is positively related to site commitment.
Hypothesis 5	Utilitarian value drawn from navigating an OSE is positively related to site commitment.

To assess Propositions 1 and 2, measures of the six dimensions were developed and found to have strong psychometric properties (Chapter 5, page 208). Five alternative models were tested, and the results supported the proposition that consumers perceive

OSEs in terms of their Sense-making and Exploratory attributes. In turn, Sense-making attributes are perceived as Page clarity and Site architecture, and Exploratory attributes are perceived in terms of Visual impact, Experiential intensity, Marketer informativeness and Non-marketer informativeness (Chapter 6, page 235).

Regarding Hypotheses 1-5, the key findings are that, as hypothesised, Exploratory potential produces both Hedonic (Hypothesis 3) and Utilitarian value (Hypothesis 2), and that both kinds of value contribute to Site commitment (Hypotheses 4 and 5).

Unexpectedly, it was found that Sense-making potential does not produce Utilitarian value directly (therefore Hypothesis 1 is not supported), but only through the mediation of Exploratory potential. In essence therefore, Sense-making potential was found to be an antecedent of Exploratory potential.

The study's results provide a number of important insights into consumption behaviour online. These are discussed in more detail next.

8.2 THEORETICAL IMPLICATIONS

8.2.1 OSEs are perceived holistically as environments replete with product information

The findings suggest that the distinction between the Sense-making and the Exploratory potential of OSEs is a pertinent theory to explain how OSEs are perceived and processed by consumers when they shop online. Even though an online shopping navigation does not take consumers anywhere beyond the surface of their two-dimensional screens, they do indeed perceive the series of successive pages they view on the screens as 'real' environments. The findings also support the view that OSEs are a particular kind of environment, which all visitors navigate in search of product-related information. In OSEs therefore, visitors are shoppers. This is an important point to bear in mind as one reviews the online literature, much of which deals with 'generic' websites.

While such constructs as vividness and interactivity can help explain online behaviours, they do not quite capture the experiential qualities of OSEs, in view of consumers' specific expectations as shoppers. Shoppers are only sensitive to specific aspects of vividness and interactivity, when these bring products to life and enable consumers to shop more effectively and more pleasurably. If, when they shop online, consumers are also computer users, it is important for marketers to concern themselves with consumer perceptions of the virtual shopping environment, rather than remaining focused on the intrinsic qualities of the medium. The qualities of the medium are only of concern inasmuch as they produce affordances which facilitate the online shopping activity. It is important, therefore, that the marketing literature uses its own terminology when considering the dimensions and attributes of OSEs.

Based on a critical review of several literature streams and promising results in previous studies, a gestalt approach was adopted to conceptualise how consumers perceive OSEs. The results support this holistic approach, and provide insights into the respective roles of the two main kinds of attributes: Sense-making potential and Exploratory potential. This approach has two main benefits. Firstly, it focuses on consumer perceptions and reactions, which is the important level of analysis for marketers. The distinction between Sense-making potential and Exploratory potential is made on the basis of how they are perceived, used and processed by consumers, rather than on the basis of any intrinsic quality, intrinsic nature or designer perception. While websites are conceived and designed by marketers and designers out of a multitude of cues, their ultimate success depends on marketers' and designers' understanding of how holistically, the cues which contribute to create the virtual environment are perceived, processed and used *by consumers*. Secondly, it has identified attributes which exist irrespective of the level of technology. The results, therefore, do not risk becoming obsolete as fast as the technology prevalent at the time they have been obtained.

8.2.2 The ability to explore product-related information is a source of shopping value

The study shows that product-related information is perceived by consumers as part of a retail website's exploratory potential. In this respect, OSEs are different from other

environments, in that all OSE visitors share the motive of finding product-related information. The depth of information available and searchable is important because it makes further exploration possible. While the manner in which the information is presented is important because it may impact on sense-making, the results suggest that OSEs should contain as much product-related information as feasible, and from as many sources as possible. OSEs are the first shopping 'medium' which can provide consumers with access to all the sources of information they usually seek, all in one place. This significantly reduces consumers' information search costs.

Furthermore, the internet medium's vividness and interactivity, and the resulting telepresence, can bring many products to life so that they can be experienced online prior to purchase. The qualities of the online medium and every development in internet technology offer new opportunities for marketers to showcase their products. Product inspection may take a different form from offline, as consumers use affordances to assess products. For example, the success of music sales online may be attributable to the fact that it is experienced more easily online than in a record shop. New technologies may in future enable consumers to create new affordances. Internet speed in particular will ease the download of complex images, which could for example enable consumers to consider pieces of furniture in the context of fully designed virtual rooms.

8.2.3 Site commitment results from both hedonic and utilitarian value

The study found that Hedonic value and Utilitarian value contribute to Site commitment in similar proportions (.41 and .52 respectively). Even though caution must be exercised until these results are further validated, this is an important finding because although the utilitarian benefits of online shopping are well known (e.g. opportunity to shop at all hours from the comfort of one's home or office, absence of crowding, access to more information, access to a wider product range), and the limitations of virtual experiences compared to direct ones have been considered (Grewal, Iyer and Levy 2004), online shoppers nevertheless appear to place a high value on hedonic factors when considering their future relationship with a retail website.

If further research validates these results, this would indicate that while consumers want to avoid some of the hassles of offline shopping, and do want all the functionalities afforded by the internet (such as searching capabilities and information), they are still sensitive to the innate pleasures of shopping. The ability to stage intrinsically rewarding experiences is likely to be a source of competitive advantage online also (Pine and Gilmore 1998). The ability of marketers to provide, on each visit, a shopping experience which produces high levels of both Hedonic and Utilitarian value is especially important online where, unless they form the intention of returning to a site during a navigation, shoppers are unlikely to 'stumble into it' again with the ease one stumbles into a store in the high street or a mall.

8.2.4 Exploratory potential is the main source of shopping value

Perhaps the most interesting finding of this study results from the rejection of the hypothesis that there is a direct relationship from Sense-making potential to Utilitarian value. Consequently, Sense-making potential acts as an antecedent to Exploratory potential. Thus, Sense-making potential is necessary but not sufficient to produce Shopping value. This is consistent with Kaplan and Kaplan's (1982) argument that people are not satisfied with just making sense of an environment. They quickly become bored and seek exploration as a way to expand the boundaries of their world. The same appears to apply to online shopping contexts. A similar antecedent/consequence relationship between attributes has been discussed in the HCI literature. Several studies using the Technology Acceptance Model have found perceived ease of use to be an antecedent of perceived usefulness (Henderson and Divertt 2003; Karahanna and Straub 1999). A consumer who feels ill at ease on the site will be less inclined or able to grasp the variety of explorations possible from each page.

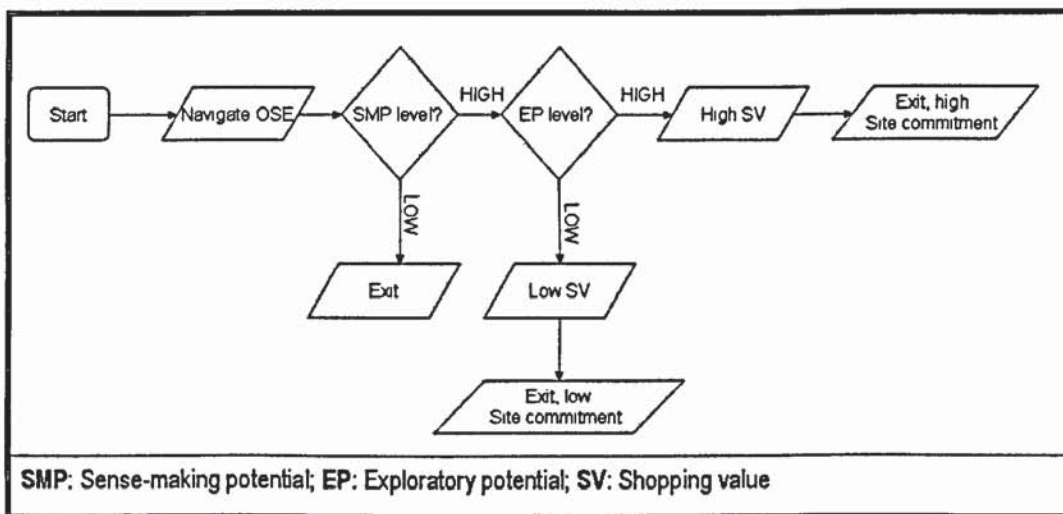
Further studies suggest that the influence of ease of use may decrease in future, as the average level of consumer competence online increases. In particular, it seems that the respective influences of perceived ease of use and perceived usefulness vary with the level of user experience (Castaneda et al. 2007). Davies et al. (1989) observed that over

time, the relative impact of perceived usefulness increased, and the direct impact of ease of use on usage behaviour weakened. Similarly, Adams et al. (1992) found that 'perceived ease of use' varied as a function of user experience level. Ease of use is similar, conceptually, to Sense-making potential, and, therefore, it may be that Sense-making potential will in future become less of a threshold for consumers to be able to appreciate the Exploratory potential of the site. It could be, therefore, that as consumers get more used to the internet and to shopping online, the importance of the Sense-making potential will diminish while Exploratory potential will take on even more importance.

8.2.5 Creating competitive advantage with exploratory potential

Exploratory potential, then, turns out to be the 'killer attribute', or the condition *sine qua non* to keep consumers navigating the environment. As described in Figure 8-1 (page 269), consumers' decision to patronise a site might be sequentially organised as follows: if they perceive the OSE's Sense-making potential to be low, they exit the site; if Sense-making potential is high, they keep navigating. Next, if they perceive the OSE's Exploratory potential to be low, they draw lower value and therefore do not commit to the site. If they perceive the OSE's Exploratory potential to be high, Shopping value results, which commits them to the site.

Figure 8-1: Flow chart describing consumer decisions during an online shopping navigation



This possible process is supported by the analysis of the average level of Site commitment experienced by respondents when they are segmented into four groups, based on their perceptions of Sense-making potential and Exploratory potential.

Figure 8-2 (page 270) shows the existence of interaction effects between Sense-making potential and Exploratory potential. In particular it shows that while low perceptions of Sense-making potential (irrespective of the perceptions of Exploratory potential) lead to low levels of Site commitment, there is a significant difference between low and high Exploratory potential.

Figure 8-2: Interaction effects of Sense-making and Exploratory potential on Site commitment

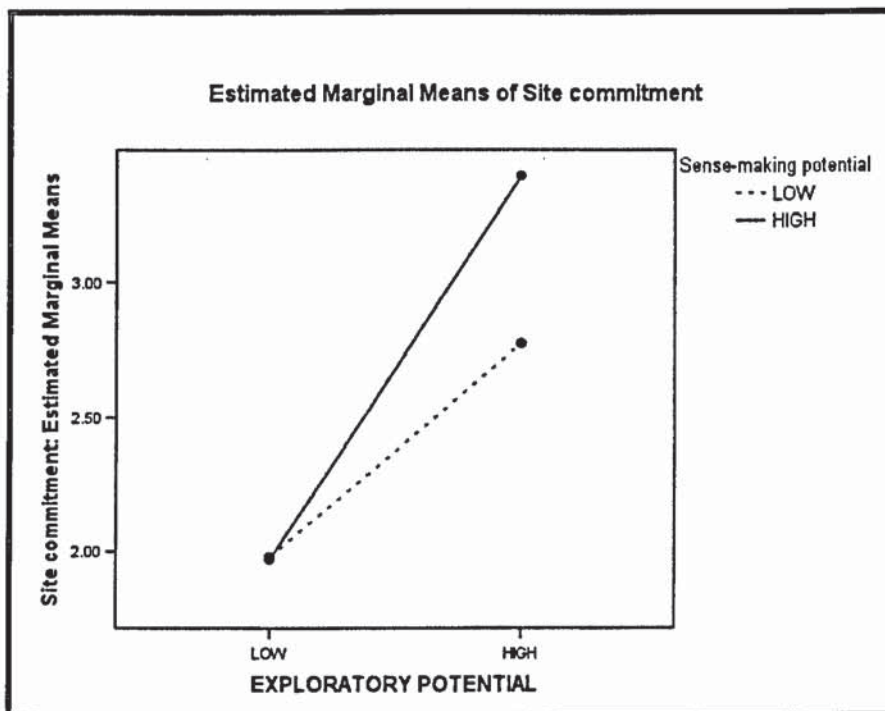
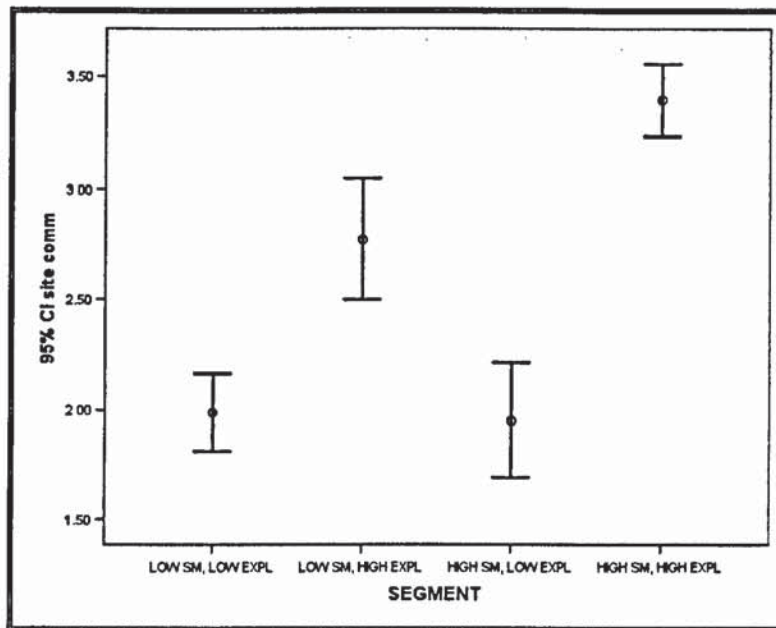


Figure 8-3, which displays a 95% confidence interval around the means of Site commitment for each of the four segments (i.e. low sense-making/low exploratory, low sense-making/high exploratory, high sense-making/low exploratory and high sense-

making/high exploratory), shows that the means of the low sense-making/high exploratory, high sense-making/low exploratory and high sense-making/high exploratory groups are statistically different.

Figure 8-3: Site commitment means per segment



This study's findings suggest that Kaplan and Kaplan's (1982) contention that people prefer environments which they can make sense of and explore, also applies to consumers in OSEs. In other words, marketers can achieve competitive advantage by developing websties which consumers perceive as making sense and worth exploring. The competitive advantage can be explained both by consumers' preference for such sites, and by the Shopping value which they derive from the site's Exploratory potential.

Exploratory potential is the more strategic attribute of OSEs, because by producing Shopping value, it creates Commitment to the site. A major concern of online marketers therefore becomes: how can a retail website facilitate exploration? Exploratory potential was found to be reflected in both spatial exploration and informational exploration attributes. Therefore, exploration applies both to the virtual environment itself, and to product-related information. In spite of the sensory limitations of online interfaces, and of the suggestion that consumers may have more instrumental motivations when they

shop online (Burke 2002), they want to explore the environment as well as exploring product-related information. Marketers therefore need to concern themselves with building an environment which is worth exploring, and communicating a plethora of information worth exploring.

In view of several unique characteristics, the internet, as a new communication medium, offers new challenges and opportunities to gain competitive advantage. Online, products can come to life through telepresence; for the first time in history, all sources of information most valued by consumers (personal, marketer, opinion formers, other users) are available at once; the quantity of information is potentially quasi-unlimited, and it can be searched effectively.

Thus, marketers can exploit the variety of technologies and design tools available to them to create an atmosphere, messages and a community of sources with the aim of maximising the Exploratory potential of their retail website. While they need to work closely with IT professionals to make this happen, marketers need to remain in charge of the atmosphere and the communication. As technology evolves, they have to concern themselves with finding new ways to facilitate the exploration of their online store and of their products and information. Competitive advantage is drawn from the attributes driving exploration – not from the particular technologies or design artifices used to create the perception, and which change over time. These are only useful if harnessed to the aim of creating competitive advantage by offering additional Shopping value through perceptions of a site worth exploring spatially and informationally.

In summary, the main findings of this study bring out the spatial nature of OSEs (even if they are only virtual environments), and their informational nature. The potential for their exploration is only likely to grow as technology provides more ways to bring environments and products to life, and as more consumers adopt a cross-channel strategy in their shopping behaviour. The research has also highlighted the fact that consumers' perceptions of OSEs are strongly anchored in the context of the shopping activity. They expect their experience to be a *shopping* experience and when navigating OSEs, they are very much *shoppers*, not just computer users.

8.3 MANAGERIAL IMPLICATIONS

Several managerial implications can be discerned. Firstly, the model developed and tested indicates ways in which retailers and service organisations can manipulate the design of their online environments, with the confidence that stronger site commitment among their customers will ensue.

Secondly, these results provide marketers and managers with a model to consider the effectiveness of their current website, or to conceive of new ways of enhancing consumers' online shopping experiences. In particular, Exploratory potential has been found to be central to gaining consumer commitment to the site. Exploratory potential was found to consist of both spatial exploratory potential and information diversity attributes. These constitute as many concrete 'handles' which marketers can use to further enhance the competitiveness of their site. In particular, as technology evolves, and as download speeds keep increasing, marketers will be able to find new ways to enhance the exploratory potential of their site and its product information.

Thirdly, the gestalt and the scales developed can be used by marketers as a diagnostic tool to measure the overall sense-making and exploratory strength of their website against competitors. One can also use Sense-making potential and Exploratory potential to draw perceptual maps of online stores in a particular product category and tease out the particular positioning of different stores, and the manner in which they achieve it.

Fourthly, the concepts and measures of this study can serve as a blueprints for marketers to lead retail website development projects. The six constructs operationalised concern perceptual attributes such as 'informativeness', or 'experiential intensity' rather than actual cues. In other words, they tap the perception of consumers as to the level of eventual success with which the cues which have been assembled, enable them to satisfy their needs. These are important constructs for marketers as they strive to retain and delight consumers online, since they measure consumers' perceptions rather than expert or designer judgments of websites. They form, therefore, a valuable 'vocabulary' for

marketers to use when discussing the performance of a website with information systems and interface design specialists. It is important that technology and design be harnessed to meet the specific needs of consumers (and in the process marketers) rather than be deployed to potentially irrelevant and costly IT or design ends. Marketers stand to gain a great deal from considering how technological advances can help them fulfil in new, more effective and richer ways, their consumers' perceptual needs.

8.4 SUMMARY

The purpose of this chapter was to consider the implications of the study's main results. Theoretically, the results indicate that OSEs are perceived holistically, as environments replete with product information, that the ability to explore product-related information is a source of shopping value, that utilitarian value and hedonic value both contribute to site commitment, and, importantly, that exploratory potential is the main source of shopping value. This places the focus on exploratory potential as the 'killer attribute'. Managerially, the results provide marketers with a model with which they can manipulate their retail websites for maximum competitive advantage. The next chapter concludes this thesis, by considering its limitations and stating its contributions.

CHAPTER 9: CONCLUSION

9.0 INTRODUCTION

This chapter is organised around two main objectives:

1. to identify the work's main contributions;
2. to reflect on its limitations and identify further research needs and avenues.

It first returns to the original impetus for the research, before summarising the main findings (Section 9.1), in order to provide a context within which the main contributions of the research can be presented (Section 9.2, page 277). The results however need to be considered in the context of a series of limitations, which in turn point the way towards future research (Section 9.3, page 279).

9.1 SUMMARY OF THE RESEARCH AND KEY FINDINGS

As more consumers shop online more often, either purchasing goods or searching for information before purchasing goods offline, it becomes crucially important for marketers to know how to provide them with the best possible online shopping experience. In this respect, online shopping environments (OSEs) are a key element since they are the main, or the only, source of cues which consumers have, to 'manage' their experience online or form an opinion of the firm. The aim of this dissertation was to explain theoretically how OSE attributes work together holistically to produce desirable consumer responses. The research was structured around three main objectives.

Firstly, it aimed to conceptualise OSEs, and identify the different roles they play during an online shopping navigation. The study conceptualised OSEs as virtual environments which may be perceived and experienced both cognitively (information, orientation,

understanding of tools, sense-making etc.) and affectively (sensory, experiential, interactive, playful) by consumers through a technology-mediated interaction with their computer screen. During an online shopping navigation, they play several roles: as the locus of an experience; as a participant in an interaction with the consumer, providing returns to every click and search; as a medium on which consumers 'produce' their own communication; as a tool which can help or hinder shoppers; as a service; and as a virtual environment. A multi-disciplinary approach (see Chapter 2, page 17) identified a number of characteristics of OSEs: they involve consumers, they are more complex than their offline counterparts and are likely first apprehended holistically, and they can elicit high levels of emotions and cognition.

Secondly, the research aimed to develop a conceptually-grounded categorisation of consumer perceptions of OSE attributes. Using a gestalt approach, Kaplan and Kaplan's (1982) framework was useful in understanding the distinctions consumers make between OSE attributes, based on the environmental need they fulfil (sense-making or exploration). The Framework was extended to take account of the specific characteristics of OSEs, encompassing 'Information diversity' as an exploratory dimension, to reflect the product-related informational needs of online shoppers. Sense-making potential and Exploratory potential were conceptualised as higher-order constructs explaining six individual dimensions. Measures of the six dimensions were developed and found to have strong psychometric properties (see Chapter 5, page 208). Five alternative models were tested, and the results supported the proposition that consumers perceive OSEs in terms of their sense-making and exploratory attributes. In turn, Sense-making attributes are perceived as Page clarity and Site architecture, and Exploratory attributes are perceived in terms of Visual impact, Experiential intensity, Marketer informativeness and Non-marketer informativeness (see Chapter 6, page 235).

Thirdly, it aimed to explain how OSE attributes work together to produce desirable consumer responses. The key findings (see Chapter 7, page 251) are that, as hypothesised, Exploratory potential produces both Hedonic and Utilitarian value, and that both kinds of value contribute to Site commitment. Unexpectedly, it was found that Sense-making potential did not produce Utilitarian value directly, but only through the

mediation of Exploratory potential. In essence therefore, Sense-making potential was found to be an antecedent of Exploratory potential.

The study's results provide a number of important insights into consumption behaviour online, which were discussed in the last chapter. In particular:

1. OSEs are perceived holistically as environments replete with product information;
2. The ability to explore product-related information is a source of shopping value;
3. Site commitment results from both hedonic and utilitarian value;
4. Exploratory potential is the main source of shopping value.

9.2 CONTRIBUTIONS

This study comprises seven main contributions. First, it has identified the main ways in which the internet has changed the nature of the shopping experience, and conceptualized OSEs, delineating them from their offline counterparts. This has led to conceiving online shopping experiences from six distinct perspectives: as an experience, as an involving relationship, as the creating and receiving of marketing communication, as the use of a tool, as a service and finally as a navigation through a virtual environment.

Second, it has contributed to theory by developing a gestalt of consumer perceptions of OSEs. It confirms the relevance of Kaplan and Kaplan's (1982) Preference Framework, and extends it to the online context, recognising the informational needs all shoppers share when they visit an OSE, by including the two dimensions of Marketer informativeness and Non-marketer informativeness. It builds on the work of Rosen and Purinton (2004) and Singh et al. (2005), by operationalising all constructs of the model and testing their relationship to two higher-order factors (Exploratory potential and Sense-making potential), with the stringent structural equation modelling method. It also confirms the importance of the main attributes investigated in the extant literature, and gives them a theoretical explanation. Shoppers, like all humans, perceive OSEs as environments, albeit virtual, which they wish to both understand and explore.

Additionally, they perceive their Exploratory potential in terms of both the environment itself and its information diversity.

Third, parsimonious scales to measure the sense-making and exploratory potentials of OSEs have been developed and validated. These can now be used in further studies on OSEs.

Fourth, the categorisation of OSE attributes distinguishes between page-level and site-level perceptions, reflecting the reality that online navigations consist of both exposures to two-dimensional, individual pages and three-dimensional experiences through a succession of pages. This distinction has begun to emerge in the literature concerning involving qualities, but the distinction is extended here to both the sense-making and the exploratory perceptions of the environment. Therefore the model, while remaining parsimonious due to its higher-order structure, accounts for the complex reality of website perceptions.

Fifth, it has established the important distinction between two different sources of information: marketer information and information from other sources. This distinction is extremely apt when studying OSEs, since they are the first shopping context where these two types of information co-exist. While scholars have investigated the impact of non-marketer information, and in particular word of mouth, on consumer behavior online (Godes et al. 2005; Gruen et al. 2006), this distinction is surprisingly absent from the extant categorisations of environmental attributes. This distinction is important since the credibility and trustworthiness of marketer and non-marketer sources varies, as well as the likely implications consumers will make from them (Gotlieb and Sarel 1992).

Sixth, by highlighting the central role of Exploratory potential in committing consumers to a site, it re-focuses the main challenge of online retailing as the design of environments and the communication of product information in a manner which invites exploration. A major contribution of this study therefore lies in re-positioning the responsibility of marketers as that of communicating products and environments via the online medium so as to bring them alive, and thus facilitate and make customer information search and

navigation more pleasurable. This will become especially important if consumers keep using the internet in a cross-channel strategy, and suggests that retail websites need to be tooled to encourage information search.

Seventh, on the methodological front, by capturing respondents' perceptions of a specific navigation undertaken immediately prior to the survey and untainted by intimate prior knowledge of the site, it has overcome validity concerns expressed about the likely halo effects of studies which call on consumers' memory to describe past experiences (Chen et al. 1999; Lowrey et al. 2005; Rettie 2001).

These main contributions are summarised in Table 9-1.

Table 9-1: Summary of the main contributions of the study

Main contributions
1. Identified main ways in which the internet has changed the nature of the shopping experience.
2. Extended Kaplan and Kaplan's (1982) Preference Framework, explaining how consumers perceive OSEs holistically.
3. Developed and validated parsimonious scales for Sense-making and Exploratory potential
4. Identified distinction between page-level and site-level perceptions.
5. Distinguished between different sources of information (marketer vs. non-marketer).
6. Provided a model for marketers to conceive and design retail websites whose attributes work together to create competitive advantage, which isolates the key role played by the need for exploration of both the virtual environment and product-related information in the creation of value for the consumer.
7. Provided a method which reduces the potential memory or halo effects associated with surveys in this field of enquiry.

9.3 LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

Research consists of a series of philosophical and methodological crossroads, and each crossroad necessitates a choice. The researcher is aware that the same research objectives could have been met using an altogether different approach. For example, a phenomenological approach would have been justified if one considers that rather than

there being just one reality which a scientific method can aim to get close to, individuals each construct their own reality. Besides the philosophical standpoint, each methodological choice implied its own limitations. These were considered step-by-step and acknowledged in the methodology chapter, Section 4.4 (page 198). The main limitations of this study are now reviewed, and point the way towards further research.

First, by proposing a theory of how OSE attributes work together holistically to produce competitive advantage, the researcher chose to link a number of constructs as a small step forward, building on extant knowledge. From that perspective, the theory developed is a 'prisoner' of the dominant paradigm, and excludes other possible explanations. As such, while a multi-disciplinary approach was adopted to enhance the study's conceptual grounds, and while the results of the enquiry provide promising support to the theory, it is only one possible explanation of what happens when a customer navigates a retail website. It also suffers from its fragile infancy. In particular, while a very rigorous process was followed to develop and validate measures on different samples in order to avoid giving too great an importance to the idiosyncrasies of any sample data, these measures require further validation.

Second, is the use of a convenience sample of students and university staff. Students have been exposed to the internet and its virtual environment for a higher proportion of their lives, and are more computer literate and avid online shoppers than average consumers (Marsh et al. 2000). The literature (e.g. Liefeld 2003; Soley and Reid 1983; Wells and Mithun 2003) has questioned the validity of studies involving students. In this case however, students are tomorrow's consumers, whom marketers must consider when planning future versions of their websites.

Third, due to their age and lighter time pressures, students may also have more exploratory behaviour tendencies, and this may have increased the observed levels of hedonic value. An important research avenue would involve considering the possible moderating effect of exploratory behaviour tendencies. Baumgartner and Steenkamp (1996) have found that both exploratory information seeking tendencies and exploratory acquisition of product tendencies affect actual exploratory consumer behaviours. It

would be appropriate to ask whether these two constructs might moderate the relationship between sense-making and exploratory potential (consumers with high levels of exploratory behaviour tendencies may seek and therefore be able to identify exploratory cues more proficiently than others), or between perceived exploratory potential and hedonic value.

A fourth source of vulnerability lies in the single context (online bookstores) to which the measures and overall model have been applied. Replication applied to a different product category might reveal flaws in the measures, with some items behaving differently. It might return different strengths in relationships. In particular, there is a possibility that with less gratifying product categories such as the purchase of train tickets, groceries or computer accessories, exploratory cues will have less importance.

Fifth, the study focused on the impact of the virtual shopping environment on consumer responses. It did not consider the likely additional impact of the physical environment in which consumers and their computer are located during the shopping experience. A most interesting research avenue would aim to understand the relative impact of each environment, and possible interaction effects, for example when both the virtual and the real, surrounding environments are highly arousing.

Sixth, although theory and a number of previous studies suggest that involvement levels are high during online shopping navigations, the current study did not measure involvement adequately. Future research should aim to capture involvement, ideally measuring its changing levels throughout the course of the navigation. This may be possible with methods similar to the Experience Sampling Method used to measure flow (Csikszentmihalyi and Csikszentmihalyi 1988) or with eye-tracking methods measuring physiological reactions to screen content, which are indicative of attention (Christianson et al. 1991), which in itself may serve as an indicator of involvement levels.

Seventh, the use of an *ex post facto* design precludes the researcher from making any claim of causality. Having said this, a number of measures were taken to limit the influence (confounding) of extraneous elements – by having the respondents navigate the

same site, at the same download speed, with the same browser display and for the same duration. Nevertheless, further research could follow an experimental design, considering in particular the impact of cue manipulations on consumer responses.

Eighth, it must be acknowledged that the measures taken to reduce the influence of extraneous elements may have brought another source of bias: forcing respondents to navigate a website for 8 minutes may yield a poor simulation of actual behaviour, since some of the respondents would have normally left the site well before time was up.

Ninth, by nature, theory aims to offer simple explanations to complex phenomena. Parsimony is a highly desirable aim when developing theory. In the process though, the other factors bearing on the complex reality are ignored. This research has aimed to consider the impact of a specific environment on consumers. It has not attempted to model individual characteristics which undoubtedly affect the model. Such characteristics could include Exploratory Behaviour tendencies (which were discussed earlier, page 280) need for cognition (NFC) and optimal stimulation level (OSL). For instance, individuals with a high NFC might place more value on informative attributes than on experiential intensity, as the following findings of Martin, Sherrard, and Wentzel (2005) seem to indicate: high NFC subjects gave better evaluations of sites with high verbal and low visual complexity. Conversely, shoppers with high OSL might value sites with strong exploratory attributes more than shoppers with low OSL.

Another interesting research avenue would be to consider the relevance of the Preference Framework to offline, traditional shopping environments. In particular, do sense-making and exploratory potential have the same antecedent/consequence relationship? Do shoppers only draw value from a visit to a mall if they have found it worth exploring? Further, as more shops allow consumers to browse their online interface while in the store, is information diversity also becoming more relevant offline?

9.4 CONCLUSION

Overall, this study has revealed how OSE attributes could be utilised holistically to create competitive advantage, putting the spotlight on Exploratory potential as the main creator of Shopping value. Further research on the exploratory potential of OSEs holds a great deal of promise, since one can only assume that the constantly evolving technology will provide ever more opportunities and novel ways for marketers to increase the potential for exploration on their website. In fact, as internet speeds increase and internet use becomes more widespread and more second-nature to consumers (as the young 'generation internet' comes of age and becomes the consuming majority), the relative importance of sense-making and exploratory potential is likely to irrevocably and permanently tilt towards exploratory attributes. Scholarly attention towards the exploratory potential of retail websites will likely increase. From this vantage point, this study, which shows how the exploratory potential of online shopping environments increases commitment to a retail website by producing both hedonic and utilitarian value as a consequence of shopper involvement with site content, contributes an important insight into online consumer behaviour.

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APPENDICES

APPENDIX 1

FINAL SURVEY QUESTIONNAIRE

APPENDICES

Please answer the questions which follow in relation to the navigation you have just undertaken, **NOT IN GENERAL**.

For each of these questions, please indicate the extent to which you agree or disagree with the statements. Circle the one statement which most closely represents your opinion.

Example:		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
EX1	Coffee with milk is my favourite drink.	1	2	3	4	5

START ANSWERING FROM HERE

II1 Had you navigated this website before? (please tick) ☐ Yes ☐ No

II2 If yes, is this a website which... (please tick one)	<input type="checkbox"/> you visit regularly?	<input type="checkbox"/> you have visited only a few times	<input type="checkbox"/> you visit every time you are looking for information or to make a purchase in its product category.
---	---	--	--

		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
IQ1	This site presented information which was easy to understand	1	2	3	4	5
EOU4	I found this website easy to use	1	2	3	4	5
R6	A lot of the information on this website had no practical value for me	1	2	3	4	5
NMI3	From this site it was impossible to see what other users thought of the products	1	2	3	4	5
VV4	The website gave a very lifelike impression of the store	1	2	3	4	5
NMI4	I could access product reviews on this site	1	2	3	4	5
R5	A lot of the information on this website was irrelevant to my needs	1	2	3	4	5
PO4	The organization of the information presented on the screen was confusing	1	2	3	4	5
M3	The products seemed very intangible on this website	1	2	3	4	5
EF7	This site felt more like reading a text than being in a shop	1	2	3	4	5
NMI2	This site had customer reviews of products	1	2	3	4	5
M6	This site enabled me to get close to the products	1	2	3	4	5
SP4	This site had links to other relevant products	1	2	3	4	5
V18	This site had no visual impact	1	2	3	4	5
SUD3	I felt as if I was actually getting answers to what I was after on this website	1	2	3	4	5
I1	This site had insufficient product information	1	2	3	4	5

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		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
IT7	This site responded in strange ways	1	2	3	4	5
I3	This website adequately met my information needs	1	2	3	4	5
VV6	The website really defined the shop for me	1	2	3	4	5
M4	This website enabled me to click on products to see them from different angles	1	2	3	4	5
IT2	This website gave me the results I anticipated when I clicked on things	1	2	3	4	5
SPPC1	This website had few product alternatives to consider	1	2	3	4	5
NMI6	This website made it easy for users of its products to exchange information among themselves	1	2	3	4	5
SUD8	This website didn't understand what I'm interested in	1	2	3	4	5
SP8	This website offered no suggestions	1	2	3	4	5
SUD10	This website didn't understand my needs	1	2	3	4	5
NMI1	This website only gave me its own product information, and not other users' comments	1	2	3	4	5
I2	This website provided complete product descriptions	1	2	3	4	5
M5	This website enabled me to click on things to get different views of the products	1	2	3	4	5
SP2	This website recommended relevant products to me which I hadn't thought of or didn't know	1	2	3	4	5
EF4	This website replicated the kind of experience I have when I shop	1	2	3	4	5
SUD12	This website seemed to be adapting its style to me	1	2	3	4	5
SP3	This website threw up lots of new ideas	1	2	3	4	5
M7	This website was able to give me a good idea of the different facets of the products	1	2	3	4	5
VI7	This website was dull visually	1	2	3	4	5
EF5	This website was incapable of reproducing the excitement of shopping	1	2	3	4	5
R1	The information on this website was helpful	1	2	3	4	5
EF6	When I navigated this website I felt I was shopping for real	1	2	3	4	5
TR3	When I used the website there was very little waiting time between my actions and the website's response	1	2	3	4	5
IL8	The pages of this website were too crowded	1	2	3	4	5
RC4	When I visited categories on this website I found things where I expected to find them	1	2	3	4	5
SP1	When I was looking at a particular product, the website also provided links to similar items	1	2	3	4	5
RPO6	The products were logically organized into relevant categories	1	2	3	4	5
VI3	The website had a visually pleasing design	1	2	3	4	5
TR2	The website loaded quickly	1	2	3	4	5

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		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
POC3	The website presented the information in a consistent manner	1	2	3	4	5
VI4	The website was aesthetically appealing	1	2	3	4	5
VV5	The website gave a very vague impression of the shop	1	2	3	4	5
R9	The website was giving me results which had little relevance to what I asked for	1	2	3	4	5
IL4	There was an awful lot of things on every page	1	2	3	4	5
TR1	The website took long to load	1	2	3	4	5
I6	There was enough information on this website to assess the products	1	2	3	4	5
EOU1	Learning to use this website would be difficult for me	1	2	3	4	5
IL3	There was the right amount detail on these pages	1	2	3	4	5
I8	There wasn't enough information on this website to make a purchase decision	1	2	3	4	5
I7	I could learn a lot about the products on this site	1	2	3	4	5
IQ2	The information on this website was consistent	1	2	3	4	5
IL6	The web pages were easy to read	1	2	3	4	5
IQ3	The information on this website was up-to-date	1	2	3	4	5
SUD2	Interacting with the website gave me answers to my questions	1	2	3	4	5
IL2	There was too much text on the screens	1	2	3	4	5
SPPC5	It was difficult to find similar products to the ones I looked at on this website	1	2	3	4	5
EOU3	It would be hard for me to become skilful at using this website	1	2	3	4	5
M1	On this website, the view of the products was too one-dimensional	1	2	3	4	5
VV3	The website gave a very weak impression of the store	1	2	3	4	5
IQ4	The information on this website was accurate	1	2	3	4	5
PO3	The information on this website was disorganised	1	2	3	4	5
EOU2	My interaction with this website was clear and understandable	1	2	3	4	5
R2	The information on this website was important to me	1	2	3	4	5
IQ5	The information on this website was useful	1	2	3	4	5
R3	The information was meaningful to me	1	2	3	4	5
IT5	The links and buttons on this website made sense	1	2	3	4	5
SUD5	The more I navigated on this website, the more it seemed to understand me	1	2	3	4	5
R7	Some of the information on the pages had no relevance to the rest of the page	1	2	3	4	5

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		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
TR4	Technically, this website worked well	1	2	3	4	5
IT8	The categories and buttons were difficult to understand	1	2	3	4	5
RP08	The categories in which the products are organized were a complete shambles	1	2	3	4	5
VI2	The combination of the visual elements of this website was very harmonious	1	2	3	4	5
PO1	The content on the website was clear	1	2	3	4	5
EF8	The experience of shopping was not there when I navigated on this site	1	2	3	4	5
VI9	The graphics elements of this site were boring	1	2	3	4	5
R8	The information had nothing to do with me or my needs	1	2	3	4	5
VV2	The website gave a very vivid impression of the store	1	2	3	4	5
IT6	The information on succeeding links from the initial page was predictable	1	2	3	4	5
RC1	I got the information I expected whenever I clicked on a link	1	2	3	4	5
PO7	The content on this site was well organized	1	2	3	4	5
VV1	The website gave a very unclear impression of the store	1	2	3	4	5
CO1	During the navigation, I felt confused	1	2	3	4	5
IV3	The navigation was boring	1	2	3	4	5
PL3	I found this website pleasing	1	2	3	4	5
CO4	During the navigation, I felt frustrated	1	2	3	4	5
PL5	I found this website unpleasant	1	2	3	4	5
CO8	I felt as though the website was controlling me rather than me controlling it	1	2	3	4	5
PL4	I found this online shopping environment off-putting	1	2	3	4	5
CO7	I felt I could understand how the website worked	1	2	3	4	5
IV2	The navigation was enjoyable	1	2	3	4	5
CO5	I felt in charge of my navigation with the site	1	2	3	4	5
PL2	This website was dissatisfying	1	2	3	4	5
CO6	I felt lost on this website	1	2	3	4	5
IV4	The navigation was exciting	1	2	3	4	5
PL6	This was an uncomfortable website	1	2	3	4	5
IV1	The navigation was stimulating	1	2	3	4	5
PL1	This was a nice online shopping environment	1	2	3	4	5

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		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
HV4	Compared to other things I could have done, the time spent shopping on this website was truly enjoyable	1	2	3	4	5
IR7	I am unlikely to use this website again	1	2	3	4	5
HV8	During the navigation I felt the excitement of the hunt	1	2	3	4	5
UV1	I accomplished just what I wanted to during this navigation	1	2	3	4	5
HV2	I continued to navigate the site because I had to, not because I wanted to	1	2	3	4	5
UV2	I couldn't find what I really needed during this online shopping experience	1	2	3	4	5
IR4	I plan to use this website in the future	1	2	3	4	5
HV5	I enjoyed being immersed in exciting new products	1	2	3	4	5
REL2	I would refuse to let this website contact me for special offers or promotions	1	2	3	4	5
HV6	I enjoyed this navigation for its own sake, not just for the items I may have purchased	1	2	3	4	5
WOM5	I would have only good things to say about this website	1	2	3	4	5
REL1	If the website had a function enabling me to register for email alerts, I would register	1	2	3	4	5
IR6	I expect my use of this website to continue in the future	1	2	3	4	5
HV7	I had a good time on this website because I was able to act on "the spur of the moment"	1	2	3	4	5
WOM4	I would hesitate to mention this website to my friends	1	2	3	4	5
IR5	I intend to continue using this website in the future	1	2	3	4	5
UV4	I was disappointed because I would have to go to another site to complete my shopping	1	2	3	4	5
HV10	While shopping on this site I felt a sense of adventure	1	2	3	4	5
WOM1	I will recommend this site to other people	1	2	3	4	5
IR8	I will use a website other than the one I just visited next time I need a book	1	2	3	4	5
REL3	I would like this website to keep in touch with me through email	1	2	3	4	5
HV1	The navigation on this website was truly a joy	1	2	3	4	5
IR3	I will visit this site first when I want to shop for books	1	2	3	4	5
WOM6	I would be proud to tell others that I use this website	1	2	3	4	5
REL5	I would register to receive newsletters from this website	1	2	3	4	5
WOM8	If this website had a function to refer it to friends, I would use it	1	2	3	4	5
HV3	Shopping on this website truly felt like an escape	1	2	3	4	5
HV11	This shopping navigation was not a very nice way to spend my time	1	2	3	4	5
WOM3	When talking to people about this website, I will say negative things	1	2	3	4	5

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		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
UV3	While shopping I found just the item(s) I was looking for	1	2	3	4	5
HV9	While shopping on the site I was able to forget my problems	1	2	3	4	5
<u>About yourself</u>						
SD10	I have never deliberately said something that hurt someone's feelings	1	2	3	4	5
IIV7	Books as a product category are fun	1	2	3	4	5
EAP1	Even though certain food products are available in a number of different flavours, I tend to buy the same flavours	1	2	3	4	5
SC3	I am familiar with many online retail sites	1	2	3	4	5
IIV2	Books are irrelevant to me	1	2	3	4	5
SD3	My table manners at home are as good as when I eat out in a restaurant	1	2	3	4	5
EIS5	I don't like to shop around just out of curiosity	1	2	3	4	5
IIV10	Books are of no concern to me	1	2	3	4	5
SC5	I am unsure about shopping online	1	2	3	4	5
EAP7	I am very cautious in trying new or different products	1	2	3	4	5
SD4	There have been times when I felt like rebelling against people in authority even though I knew they were right	1	2	3	4	5
EIS2	I like to go window shopping and find out about the latest styles	1	2	3	4	5
IIV5	Books to me are dull	1	2	3	4	5
EAP3	I think of myself as a brand-loyal consumer	1	2	3	4	5
SD1	I sometimes feel resentful when I don't get my way	1	2	3	4	5
IIV4	Books in general are unexciting	1	2	3	4	5
EIS9	I don't like to talk to my friends about my purchases	1	2	3	4	5
SD8	I have never been annoyed when people expressed ideas very different from my own	1	2	3	4	5
IIV9	Books to me are boring	1	2	3	4	5
EIS8	I like to shop around and look at displays	1	2	3	4	5
SD9	I am sometimes irritated by people who ask favours of me	1	2	3	4	5
EAP5	When I go to a restaurant, I feel it is safer to order dishes I am familiar with	1	2	3	4	5
IIV3	Books mean a lot to me	1	2	3	4	5
EIS3	I get very bored listening to others about their purchases	1	2	3	4	5
EAP8	I enjoy taking chances in buying unfamiliar brands just to get some variety in my purchases	1	2	3	4	5
IIV8	I find books in general appealing	1	2	3	4	5

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		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
EAP2	I would rather stick with a brand I usually buy than try something I am not very sure of	1	2	3	4	5
EIS4	I generally read even my junk mail just to know what it is about	1	2	3	4	5
SC1	I have a great deal of experience in navigating online shopping websites	1	2	3	4	5
SC2	I have used or been exposed to this type of retail website in the past	1	2	3	4	5
EIS6	I like to browse even when I don't plan to buy anything	1	2	3	4	5
SD2	I am always careful about the way I dress	1	2	3	4	5
EIS10	I often read advertisements just out of curiosity	1	2	3	4	5
EAP9	I rarely buy brands about which I am uncertain how well they perform	1	2	3	4	5
SC4	I rarely shop online	1	2	3	4	5
EAP10	I usually eat the same kind of foods on a regular basis	1	2	3	4	5
SD6	I sometimes try to get even rather than forgive and forget	1	2	3	4	5
EIS7	I usually throw away mail advertisements without reading them	1	2	3	4	5
EAP6	If I like a brand, I rarely switch from it just to try something different	1	2	3	4	5
SD7	I am always courteous, even to people who are disagreeable	1	2	3	4	5
IIV6	In general, books matter to me	1	2	3	4	5
EIS1	Reading advertising to find out what's new is a waste of time	1	2	3	4	5
IIV1	To me, books in general are important	1	2	3	4	5
EAP4	When I see a new brand on the shelf, I'm not afraid of giving it a try	1	2	3	4	5
SD5	I'm always willing to admit it when I make a mistake	1	2	3	4	5

PI1- For how many years have you been using the internet? _____ years.

PI2- Have you shopped online before? ☐ Yes ☐ No

PI3- Have you purchased products online before? ☐ Yes ☐ No

PI4- What is your nationality? _____

PI5- What is your name? _____

(NB: this last question is only to ensure there is no duplication – your answers to the questionnaire will remain confidential)

THANK YOU.

APPENDIX 2

SURVEY INSTRUMENT DEVELOPMENT – ORIGIN OF ITEMS INCLUDED

This appendix details, for each of the measures used in the study, the wording and origin of the items included in the survey instrument (see Appendix 1, page 326).

INDEPENDENT VARIABLES

Spatial exploration

Table 9-2: Visual impact (the attention-grabbing, aesthetic visual diversity of individual web pages) – 6 items

Ref	Item wording	RC	Original scale	Comments
V12	The combination of the visual elements of this website was very harmonious	✓		
V13	The website had a visually pleasing design		Web Appearance (Kim and Stoel 2004a)	
V14	The website was aesthetically appealing		Visual Appeal (Mathwick, Malhotra and Rigdon 2002)	
V17	This website was dull visually	✓	Web Appearance (Kim and Stoel 2004a)	'pleasing' was replaced by 'dull' to produce a reverse-coded item
V18	This site had no visual impact	✓		
V19	The graphics elements of this site were boring	✓		
RC: indicates reverse-coded items.				

Table 9-3: Experiential intensity (the ability of the website to produce an involving shopping experience) – 5 items

Ref	Item wording	RC	Original scale	Comments
EF4	This website replicated the kind of experience I have when I shop			
EF5	This website was incapable of reproducing the excitement of shopping	✓		
EF6	When I navigated this website I felt I was shopping for real			
EF7	This site felt more like reading a text than being in a shop	✓		
EF8	The experience of shopping was not there when I navigated on this site	✓		
RC: indicates reverse-coded items.				

Information diversity

Table 9-4: Marketer informativeness (the extensiveness of marketer information available on the site) – 12 items

Ref: Item wording	RC	Original scale	Comments
I1: This site had insufficient product information	✓	Product Information Quality (Park and Kim 2003)	'sufficient' was replaced by 'insufficient' to obtain a reverse-coded item
I2: This website provided complete product description		Quality of Information and Service (Liu et al. 2001)	
I3: This website adequately met my information needs		Information Fit-to-task (Kim and Stoel 2004a)	
I6: There was enough information on this website to assess the products			
I7: I could learn a lot about the products			
I8: There wasn't enough information on this website to make a purchase decision	✓		
R1: The information on this website was helpful		Information relevance (Mishra, Umesh and Stem 1993)	From question into statement
IQ1: This site presented information which was easy to understand		Product information quality (Park and Kim 2003)	
IQ2: The information on this website was consistent		Product information quality (Park and Kim 2003)	
IQ3: The information on this website was up-to-date		Product information quality (Park and Kim 2003)	
IQ4: The information on this website was accurate		User-perceived Web Quality (Aladwani and Palvia 2002)	replaced 'content' by 'information'
IQ5: The information on this website was useful		User-perceived Web Quality (Aladwani and Palvia 2002)	replaced 'content' by 'information'
RC: indicates reverse-coded items.			

Table 9-5: Non-marketer informativeness (the extensiveness of information available on the site, which originates from non-marketer sources) – 5 items

Ref	Item wording	RC	Original scale	Comments
NMI1	This website only gave me its own product information, and not other users' impressions	✓		
NMI2	This site had customer reviews of products			
NMI3	From this site it was impossible to see what other users thought of the products	✓		
NMI4	I could access product reviews on this site			
NMI6	This website made it easy for users of its products to exchange information between themselves			
RC: indicates reverse-coded items.				

Sense-making attributes

Table 9-6: Page clarity ("the ease with which one can grasp the organization of the scene" Kaplan 1992) – 10 items

Ref	Item wording	RC	Original scale	Comments
IL2	There was too much text on the screen	✓		
IL3	There was the right amount detail on these pages			
IL4	There was an awful lot of things on every page	✓		
IL6	The web pages were easy to read		Web Appearance (Kim and Stoel 2004a)	
IL8	The pages of this website were too crowded	✓		
PO1	The content on the website was clear		User-perceived Web Quality (Aladwani and Palvia 2002)	
PO3	The information on this website was disorganised	✓		
PO4	The organization of the information presented on the screen was confusing	✓		
PO7	The content on this site was well organized			
POC3	The website presented the information in a consistent manner			
RC: indicates reverse-coded items.				

Table 9-7: Site architecture (the shoppers' perception of the organisation of the different pages of the website as a coherent, understandable whole) – 14 items

Ref	Item wording	RC	Origin	Comments
EOU1	Learning to use this website would be difficult for me	✓	Perceived Ease of Use (Venkatesh and Davis 1996)	'easy' was replaced by 'difficult' to produce a reverse-coded item
EOU2	My interaction with this website is clear and understandable		Perceived Ease of Use (Venkatesh and Davis 1996)	
EOU3	It would be hard for me to become skilful at using this website	✓	Perceived Ease of Use (Venkatesh and Davis 1996)	'easy' was replaced by 'hard' to produce a reverse-coded item
EOU4	I find this website easy to use		Perceived Ease of Use (Venkatesh and Davis 1996)	
CO1	During the navigation, I felt confused	✓		
CO5	I felt in charge of my navigation with the site			
CO6	I felt lost on this website	✓		
CO7	I felt I could understand how the website worked			
CO8	I felt as though the website was controlling me rather than me controlling it			

RC: indicates reverse-coded items.
 NB: The first items EOU1, EOU2, EOU3, EOU4 consist of the full 4-item Perceived Ease of Use scale (Venkatesh and Davis 1996).

MEDIATING VARIABLES

Constructs representing the two dimensions on Shopping value – Utilitarian value and Hedonic value – were included as mediating variables in the model. These constructs were operationalised using Babin et al.'s (1994) Shopping value scale, which consists of two dimensions: Utilitarian value and Hedonic value.

Table 9-8: Utilitarian value ("an overall assessment of functional benefits and sacrifices" Overby and Lee 2006, p. 1161) – 4 items

Ref	Item wording	RC	Original scale	Comments
UV1	I accomplished just what I wanted to on this navigation			
UV2	I couldn't find what I really needed on this website	✓		'shopping trip' was replaced by 'navigation' original wording was "I couldn't buy what I really needed", and it was reworded to reflect the fact that while purchasing was not discouraged during the 8-minute navigation respondents were reporting on, the conditions were making it difficult to purchase and may have biased the reporting on this item.
UV3	While shopping I found just the item(s) I was looking for			
UV4	I was disappointed because I would have to go to another site to complete my shopping	✓		
RC: indicates reverse-coded items. Babin et al. (1994) report a Cronbach's Alpha of .80 for this dimension.				

Table 9-9: Hedonic value ("an overall assessment of experiential benefits and sacrifices, such as entertainment and escapism" Overby and Lee 2006, p. 1161) – 11 items

Ref	Item wording	RC	Original scale	Comments
HV1	The navigation on this website was truly a joy			'shopping trip' and 'shop' were replaced by 'navigation' and 'website'/'site' respectively
HV2	I continued to navigate the site because I had to, not because I wanted to.	✓		original wording ("I continued to shop, not because I had to, but because I wanted to") was altered to obtain a negatively-worded item; 'shop' was replaced by 'website'
HV3	Shopping on this website truly felt like an escape.			'shop' was replaced by 'website'
HV4	Compared to other things I could have done, the time spent shopping on this website was truly enjoyable			'shop' was replaced by 'website'
HV5	I enjoyed being immersed in exciting new products			
HV6:	I enjoyed this navigation for its own sake, not just for the items I may have purchased			'shopping trip' was replaced by 'navigation'
HV7	I had a good time on this website because I was able to act on "the spur of the moment".			'shop' was replaced by 'website'
HV8	During the navigation I felt the excitement of the hunt			'shopping trip' was replaced by 'navigation'
HV9	While shopping on the site I was able to forget my problems			'shop' was replaced by 'website'
HV10	While shopping on this site I felt a sense of adventure			'shop' was replaced by 'website'
HV11	This shopping navigation was not a very nice way to spend my time.	✓		"nice time out" was replaced by "nice way to spend my time"; 'shopping trip' was replaced by 'navigation'
RC: indicates reverse-coded items. Babin et al. (1994) report a Cronbach's Alpha of .93 for the Hedonic value dimension.				

Hedonic value scale developed by Babin et al. (1994)

DEPENDENT VARIABLE

Table 9-10: Site commitment (The degree to which the consumer is willing to remain associated with the retail website) – 16 items

Ref	Item wording	RC	Origin	Comments
IR3	I will visit this site first when I want to buy books		Site commitment (Park and Kim 2003)	
IR4	I plan to use this website in the future		Behavioural Intention to Use (Agarwal and Karahanna 2000)	Replaced 'the web' by 'this website'
IR5	I intend to continue using this website in the future		Behavioural Intention to Use (Agarwal and Karahanna 2000)	Replaced 'the web' by 'this website'
IR6	I expect my use of this website to continue in the future		Behavioural Intention to Use scale (Agarwal and Karahanna 2000)	Replaced 'the web' by 'this website'
IR7	I am unlikely to use this website again	✓		
IR8	I will use a website other than the one I just visited next time I need a book	✓	adapted from Intention to Return to the Site (Coyle and Thorson 2001)	Replaced 'I will return to this site' by 'I will use a website other than the one I just visited' to produce a reverse-coded question (continued next page)

Ref	Item wording	RC	Origin	Comments
<i>(continued from previous page)</i>				
WOM1	I will recommend this site to other people		Site commitment (Park and Kim 2003)	
WOM3	When talking to people about this website, I will say negative things	✓		
WOM4	I would hesitate to mention this website to my friends	✓		
WOM5	I would have only good things to say about this website			
WOM6	I would be proud to tell others that I use this website			
WOM8	If this website had a function to refer it to friends, I would use it			
REL1	If the website had a function enabling me to register for email alerts, I would register.			
REL2	I would refuse to let this website contact me for special offers or promotions	✓		
REL3	I would like this website to keep in touch with me through email.			
REL5	I would register to receive newsletters from this website			
RC: indicates reverse-coded items.				

SOCIAL DESIRABILITY

Table 9-11: Social desirability – 10 items

Ref	Item wording	RC	Origin	Comments
SD1	I sometimes feel resentful when I don't get my way.	✓	Desirability Scale (Crowne and Marlowe 1960) Richins and Dawson's reduced version of the Marlowe-Crowne Social	'my manner of dress' was replaced by 'the way I dress' which was deemed to be in more common use in Britain
SD2	I am always careful about the way I dress.			
SD3	My table manners at home are as good as when I eat out in a restaurant.			
SD4	There have been times when I felt like rebelling against people in authority even though I knew they were right.	✓		
SD5	I'm always willing to admit it when I make a mistake.			
SD6	I sometimes try to get even rather than forgive and forget.	✓		
SD7	I am always courteous, even to people who are disagreeable.			
SD8	I have never been annoyed when people expressed ideas very different from my own.			
SD9	I am sometimes irritated by people who ask favours of me.	✓		
SD10	I have never deliberately said something that hurt someone's feelings.			

Richins and Dawson obtained a Cronbach's Alpha of .70 in their study (Richins and Dawson 1992). Items developed for new measures were correlated with the sum score of the Social Desirability scale. Items correlating at the .05 level were considered as possibly contaminated with bias, and were candidates for deletion.

APPENDIX 3

MEASURE DEVELOPMENT

INSTRUCTIONS GIVEN TO EXPERT JUDGES

Dear _____,

First of all, many thanks for agreeing to help in assessing the relevance and clarity of various items for the development of my scales.

CONTENTS

This documents consists of the following:

- instructions (this page)
- **conceptual definitions** of the constructs and underlying dimensions for which scales are being developed (page 2) – you may want to print this part for easy reference throughout the exercise.
- one page (or two) per construct, with a list of **items to be assessed**.
- one final page for **comments and suggestions** – if you still have some energy and time left...

FORMAT

You may want to use one of three formats to provide your feedback:

- Use this file (judge sheets.doc) and type your feedback in the relevant columns.
- Use the other file (judge sheets form.doc) attached to this email which is in a form format. This format lets you use drop down menus and tick boxes if you prefer that to typing everything out.
- Print the whole document (use this file: judge sheets.doc) and fill it out by hand. You can then return it to Darshan Kitare (Marketing Group Administrative Assistant) who will forward to me. Since the sheets may be faxed, please use a black pen rather than a pencil.

WHAT TO DO

For each of the constructs, can I ask that you do the following,

For each item, indicate in the 'dimension' column which dimension (as defined on page 2) you believe this item taps. If you don't believe this item should be used because it's unclear, it doesn't really tap any dimension, or it has any other flaw, then indicate 'omit'.

If you have indicated a dimension, then please indicate in the next, 'relevance' column how strongly relevant to that dimension the item is, using:

1 for weak relevance, 2 for moderate relevance, 3 for strong relevance.

If you had said 'omit' for that item, leave this cell blank.

If you would like to make **comments or suggestions** on a specific item, could you make them either right next to the item or (if you are doing this on a printed copy of the file) on the final page – indicating the item number your comment is referring to.

TIME FRAME, SENDING BACK

Could you please return your completed forms

To me by email (cathd@emirates.net.ae)

or in hard copy format to Darshan Kitare (Nelson Building, 2nd floor)

by close of day on **Friday, 15 October**.

Once again, thank you very much.

Kind regards,

Catherine

APPENDIX 4

OSE ATTRIBUTES: MEASURE DEVELOPMENT PERCENTAGE AGREEMENT AMONG JUDGES

Table 9-12: Visual impact

Ref	Item wording	%age agreement
VI2	The combination of the visual elements of this website was very harmonious	100%
VI3	The website had a visually pleasing design	100%
VI4	The website was aesthetically appealing	100%
VI7	This website was dull visually	100%
VI8	This site had no visual impact	89%
VI9	The graphics elements of this site were boring	89%

Table 9-13: Experiential intensity

Ref	Item wording	%age agreement
EF4	This website replicated the kind of experience I have when I shop	89%
EF5	This website was incapable of reproducing the excitement of shopping	100%
EF6	When I navigated this website I felt I was shopping for real	89%
EF7	This site felt more like reading a text than being in a shop	100%
EF8	The experience of shopping was not there when I navigated on this site	89%

Table 9-14: Marketer informativeness

Ref	Item wording	%age agreement
I1	This site had insufficient product information	89%
I2	This website provided complete product description	89%
I3	This website adequately met my information needs	89%
I6	There was enough information on this website to assess the products	100%
I7	I could learn a lot about the products	78%
I8	There wasn't enough information on this website to make a purchase decision	100%
R1	The information on this website was helpful	100%
IQ1	This site presented information which was easy to understand	These items, which originate from published scales (Aladwani and Palvia 2002; Park and Kim 2003), were not submitted to judges
IQ2	The information on this website was consistent	
IQ3	The information on this website was up-to-date	
IQ4	The information on this website was accurate	
IQ5	The information on this website was useful	

Table 9-15: Non-marketer informativeness

Ref	Item wording	%age agreement
NMI1	This website only gave me its own product information, and not other users' impressions	89%
NMI2	This site had customer reviews of products	89%
NMI3	From this site it was impossible to see what other users thought of the products	100%
NMI4	I could access product reviews on this site	100%
NMI6	This website made it easy for users of its products to exchange information between themselves	89%

Table 9-16: Page clarity

Ref	Item wording	%age agreement
IL2	There was too much text on the screen	89%
IL3	There was the right amount of detail on these pages	100%
IL4	There was an awful lot of things on every page	100%
IL6	The web pages were easy to read	89%
IL8	The pages of this website were too crowded	78%
PO1	The content on the website was clear	89%
PO3	The information on this website was disorganised	100%
PO4	The organization of the information presented on the screen was confusing	100%
PO7	The content on this site was well organized	100%
POC3	The website presented the information in a consistent manner	89%

Table 9-17: Site architecture

Ref	Item wording	%age agreement
EOU1	Learning to use this website would be difficult for me	These items, which originated from other scales (see Appendix 2), were not submitted to judges to avoid response fatigue.
EOU2	My interaction with this website is clear and understandable	
EOU3	It would be hard for me to become skilful at using this website	
EOU4	I find this website easy to use	
CO1	During the navigation, I felt confused	
CO5	I felt in charge of my navigation with the site	
CO6	I felt lost on this website	
CO7	I felt I could understand how the website worked	
CO8	I felt as though the website was controlling me rather than me controlling it	

APPENDIX 5

PILOT BRIEF AND QUESTIONNAIRE

WEB NAVIGATION RESEARCH

Please follow the following steps:

1. Make yourself comfortable
2. Please complete the form to enter the draw, I will collect it during the hour.
3. NB: The draw for a £25 M&S voucher will take place right at the end of this session. The draw for £50 cash will take place at the end of the last session today. I will contact you by phone or email if you have won.
4. Set the clock on your screen at 5 minutes, and start it when you are ready to start the navigation.
5. Immediately go to Favourites, choose 'bookplace'
6. Navigate this site for 5 minutes. You can search for books you have in mind to purchase or get more information about, or just browse, or both. Just carry out this navigation as you would normally do if you were at home, in an internet cafe or at your desk. Please do not leave this site during the navigation.
7. After 5 minutes, the clock will tell you it's time to stop the navigation. You can then turn to the questionnaire to the right of your screen. Please answer ALL questions.
8. Once you have finished, please bring your questionnaire over to me

You are free again! And thank you so very much!

IF YOU HAVE ANY QUESTIONS ON THE PROCESS, PLEASE ASK ME! I'LL BE HERE OR IN THE NEXT ROOM FOR THE DURATION OF THE EXERCISE.

APPENDICES

Reg: Session ____ / Machine ____

Had you navigated this website before? (please tick) ☐ Yes ☐ No

If yes, is this a website which...
(please tick)

<input type="checkbox"/> you visit regularly?	<input type="checkbox"/> you have visited only a few times	<input type="checkbox"/> you visit every time you are looking for information or to make a purchase in its product category.
---	--	--

Please answer the questions which follow in relation to the navigation you have just undertaken, NOT IN GENERAL.

For each of these questions (unless otherwise indicated), please indicate the extent to which you agree or disagree with the following statements. Circle the one statement which most closely represents your opinion on that point.

Example:		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
EX1	Coffee with milk is my favourite drink.	1	2	3	4	5

Experiential quality		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
EF1	This site has managed to re-create the excitement of the shopping experience	1	2	3	4	5
EF2	This site managed to convey the excitement of seeing the products	1	2	3	4	5
EF3	This site really brings products alive	1	2	3	4	5
EF4	This website replicates the kind of experience I have when I shop	1	2	3	4	5
EF5	This website reproduced the excitement of shopping	1	2	3	4	5
EF6	When I navigated this website I felt I was shopping for real	1	2	3	4	5
EF7	This site felt more like reading a text than being in a shop	1	2	3	4	5
EF8	The experience of shopping was not there when I navigated on this site	1	2	3	4	5
M1	On this website I could get several different views of the products	1	2	3	4	5
M2	I could get a really good idea of the products on this website	1	2	3	4	5
M3	I could look closely at the products on this site	1	2	3	4	5
M4	This website enabled me to click on products to see them from different angles	1	2	3	4	5
M5	This website enabled me to click on things to get different views of the products	1	2	3	4	5
M6	This site enabled me to get close to the products	1	2	3	4	5
M7	This website was able to give me a good idea of the different facets of the product	1	2	3	4	5
M8	On this site I could click on images of products to get a different view	1	2	3	4	5

APPENDICES

		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
VI1	The way the website displayed its products was attractive	1	2	3	4	5
VI2	The combination of the visual elements of this website was very harmonious	1	2	3	4	5
VI3	The website displayed visually pleasing design	1	2	3	4	5
VI4	The website was aesthetically appealing	1	2	3	4	5
VI5	Some of the visual elements of this website were very eye-catching	1	2	3	4	5
VI6	Visually the pages of this website were a pleasure to look at	1	2	3	4	5
VI7	This website was dull visually	1	2	3	4	5
VI8	This site had no visual impact	1	2	3	4	5
VI9	The graphics elements of this site were boring	1	2	3	4	5
VI10	The colours of this website were attractive	1	2	3	4	5
VI11	The website design was innovative	1	2	3	4	5
SUD1	I seemed to be able to have a conversation with this website	1	2	3	4	5
SUD2	Interacting with the website gave me answers to my questions	1	2	3	4	5
SUD3	I felt as if I was actually getting answers to what I was after on this website	1	2	3	4	5
SUD4	I felt I was having a real dialogue with the site	1	2	3	4	5
SUD5	The more I navigated on this website, the more it seemed to understand me	1	2	3	4	5
SUD6	The website could not be personalised or customised to meet my needs	1	2	3	4	5
SUD7	The website didn't provide significant user interaction	1	2	3	4	5
SUD8	This website understands what I'm interested in	1	2	3	4	5
SUD9	The website allowed me to interact with it to receive tailored information	1	2	3	4	5
SUD10	This website didn't understand my needs	1	2	3	4	5
SUD11	The website provided feedback mechanisms	1	2	3	4	5
SUD12	This website seemed to be adapting its style to me	1	2	3	4	5

	Content depth	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I1	This site gave sufficient product information	1	2	3	4	5
I2	This website provided complete product description	1	2	3	4	5
I3	This website adequately met my information needs	1	2	3	4	5

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		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I4	This site had lots of useful information	1	2	3	4	5
I5	This site had lots of interesting information	1	2	3	4	5
I6	There was enough information on this website to assess the products	1	2	3	4	5
I7	I could learn a lot about the products	1	2	3	4	5
I8	There wasn't enough information on this website to make a purchase decision	1	2	3	4	5
PC1	This website had a good range of product alternatives to consider	1	2	3	4	5
PC2	This website returned many alternatives when I searched for a particular type of product	1	2	3	4	5
PC3	This website didn't offer enough product choice in its different sections	1	2	3	4	5
PC4	There wasn't enough product variety	1	2	3	4	5
PC5	It was easy to find out what similar products to the ones I looked at this website has to offer	1	2	3	4	5
SP1	When I was looking at a particular product, the website also provided links to similar items	1	2	3	4	5
SP2	This website recommended relevant products to me which I hadn't thought of or didn't know	1	2	3	4	5
SP3	This website threw up lots of new ideas	1	2	3	4	5
SP4	This site had links to other relevant products	1	2	3	4	5
SP5	This site offered me interesting suggestions	1	2	3	4	5
SP6	This site gave interesting ideas on other products I might like to consider	1	2	3	4	5
SP7	This site directed me to other, similar products	1	2	3	4	5
SP8	This website didn't offer any suggestions	1	2	3	4	5
NMI1	This website gave me easy access to information from other users of the products	1	2	3	4	5
NMI2	This site had customer reviews of products	1	2	3	4	5
NMI3	On this website I was able to read about the experience of other users of the products	1	2	3	4	5
NMI4	I could access product reviews on this site	1	2	3	4	5
NMI5	This website provided an all-rounded view of the products thanks to marketer, customer and reviewer information	1	2	3	4	5
NMI6	This website made it easy for users of its products to exchange information between themselves	1	2	3	4	5

	Content quality	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
R1	The information on this website was helpful	1	2	3	4	5
R2	The information on this website was important to me	1	2	3	4	5

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		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
R3	The information was meaningful to me	1	2	3	4	5
R4	The returns from my search were very relevant to what I was looking for	1	2	3	4	5
R5	A lot of the information on this website did not relate to my needs	1	2	3	4	5
R6	A lot of the information on this website had no practical value for me	1	2	3	4	5
R7	Some of the information on the pages had no R to the rest of the page	1	2	3	4	5
R8	The information didn't have anything to do with me or my needs	1	2	3	4	5
R9	The website was giving me results which had little relevance to what I asked for	1	2	3	4	5
C1	I got the information I expected whenever I clicked on a link	1	2	3	4	5
C2	I was able to get the same kind of information for all the products I looked at	1	2	3	4	5
C3	The website presented the information in a consistent manner	1	2	3	4	5
C4	When I visited categories on this website I found things where I expected to find them	1	2	3	4	5
PO1	The content on the website was clear	1	2	3	4	5
PO2	The content was organized well	1	2	3	4	5
PO3	The information on this website was well organised	1	2	3	4	5
PO4	The organization of the information presented on the screen was confusing	1	2	3	4	5
PO5	The products were broken down into relevant categories	1	2	3	4	5
PO6	The products were logically organized into relevant categories	1	2	3	4	5
PO7	The content on this site was well organized	1	2	3	4	5
PO8	The categories in which the products are organized were a complete shambles	1	2	3	4	5

		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Interface effectiveness						
VEOU1	Learning to use this website would be easy for me	1	2	3	4	5
VEOU2	My interaction with this website is clear and understandable	1	2	3	4	5
VEOU3	It would be easy for me to become skilful at using this website	1	2	3	4	5
VEOU4	I find this website easy to use	1	2	3	4	5
IL1	This site was making a good use of pictures and symbols to lighten up the screens	1	2	3	4	5
IL2	There was too much text on the screen	1	2	3	4	5
IL3	There was too much detail on these pages	1	2	3	4	5
IL4	There was an awful lot of things on every page	1	2	3	4	5

APPENDICES

		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
IL5	The amount of information displayed on the screen was adequate	1	2	3	4	5
IL6	The web pages were easy to read	1	2	3	4	5
IL7	The website used the ideal combination of text and pictures	1	2	3	4	5
IL8	The pages of this website were too crowded	1	2	3	4	5
IT1	This website was laid out in the same general way as the websites I am used to	1	2	3	4	5
IT2	This website gave me the results I anticipated when I clicked on things	1	2	3	4	5
IT3	This site didn't seem to behave like other sites	1	2	3	4	5
IT4	The site used standard web design conventions	1	2	3	4	5
IT5	The links and buttons on this website made sense	1	2	3	4	5
IT6	The information on succeeding links from the initial page was predictable	1	2	3	4	5
IT7	This site didn't respond the way I expected it to	1	2	3	4	5
IT8	The categories and buttons weren't easy to understand	1	2	3	4	5
TR1	The website took long to load	1	2	3	4	5
TR2	The website loaded quickly	1	2	3	4	5
TR3	When I used the website there was very little waiting time between my actions and the website's response.	1	2	3	4	5
TR4	Technically, this website worked well	1	2	3	4	5
TR5	There were technical problems on this site	1	2	3	4	5

Your feelings about the site		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
IV1	The navigation was stimulating	1	2	3	4	5
IV2	The navigation was enjoyable	1	2	3	4	5
IV3	The navigation was interesting	1	2	3	4	5
IV4	The navigation was exciting.	1	2	3	4	5
CO1	During the navigation, I felt confused	1	2	3	4	5
CO2	During the navigation, I felt calm	1	2	3	4	5
CO3	During the navigation, I felt in control	1	2	3	4	5
CO4	During the navigation, I felt frustrated	1	2	3	4	5
CO5	I felt in charge of my navigation with the site	1	2	3	4	5
CO6	I felt lost on this website	1	2	3	4	5

APPENDICES

		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
CO7	I felt I could understand how the website worked	1	2	3	4	5
CO8	I felt as though the website was controlling me rather than me controlling it	1	2	3	4	5
CO9	I felt I was in charge of my interaction with the website	1	2	3	4	5
CO10	I found it hard to find things from this website	1	2	3	4	5

Your future intentions towards the site		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
IR1	I will not change my book shopping site in the future	1	2	3	4	5
IR2	I will continuously purchase books at this site in the future	1	2	3	4	5
IR3	I will visit this site first when I want to buy books	1	2	3	4	5
IR4	I plan to use this website in the future	1	2	3	4	5
IR5	I intend to continue using this website in the future	1	2	3	4	5
IR6	I expect my use of this website to continue in the future	1	2	3	4	5
IR7	It is very likely that I will return to this site	1	2	3	4	5
IR8	I will return to this site the next time I need a book	1	2	3	4	5
WOM1	I will recommend this site to other people	1	2	3	4	5
WOM2	If a friend called me tonight to get my advice in his/her search for a book, I would recommend him/her to visit this website	1	2	3	4	5
WOM3	When talking to people about this website, I will say negative things	1	2	3	4	5
WOM4	I would not hesitate to mention this website to my friends	1	2	3	4	5
WOM5	I would have only good things to say about this website	1	2	3	4	5
WOM6	I would be proud to tell others that I use this website	1	2	3	4	5
WOM7	I am very likely to recommend this website	1	2	3	4	5
WOM8	If this website had a function to refer it to friends, I would use it	1	2	3	4	5
REL1	If the website had a function enabling me to register for email alerts, I would register.	1	2	3	4	5
REL2	This is not a website I would allow to contact me for special offers or promotions	1	2	3	4	5
REL3	I would like this website to keep in touch with me through email.	1	2	3	4	5
REL4	This is a website I would add to my favourites	1	2	3	4	5
REL5	I would register to receive newsletters from this website	1	2	3	4	5
REL6	I would like this website to remember me	1	2	3	4	5

APPENDICES

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
REL7 I don't want to hear about this website any more	1	2	3	4	5
REL8 This is a website I want to forget about	1	2	3	4	5

The product category

How do you feel books? Please read each set of descriptions on each of the line below and check the cell which best describes your feelings towards the importance and interest of books for you.

		Very closely descriptive	Somewhat descriptive	Neutral	Somewhat descriptive	Very closely descriptive	
IIV1	Important	1	2	3	4	5	Unimportant
IIV2	Irrelevant	1	2	3	4	5	Relevant
IIV3	Means a lot to me	1	2	3	4	5	Means nothing to me
IIV4	Unexciting	1	2	3	4	5	Exciting
IIV5	Dull	1	2	3	4	5	Neat
IIV6	Matters to me	1	2	3	4	5	Doesn't matter
IIV7	Fun	1	2	3	4	5	Not fun
IIV8	Appealing	1	2	3	4	5	Unappealing
IIV9	Boring	1	2	3	4	5	Interesting
IIV10	Of no concern	1	2	3	4	5	Of concern to me

How do you feel online generally?

In this part of the questionnaire we are interested in your experience as a consumer with online shopping websites in general.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
SC1 I have a great deal of experience in navigating online shopping websites	1	2	3	4	5
SC2 I have used or been exposed to this type of retail website in the past	1	2	3	4	5
SC3 I am familiar with many online retail sites	1	2	3	4	5
SC4 I frequently shop online	1	2	3	4	5
SC5 I am very confident in buying online	1	2	3	4	5

The website

For each of these words, tell us how much they describe the website you just navigated.

	Doesn't describe at all	Doesn't quite describe	Neutral	Describes somewhat	Describes perfectly
VEQ1 Clear	1	2	3	4	5

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	Doesn't describe at all	Doesn't quite describe	Neutral	Describes somewhat	Describes perfectly
VEQ2 Vivid	1	2	3	4	5
VEQ3 Intense	1	2	3	4	5
VEQ4 Lifelike	1	2	3	4	5
VEQ5 Sharp	1	2	3	4	5
VEQ6 Defined the shop					

Please read each set of descriptions on each of the line below and circle the number which best describes how you perceived the website and the organisation behind the website in terms of the information they provided.

		Very closely descriptive	Somewhat descriptive	Neutral	Somewhat descriptive	Very closely descriptive	
VCQD1	Knowledgeable	1	2	3	4	5	Not knowledgeable
VCQD2	Competent	1	2	3	4	5	Not competent
VCQD3	Expert	1	2	3	4	5	Not expert
VCQD5	Experienced	1	2	3	4	5	Not experienced

		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
VIE1	I clearly understood the interface	1	2	3	4	5
VIE2	The interface was too complex	1	2	3	4	5
VIE3	I was not sure what was going on on the screen	1	2	3	4	5
VIE4	I was so busy watching what was happening that I did not look at the products	1	2	3	4	5
VIE5	It required a lot of effort to navigate this site	1	2	3	4	5

		Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
During this navigation...						
VCO1	I felt in control	1	2	3	4	5
VCO2	I felt powerful	1	2	3	4	5
VCO3	I felt bold	1	2	3	4	5
VCO4	I felt free	1	2	3	4	5
VIV1	I was absorbed intensely in the activity	1	2	3	4	5
VIV2	My attention was focused on the activity	1	2	3	4	5
VIV3	I concentrated fully on the activity	1	2	3	4	5
VIV4	I was deeply engrossed in the activity	1	2	3	4	5

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VSC1 What is the probability that you will purchase from this online bookstore? (please circle one number between 1 and 11)

1= no chance 5 9
2 6 10
3 7 11= virtually certain (99 in 100 chances)
4 8

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
VSC2 I will purchase from this online bookstore the next time I buy books	1	2	3	4	5
VSC3 The next time I purchase books online, I will buy from this site	1	2	3	4	5

About your preferences

The statements below concern your personal reactions to a number of different situations.

	Always false	False, with exceptions	Sometimes true, sometimes false	True, with exceptions	Always true
SM1 It is my feeling that if everyone else in a group is behaving in a certain manner, this must be the way to behave	1	2	3	4	5
SM2 I actively avoid wearing clothes that are not in style	1	2	3	4	5
SM3 At parties I usually try to behave in a manner that makes me fit in	1	2	3	4	5
SM4 What I am uncertain how to act in a social situation, I look to the behaviour of others for cues	1	2	3	4	5
SM5 I try to pay attention to the reaction of others to my behaviour in order to avoid being out of place	1	2	3	4	5
SM6 I find that I tend to pick up slang expressions from others and use them as part of my own vocabulary	1	2	3	4	5
SM7 I tend to pay attention to what others are wearing	1	2	3	4	5
SM8 The slightest look of disapproval in the eyes of a person with whom I am interacting is enough to make me change my approach	1	2	3	4	5
SM9 It's important to me to fit in with the group I'm with.	1	2	3	4	5
SM10 My behaviour often depends on how I feel others wish me to behave	1	2	3	4	5
SM11 If I am the least bit uncertain as to how to act in a social situation, I look to the behaviour of others for cues	1	2	3	4	5
SM12 I usually keep up with clothing style changes by watching what others wear.	1	2	3	4	5
SM13 When in a social situation, I tend not to follow the crowd, but instead behave in a manner that suits my particular mood at the time.	1	2	3	4	5

About yourself

PI1- For how many years have you been using the internet? _____ years.

PI2- Have you shopped online before? ☐ Yes ☐ No

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PI3- Have you purchased products online before? ☐ Yes ☐ No

PI4- What is your nationality? _____

Any comments?

This questionnaire is being pre-tested. If you found some questions confusing or inappropriate, I would appreciate your comments and suggestions. If you can spare a few minutes to indicate this below?

Many thanks!

The information you have provided in this questionnaire will remain anonymous and confidential. However, would you allow me to contact you if I have any query on the way you have completed the questionnaire? I'd hate not to be able to use your responses just because one box wasn't ticked... If that's OK with you, could you provide me with your contact details, so that I can clarify any query I may have?

Your name _____

Your telephone number _____

Your email address _____

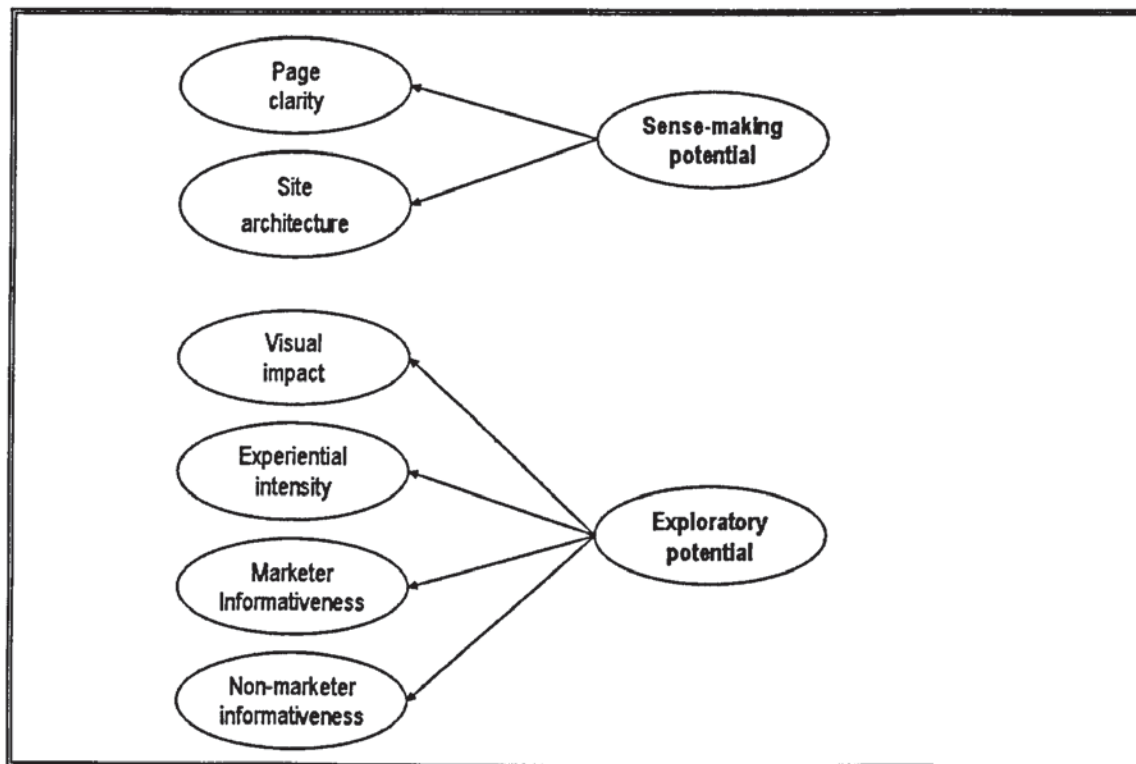
APPENDIX 6

OSE ATTRIBUTES – MEASURE PURIFICATION

INTRODUCTION

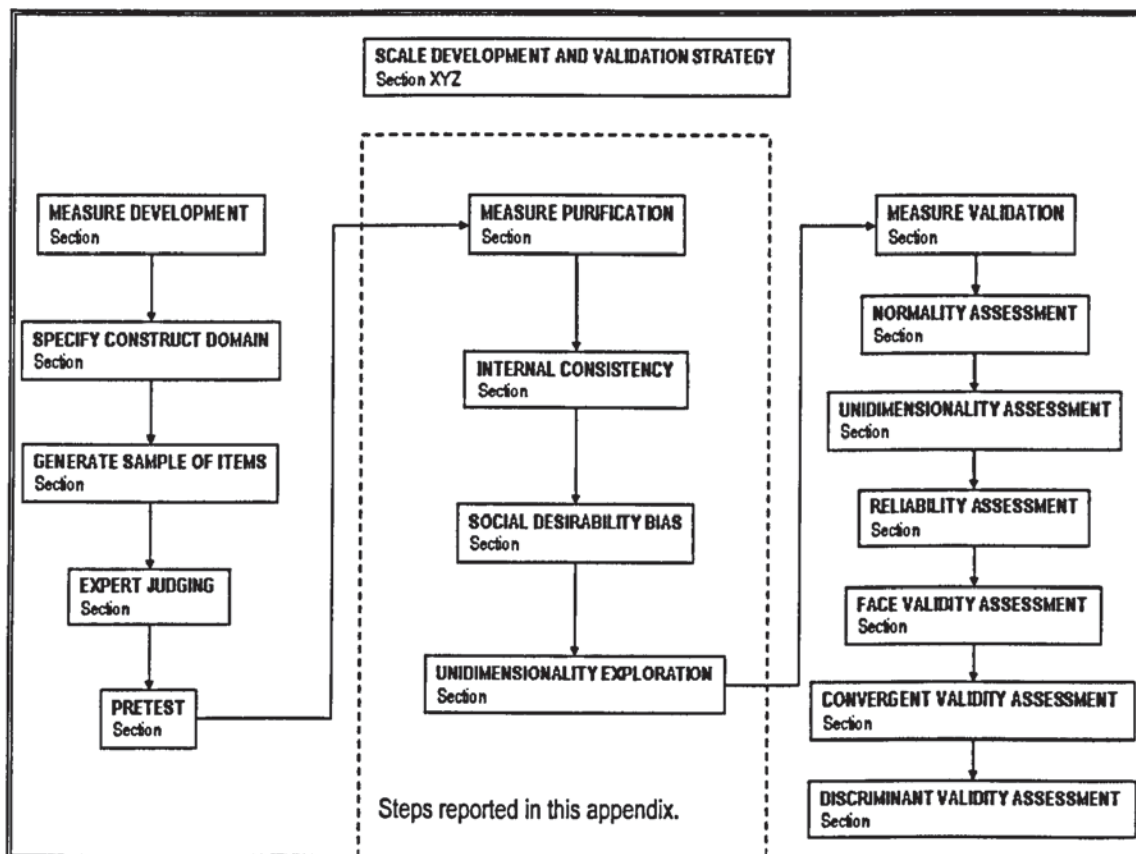
The purpose of this appendix is to report the purification of the OSE attribute measures, namely Page clarity, Site architecture, Visual impact, Experiential intensity, Marketer informativeness and Non-marketer informativeness. These six attributes were conceptualised to be dimensions of two key OSE attributes, Sense-making potential and Exploratory potential – see Chapter 3, Section 3.1, page 116 for the development of the conceptual framework. The conceptual framework is reproduced here (see Figure 9-1) for ease of reference.

Figure 9-1: Conceptual model, Part I – Conceptualising the attributes of OSEs



The process followed was reported in Chapter 4, Section 4.3.1.3 (page 174), and was shown in the context of the overall Scale Development and Validation strategy in which is reproduced here. This appendix reports the following steps: internal consistency, assessment of social desirability bias and unidimensionality exploration. The appendix concludes with a summary of each measure, and measures of internal consistency and variance explained. Due to layout constraints, the tables in this appendix do not show which items were reverse-coded. The reader however can refer to Appendix 2 (page 334) to identify reverse-coded items.

Figure 9-2: Measure development and validation strategy adopted in the research



SENSE-MAKING POTENTIAL

Initial Exploratory Factor Analysis

The first step in the analysis consisted in an initial Exploratory Factor Analysis of all items purported to tap the two dimensions of the Sense-making potential construct. The items tapping Page clarity and Site architecture were submitted to Principal Components Analysis. A study of the communalities (see Table 9-18) revealed that 5 items (POC3, EOU1, EOU3, EOU4, IL3) had unacceptable communalities, below the .4 level. They were removed. The subsequent Principal Component Analysis suggested the extraction of 2 factors: 2 components had an Eigenvalue superior to 1, the scree plot and the parallel method both suggested the extraction of 2 factors. The oblique rotation of 2 factors produced an interpretable solution. PO3 did not load on either factor, and was removed. The subsequent oblique rotation results are presented in Table 9-19. This provided confirmation that the Exploratory Factor Analysis was able to return the expected factors.

Table 9-18: Sense-making potential – Communalities of initial rotation

Item	Extraction	Item	Extraction
po1	.578	ll3	.357
po3	.429	ll4	.547
po4	.465	ll6	.534
po7	.538	ll8	.706
Poc3	.318	co1	.462
Eou1	.347	co5	.563
Eou2	.492	co6	.689
Eou3	.312	co7	.423
Eou4	.397	co8	.526
ll2	.661		

Extraction Method: Principal Component Analysis.

The next step was to analyse each of the dimensions in more depth, before finally conducting another simultaneous analysis of the scale.

Table 9-19: Sense-making potential – Initial oblique rotation

Item	Component	
	1	2
co5	.802	
co7	.776	
co8	.770	
co6	.692	
co2	.643	
co1	.559	
il8		-.913
il2		-.877
il4		-.844
il6		-.510
po1		-.499
po7		-.490
po4		-.451

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.

Rotation converged in 11 iterations.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy: .890.

Bartlett's Test of Sphericity= 958.613, df=78, p=.000.

Total variance explained: 58.718%

Sample size – n=150.

Site architecture

Internal consistency

Following the initial Exploratory Factor Analysis, 6 items remained, designed to tap Site architecture, as listed in Table 9-21. All 6 items had good correlations with one another, as shown in Table 9-20, and adequate corrected inter-total correlations, in the .5-.8 range, as shown in Table 9-21. The 6 items therefore were taken to the next stage – of studying means

and standard deviations. The means of all 6 items are relatively high, but all within a relatively small range, from 3.67 to 3.98. Standard deviations range from .861 to 1.223. While some are relatively low, the removal of any item would have weakened the scale's Alpha; consequently it was decided to take all 6 items to the next step, of assessing their correlations with the Social desirability bias scale.

Table 9-20: Site architecture – Inter-item correlation matrix

	co5	co7	co8	co6	co1	eu2
co5	1.000	.473	.603	.545	.422	.420
co7	.473	1.000	.389	.385	.298	.431
co8	.603	.389	1.000	.628	.369	.381
co6	.545	.385	.628	1.000	.647	.545
co1	.422	.298	.369	.647	1.000	.508
eu2	.420	.431	.381	.545	.508	1.000

Table 9-21: Site architecture - Statistics and profile of items

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Mean	Std. Deviation
CO1: During the navigation, I felt confused	.584	.818	3.87	1.038
CO5: I felt in charge of my navigation with the site	.660	.805	3.75	.861
CO6: I felt lost on this website	.757	.782	3.98	.993
CO7: I felt I could understand how the website worked	.503	.832	3.83	.886
CO8: I felt as though the website was controlling me rather than me controlling it	.622	.815	3.67	1.223
EOU2: My interaction with this website is clear and understandable	.595	.815	3.78	.940
Cronbach's Alpha – 6 items: .838				

Social desirability bias assessment

As shown in Table 9-22, there is no significant correlation between social desirability and any of the 6 Site architecture items. At the end of this part of the process therefore, 6 items were retained to measure Site architecture, which yielded a Cronbach's Alpha of .838.

Table 9-22: Site architecture – Correlations with Social desirability bias

		co1	co5	co6	co7	co8	eu2
Total Social Desirability	Pearson Correlation	-.087	-.058	-.115	-.007	-.049	-.077
	Sig. (2-tailed)	.287	.481	.160	.930	.550	.352

Dimensionality exploration

The 6 items retained from the previous part of the analysis were submitted to a Principal Components Analysis to assess their dimensionality. The results are shown in Table 9-23. Both the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity indicated that the data was suitable for factor analysis. The Principal Component Analysis returned only one factor with an Eigenvalue greater than 1, which explained 56.116% of the total variance. The loading of all 6 items was well above .45 which is the significance point at the .05 level with samples of 150 (Hair et al. 1998). On conclusion of the Measure Purification process, 6 items were retained for the Site architecture measure, whose statistics are given in Table 9-24.

Table 9-23: Site architecture – Factor matrix

Scale item (sorted by loading size)	Factor loading
CO6: I felt lost on this website	.850
CO5: I felt in charge of my navigation with the site	.775
CO8: I felt as though the website was controlling me rather than me controlling it	.759
EOU2: My interaction with this website is clear and understandable	.728
CO1: During the navigation, I felt confused	.726
CO7: I felt I could understand how the website worked	.642

Extraction Method: Principal Component Analysis. 1 component extracted.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.: .814.

Bartlett's Test of Sphericity= 348.623, df=15, p=.000.

Total variance explained: 56.116%.

Sample size – n=150.

Table 9-24: Site architecture – Statistics of items retained on conclusion of measure purification process

	Factor loading	Mean	Std. Deviation
CO1: During the navigation, I felt confused	.726	3.87	1.038
CO5: I felt in charge of my navigation with the site	.775	3.75	.861
CO6: I felt lost on this website	.850	3.98	.993
CO7: I felt I could understand how the website worked	.642	3.83	.886
CO8: I felt as though the website was controlling me rather than me controlling it	.759	3.67	1.223
EOU2: My interaction with this website is clear and understandable	.728	3.78	.940
Cronbach's Alpha – 6 items: .838			
Total Variance Explained: 56.116%			

Page clarity

Internal consistency

Following the initial Exploratory Factor Analysis, 7 items remained, to tap Page clarity, as listed in Table 9-26. All 7 items had good correlations with one another, as shown in Table 9-25, and adequate corrected inter-total correlations, mostly in the .55-.75 range, as shown in Table 9-26. The 7 items therefore were taken to the next stage – of studying means and standard deviations (see Table 9-26). The means of all 7 items are relatively high, but all within a relatively small range, from 3.25 to 3.91. Standard deviations range from .824 to 1.118. These, especially for item PO1, are relatively low, but since the removal of any of these items would have weakened the scale's Alpha, it was decided to take all 7 items to the next step, of assessing their correlations with the Social desirability bias scale.

Table 9-25: Page clarity – Inter-item correlation matrix

	il2	il4	il6	il8	po1	po4	po7
il2	1.000	.630	.508	.747	.485	.443	.439
il4	.630	1.000	.379	.670	.344	.373	.405
il6	.508	.379	1.000	.432	.578	.438	.538
il8	.747	.670	.432	1.000	.548	.449	.459
po1	.485	.344	.578	.548	1.000	.478	.597
po4	.443	.373	.438	.449	.478	1.000	.440
po7	.439	.405	.538	.459	.597	.440	1.000

Table 9-26: Page clarity – Statistics and profile of items

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Mean	Std. Deviation
IL2 There was too much text on the screen	.738	.838	3.35	1.074
IL4 There was an awful lot of things on every page	.627	.855	3.25	1.118
IL6 The web pages were easy to read	.614	.856	3.91	.843
IL8 The pages of this website were too crowded	.750	.836	3.33	1.168
PO1 The content on the website was clear	.654	.852	3.84	.824
PO4 The organization of the information presented on the screen was confusing	.558	.863	3.72	1.024
PO7 The content on this site was well organized	.614	.856	3.75	.884
Cronbach's Alpha – 7 items: .870				

9.4.1.1 Social desirability bias assessment

As shown in Table 9-27, the only significant correlation between social desirability and any of the 7 Page clarity items is negative (for IL6), therefore all 7 items can be considered as free from Social desirability bias. At the end of this part of the process therefore, 7 items were retained to measure Page clarity, which yielded a Cronbach's Alpha of .870.

Table 9-27: Page clarity – Correlations with Social desirability bias

		il2	il4	il6	il8	po1	po4	po7
Total Social Desirability	Pearson Correlation	-.054	.024	-.172(*)	-.050	-.060	-.059	-.047
	Sig. (2-tailed)	.509	.775	.035	.546	.467	.474	.571

* Correlation is significant at the 0.05 level (2-tailed).

Dimensionality exploration

The 7 items retained from the previous part of the analysis were submitted to a Principal Components Analysis to assess their dimensionality. The results are shown in Table 9-28. Both the KMO and Bartlett's Test of Sphericity indicated that the data was suitable for factor analysis. The Principal Component Analysis returned only one factor with an Eigenvalue greater than 1, which explained 56.872% of the total variance. The loading of all 7 items was well above .45.

Table 9-28: Page clarity – Factor matrix

Scale item (sorted by loading size)	Factor loading
il8 – The pages of this website were too crowded	.828
il2 – There was too much text on the screen	.817
po1 – The content on the website was clear	.765
po7 – The content on this site was well organised	.731
il6 – The web pages were easy to read	.730
il4 – There was an awful lot of things on every page	.723
po4 – The organisation of the information presented on the screen was confusing	.674

Extraction Method: Principal Component Analysis. 1 component extracted.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.: .853.

Bartlett's Test of Sphericity= 490.819, df=21, p=.000.

Total variance explained: 56.872%.

Sample size – n=150.

On conclusion of the Measure Purification process, 7 items were retained for the Page clarity measure, whose statistics are given in Table 9-29.

Table 9-29: Page clarity – Statistics of items retained on conclusion of measure purification process

	Factor loading	Mean	Std. Deviation
IL2 There was too much text on the screen	.817	3.35	1.074
IL4 There was an awful lot of things on every page	.723	3.25	1.118
IL6 The web pages were easy to read	.730	3.91	.843
IL8 The pages of this website were too crowded	.828	3.33	1.168
PO1 The content on the website was clear	.765	3.84	.824
PO4 The organization of the information presented on the screen was confusing	.674	3.72	1.024
PO7 The content on this site was well organized	.731	3.75	.884
<i>Cronbach's Alpha – 7 items: .870</i>			
<i>Total Variance Explained: 56.872%</i>			

Simultaneous analysis of the Sense-making Potential dimensions

Having analysed in depth the two dimensions making up the Sense-making Potential construct, in the process purifying each of the measures, the last step of the process was to enter the retained items into an Exploratory Factor Analysis. The results are shown in Table 9-30. Both the KMO and Bartlett's Test of Sphericity indicated that the data was suitable for factor analysis. The Principal Component Analysis returned two factors with an Eigenvalue greater than 1, which explained 58.718% of the total variance. All items load on their expected factors.

Table 9-30: Sense-making potential – Final oblique rotation

Items	Component	
	1	2
Factor 1 – Site architecture. 6 items. Alpha: .838		
CO1: During the navigation, I felt confused	.559	
CO5: I felt in charge of my navigation with the site	.802	
CO6: I felt lost on this website	.692	
CO7: I felt I could understand how the website worked	.776	
CO8: I felt as though the website was controlling me rather than me controlling it	.770	
EOU2: My interaction with this website is clear and understandable	.643	
Factor 2 – Page clarity. 7 items. Alpha: .870		
IL2 There was too much text on the screen		-.877
IL4 There was an awful lot of things on every page		-.844
IL6 The web pages were easy to read		-.510
IL8 The pages of this website were too crowded		-.913
PO1 The content on the website was clear		-.499
PO4 The organization of the information presented on the screen was confusing		-.451
PO7 The content on this site was well organized		-.490

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.

a Rotation converged in 11 iterations.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy: .890.

Bartlett's Test of Sphericity= 958.613, df=78, p=.000.

Sample size – n=150.

Total variance explained: 58.718%

EXPLORATORY POTENTIAL

Initial Exploratory Factor Analysis

A first step in the analysis consisted in an initial Exploratory Factor Analysis of items purported to tap the expected four dimensions of the Exploratory potential construct. The items developed to tap Visual impact, Experiential intensity, Marketer informativeness and Non-marketer informativeness were submitted to Principal Components Analysis. A total of

7 components had an Eigenvalue superior to 1, the scree plot suggested the extraction of 4 factors and the parallel method suggested the extraction of 4 factors. An oblique rotation of 4 factors was produced and is presented in Table 9-31. The first factor relates to Marketer informativeness, the second to Non-marketer informativeness, the third to Experiential intensity and the fourth to Visual impact.

Three items (IQ3, IQ4, NMI6) had loadings below the significance point of .45 for the sample of 150. They were removed from further analysis, and in the subsequent oblique rotation (see Table 9-33) all retained items loaded on their expected factors.

The purpose of this initial analysis was to ensure the Exploratory Factor Analysis was able to return the expected factors, which it did. The next step was then to analyse in more depth each dimension, before finally conducting another simultaneous analysis of the scale.

Table 9-31: Exploratory potential – Initial oblique rotation

	Component			
	1	2	3	4
l8	.779			
l3	.766			
l1	.696			
R1	.684			
l7	.682			
i6	.664			
i2	.627			
iq5	.581			
iq2	.523			
iq1	.522			
iq3				
iq4				
nmi2		.872		
nmi1		.819		
nmi3		.791		
nmi4		.666		
nmi6				
ef6			.779	
ef8			.739	
ef4			.731	
ef5			.648	
ef7			.602	
vi3				-.893
vi7				-.836
vi4				-.783
vi9				-.782
vi8				-.730
vi2				-.662

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization. Kaiser-Meyer-Olkin Measure of Sampling Adequacy: .848. Bartlett's Test of Sphericity= 1818.62, df=378, p=.000. n=150.

Table 9-32: Exploratory potential – Second oblique rotation

	Component			
	1	2	3	4
i8	.796			
i3	.753			
i1	.724			
i7	.703			
i6	.691			
r1	.668			
i2	.641			
iq5	.585			
iq1	.533			
iq2	.495			
nmi2		.871		
nmi1		.828		
nmi3		.797		
nmi4		.673		
ef6			.777	
ef8			.767	
ef4			.735	
ef5			.671	
ef7			.602	
vi3				-.895
vi7				-.840
vi4				-.783
vi9				-.780
vi8				-.737
vi2				-.654

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy: .865.

Bartlett's Test of Sphericity= 1673.11, df=300, p=.000.

Sample size – n=150.

Marketer informativeness

Internal consistency

Following the removal of items IQ3 and IQ4, the remaining 10 items included in the survey to tap Marketer informativeness were analysed for internal consistency. All 10 items had acceptable correlations with one another, as shown in Table 9-33, even though item IQ2's correlations were quite weak, mostly in the .2-.3 range. Furthermore, as shown in Table 9-34, it had a corrected item to total correlation below .4, considered as the cut-off point for internal consistency (Spector 1992). Additionally, item IQ1 had a very high mean (4.30) and weak standard deviation (.758). Consequently, these two items were removed from further analysis.

The remaining 8 items have means ranging from 3.25 to 3.75. Standard deviations range from .857 to 1.126. These, especially for items IQ2 and R1, are relatively low, but since the removal of any of these items would have weakened the scale's Alpha, it was decided to take all 8 items to the next step, of assessing their correlations with the Social desirability bias scale.

Table 9-33: Marketer informativeness – Inter-item correlation matrix

	i1	i2	i3	i6	i7	i8	r1	iq5	iq1	iq2
i1	1.000	.497	.530	.535	.491	.468	.368	.318	.290	.242
i2	.497	1.000	.386	.375	.447	.445	.313	.257	.161	.235
i3	.530	.386	1.000	.465	.451	.577	.572	.483	.404	.238
i6	.535	.375	.465	1.000	.466	.453	.394	.360	.236	.286
i7	.491	.447	.451	.466	1.000	.544	.433	.465	.301	.255
i8	.468	.445	.577	.453	.544	1.000	.433	.400	.400	.397
r1	.368	.313	.572	.394	.433	.433	1.000	.519	.353	.281
iq5	.318	.257	.483	.360	.465	.400	.519	1.000	.324	.260
iq1	.290	.161	.404	.236	.301	.400	.353	.324	1.000	.286
iq2	.242	.235	.238	.286	.255	.397	.281	.260	.286	1.000

Table 9-34: Marketer informativeness – Statistics and profile of items

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Mean	Std. Deviation
I1 - This site had insufficient product information	.630	.849	3.28	1.081
I2 - This website provided complete product description	.520	.858	3.41	.957
I3 - This website adequately met my information needs	.693	.843	3.26	1.126
I6 - There was enough information on this website to assess the products	.597	.852	3.37	.958
I7 - I could learn a lot about the products	.646	.848	3.25	.969
I8 - There wasn't enough information on this website to make a purchase decision	.690	.844	3.47	1.041
R1 The information on this website was helpful	.606	.851	3.75	.882
IQ5- the information on this website was useful	.554	.855	3.53	.857
IQ1- this site presented information which was easy to understand (removed from further analysis: unacceptable mean and s. d.)	.443	.863	4.30	.758
IQ2- the information on this website was consistent (removed from further analysis: unacceptable item-total correlation and s.d.)	.394	.866	3.89	.706
<i>Cronbach's Alpha - original 10 items: .866; Cronbach's Alpha – 8 remaining items: .865</i>				

Social desirability bias assessment

As shown in Table 9-35, the only significant correlation between social desirability and any of the 8 Marketer informativeness items is negative (for R1), therefore all items are considered free from social desirability bias.

At the end of this first part of the process therefore, 8 items were retained to measure Marketer informativeness, which yielded a Cronbach's Alpha of .865.

Table 9-35: Marketer informativeness – Correlations with Social desirability bias

		i1	i2	i3	i6	i7	i8	r1	iq5
Total Social Desirability	Pearson Correlation	.066	-.016	-.150	.003	.009	.019	-.175(*)	-.078
	Sig. (2-t.)	.421	.844	.067	.968	.909	.814	.032	.340

* Correlation is significant at the 0.05 level (2-tailed).

Dimensionality exploration

The 8 items retained from the previous part of the analysis were submitted to a Principal Components Analysis to assess their dimensionality. The results are shown in Table 9-36. Both the KMO and Bartlett's Test of Sphericity indicated that the data was suitable for factor analysis. The Principal Component Analysis returned only one factor with an Eigenvalue greater than 1, which explained 51.596% of the total variance. The loading of all 8 items was well above the significance point of .45.

Table 9-36: Marketer informativeness – Factor matrix

Scale item (sorted by loading size)	Factor loading
I3 - This website adequately met my information needs	.786
I8 - There wasn't enough information on this website to make a purchase decision	.760
I7 - I could learn a lot about the products	.752
I1 - This site had insufficient product information	.736
I6 - There was enough information on this website to assess the products	.705
R1 The information on this website was helpful	.701
IQ5- the information on this website was useful	.655
I2 - This website provided complete product description	.638

Extraction: Principal Component Analysis. 1 component extracted. Total variance explained: 51.596%.

KMO Measure of Sampling Adequacy: .885. Bartlett's Test of Sphericity= 445.428, df=28, p=.000. n=150.

On conclusion of the Measure purification process, 8 items were retained for the Marketer informativeness measure, whose statistics are given in Table 9-37.

Table 9-37: Marketer informativeness - Statistics of items retained on conclusion of measure purification process

	Factor loading	Mean	Std. Deviation
I1 - This site had insufficient product information	.736	3.28	1.081
I2 - This website provided complete product description	.638	3.41	.957
I3 - This website adequately met my information needs	.786	3.26	1.126
I6 - There was enough information on this website to assess the products	.705	3.37	.958
I7 - I could learn a lot about the products	.752	3.25	.969
I8 - There wasn't enough information on this website to make a purchase decision	.760	3.47	1.041
R1 The information on this website was helpful	.701	3.75	.882
IQ5- the information on this website was useful	.655	3.53	.857
Cronbach's Alpha – 8 items: .865			
Total variance explained: 51.596%			

Non-marketer informativeness

Internal consistency

The survey contained 5 items related to Non-marketer informativeness. One of these (NMI6) was removed during the initial Exploratory Factor Analysis (see Section 0). The 4 remaining items displayed strong inter-item and corrected item-total correlations (see Table 9-38 and Table 9-39). The Cronbach's Alpha for these 4 items is .812. The 4 items therefore were taken to the next stage – of studying means and standard deviations, also shown in Table 9-39. The means of the retained 4 items are relatively high, but all within a relatively small range, from 3.24 to 3.59. Standard deviations are all well above 1, the lowest standing

at 1.203. These 4 items were therefore taken to the next step, of assessing their correlations with the Social desirability bias scale.

Table 9-38: Non-marketer informativeness – Inter-item correlation matrix

	nmi1	nmi2	nmi3	nmi4
nmi1	1.000	.642	.548	.387
nmi2	.642	1.000	.688	.478
nmi3	.548	.688	1.000	.377
nmi4	.387	.478	.377	1.000

Table 9-39: Non-marketer informativeness – Statistics and profile of items

Scale item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Mean	Std. Deviation
NMI1- This website only gave me its own product information, and not other users' impressions	.640	.759	3.39	1.203
NMI2- This site had customer reviews of products	.766	.700	3.59	1.205
NMI3- From this site it was impossible to see what other users thought of the products	.658	.752	3.24	1.374
NMI4- I could access product reviews on this site	.476	.831	3.52	1.208
Cronbach's Alpha – 4 items: .812				

Social desirability bias assessment

As shown in Table 9-40, there is no significant correlation between social desirability and any of the 4 Non-marketer informativeness items. At the end of this first part of the process therefore, 4 items were retained to measure Non-marketer informativeness, which yielded a Cronbach's Alpha of .812.

Table 9-40: Non-marketer informativeness – Correlations with Social desirability bias

		nmi1	nmi2	nmi3	nmi4
Total social desirability scale	Pearson Corr.	.039	-.020	-.010	-.014
	Sig. (2-tailed)	.633	.806	.899	.862

Dimensionality exploration

Table 9-41: Non-marketer informativeness – Factor matrix

Scale item (sorted by factor loading size)	Factor loading
NMI2- This site had customer reviews of products	.891
NMI3- From this site it was impossible to see what other users thought of the products	.828
NMI1- This website only gave me its own product information, and not other users' impressions	.812
NMI4- I could access product reviews on this site	.666

Extraction Method: Principal Component Analysis. 1 component extracted. Total variance explained: 64.536%.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy: .770.

Bartlett's Test of Sphericity= 218.284, df=6, p=.000. Sample size – n=150.

On conclusion of the Measure purification process, 4 items were retained for the Non-marketer Information measure, whose statistics are given in Table 9-42.

Table 9-42: Non-marketer Information – Statistics of items retained on conclusion of measure purification process

Scale item	Factor loading	Mean	Standard Deviation
NMI1 This website only gave me its own product information, and not other users' impressions	.812	3.39	1.203
NMI2 This site had customer reviews of products	.891	3.59	1.205
NMI3 From this site it was impossible to see what other users thought of the products	.828	3.24	1.374
NMI4 I could access product reviews on this site	.666	3.52	1.208
<i>Cronbach's Alpha – 4 items: .812; Total variance explained: 64.536%</i>			

Visual impact

Internal consistency

The survey contained 6 items developed to tap Visual impact, as listed in Table 9-44. All 6 items had good correlations with one another, as shown in Table 9-43, and adequate corrected inter-total correlations, in the .5-.8 range (see Table 9-44). The 6 items therefore were taken to the next stage – of studying means and standard deviations, also shown in Table 9-44. The means of all 6 items are relatively high, but all within a relatively small range, from 2.85 to 3.43. Standard deviations range from .931 to 1.108. Item VI1 has a low standard deviation (.931) and since its removal could boost the scale's Alpha, it was removed from further analysis. The remaining 5 items were taken to the next step, of assessing their correlations with the Social desirability bias scale.

Table 9-43: Visual impact – Inter-item correlation matrix

	vi2	vi3	vi4	vi7	vi8	vi9
vi2	1.000	.558	.401	.451	.354	.449
vi3	.558	1.000	.747	.704	.564	.611
vi4	.401	.747	1.000	.615	.450	.486
vi7	.451	.704	.615	1.000	.618	.644
vi8	.354	.564	.450	.618	1.000	.573
vi9	.449	.611	.486	.644	.573	1.000

Table 9-44: Visual impact – Statistics and profile of items

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Mean	Std. Deviation
vi2 The combination of the visual elements of this website was very harmonious <i>(removed from further analysis due to weak standard deviation and lowers Cronbach's Alpha)</i>	.536	.882	3.30	.931
vi3 The website had a visually pleasing design	.816	.838	3.25	1.037
vi4 The website was aesthetically appealing	.674	.862	3.18	.997
vi7 This website was dull visually	.776	.844	3.25	1.106
vi8 This site had no visual impact	.638	.868	3.43	1.096
vi9 The graphics elements of this site were boring	.695	.858	2.85	1.108
<i>Cronbach's Alpha – original 6 items: .880; Cronbach's Alpha – remaining 5 items: .882</i>				

Social desirability bias assessment

As shown in Table 9-45, there is no significant correlation between social desirability and any of the 5 Visual impact items. At the end of this first part of the process therefore, 5 items were retained to measure Visual impact, which yielded a Cronbach's Alpha of .882.

Table 9-45: Visual impact – Correlations with Social desirability bias

		vi3	vi4	vi7	vi8	vi9
Total Social Desirability	Pearson Correlation	.037	-.024	.043	-.120	.117
	Sig. (2-tailed)	.650	.772	.603	.143	.154

Dimensionality exploration

The 5 items retained from the previous part of the analysis were submitted to a Principal Components Analysis to assess their dimensionality. The results are shown in Table 9-46. Both the KMO and Bartlett's Test of Sphericity indicated that the data was suitable for

factor analysis. The Principal Component Analysis returned only one factor with an Eigenvalue greater than 1, which explained 68.277% of the total variance. All items loaded on a single factor, and the loading of all 5 items were well above .45 which is the significance point at the .05 level with samples of 150 (Hair et al. 1998).

Table 9-46: Visual impact – Factor matrix

Scale items (sorted by loading size)	Factor loading
VI3 The website had a visually pleasing design	.884
VI7 This website was dull visually	.872
VI4 The website was aesthetically appealing	.800
VI9 The graphics elements of this site were boring	.800
VI8 This site had no visual impact	.769

Extraction Method: Principal Component Analysis. 1 component extracted. Total variance explained: 68.277%.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy: .844.

Bartlett's Test of Sphericity= 403.826, df=10, p=.000.

Sample size = n=150.

On conclusion of the Measure purification process, 5 items were retained for the Visual impact measure, whose statistics are given in Table 9-47.

Table 9-47: Visual impact – Statistics of items retained on conclusion of measure purification process

Items	Factor loading	Mean	Std. Deviation
VI3 The website had a visually pleasing design	.884	3.25	1.037
VI4 The website was aesthetically appealing	.800	3.18	.997
VI7 This website was dull visually	.872	3.25	1.106
VI8 This site had no visual impact	.769	3.43	1.096
VI9 The graphics elements of this site were boring	.800	2.85	1.108
<i>Cronbach's Alpha – 5 items: .882; Total variance explained: 68.28%</i>			

Experiential intensity

Internal consistency

The survey contained 5 items developed to tap Experiential intensity, as listed in Table 9-49. All items had good correlations with one another, as shown in Table 9-48, and adequate corrected item-total correlations, in the .4-.65 range. The Cronbach's Alpha for these 5 items is .774. The 5 items therefore were taken to the next stage – of studying means and standard deviations, also shown in Table 9-49. The means of the retained 5 items all within a relatively small range, from 2.46 to 2.87. Standard deviations are all above 1, the lowest standing at 1.068. These 5 items were therefore taken to the next step, of assessing their correlations with the Social desirability bias scale.

Table 9-48: Experiential intensity – Inter-item correlation matrix

	ef4	ef5	ef6	ef7	ef8
ef4	1.000	.329	.488	.369	.465
ef5	.329	1.000	.429	.216	.523
ef6	.488	.429	1.000	.406	.479
ef7	.369	.216	.406	1.000	.397
ef8	.465	.523	.479	.397	1.000

Table 9-49: Experiential intensity – Statistics and profile of items

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Mean	Std. Deviation
EF4-This website replicated the kind of experience I have when I shop ef4	.552	.731	2.46	1.156
EF5 - This website was incapable of reproducing the excitement of shopping	.490	.753	2.56	1.223
EF6-When I navigated this website I felt I was shopping for real	.615	.708	2.54	1.185
EF7- This site felt more like reading a text than being in a shop	.449	.765	2.87	1.160
EF8-The experience of shopping was not there when I navigated on this site	.642	.703	2.86	1.068
Cronbach's Alpha: .774				

Social desirability bias assessment

Table 9-50 shows there is no significant correlation between social desirability and any of the 5 Experiential intensity items. At the end of this first part of the process therefore, 5 items were retained to measure Experiential intensity, which yielded a Cronbach's Alpha of .774.

Table 9-50: Experiential intensity – Correlations with Social desirability bias

		ef4	ef5	ef6	ef7	ef8
Total Social Desirability	Pearson Correlation	.043	.022	.066	.158	.078
	Sig. (2-tailed)	.598	.785	.425	.053	.342

Dimensionality exploration

The 5 items retained from the previous part of the analysis were submitted to a Principal Components Analysis to assess their dimensionality. The results are shown in Table 9-51.

Both the KMO and Bartlett's Test of Sphericity indicated that the data was suitable for factor analysis. The Principal Component Analysis returned only one factor with an Eigenvalue greater than 1, which explained 53.110% of the total variance. All items loaded on a single factor, and the loadings of all 5 items were well above the significance point of .45. On conclusion of the Measure purification process, 5 items were retained for the Experiential intensity measure, whose statistics are given in Table 9-52.

Table 9-51: Experiential intensity – Factor matrix

Scale item (sorted by factor loading size)	Factor loading
EF8-The experience of shopping was not there when I navigated on this site	.800
EF6-When I navigated this website I felt I was shopping for real	.780
EF4-This website replicated the kind of experience I have when I shop	.732
EF5 -This website was incapable of reproducing the excitement of shopping	.683
EF7- This site felt more like reading a text than being in a shop	.636

Extraction Method: Principal Component Analysis. 1 component extracted. Total variance explained: 53.110%. Kaiser-Meyer-Olkin Measure of Sampling Adequacy: .789. Bartlett's Test of Sphericity= 187.579, df=10, p=.000. Sample size – n=150.

Table 9-52: Experiential intensity – Statistics of items retained on conclusion of measure purification process

Scale item	Factor loading	Mean	Std. Deviation
EF4-This website replicated the kind of experience I have when I shop	.732	2.46	1.156
EF5 - This website was incapable of reproducing the excitement of shopping	.683	2.56	1.223
EF6-When I navigated this website I felt I was shopping for real	.780	2.54	1.185
EF7- This site felt more like reading a text than being in a shop	.636	2.87	1.160
EF8-The experience of shopping was not there when I navigated on this site	.800	2.86	1.068
<i>Cronbach's Alpha: .774; Total variance explained: 53.11%</i>			

Simultaneous analysis of the Exploratory potential dimensions

Having analysed the four dimensions making up the Exploratory potential construct, in the process purifying each of the measures, the last step of the development process was to enter the retained items into an Exploratory Factor Analysis. The results are shown in Table 9-53. Both the KMO and Bartlett's Test of Sphericity indicated that the data was suitable for factor analysis. The Principal Component Analysis returned two factors with an Eigenvalue greater than 1, which explained 61.006% of the total variance, with all items loading on their respective factors.

Table 9-53: Exploratory potential – Final oblique rotation

Scale items	Component			
	1	2	3	4
Factor 1 – Marketer Informativeness. 8 items. Alpha: .865				
I1 - This site had insufficient product information	.746			
I2 - This website provided complete product description	.677			
I3 - This website adequately met my information needs	.745			
I6 - There was enough information on this website to assess the products	.698			
I7 - I could learn a lot about the products	.751			
I8 - There wasn't enough information on this website to make a purchase decision	.802			
R1 -The information on this website was helpful	.653			
IQ5 - the information on this website was useful	.631			
Factor 2 – Non-marketer informativeness. 4 items. Alpha: .812				
NMI1 - This website only gave me its own product information, and not other users' impressions		.850		
NMI2 - This site had customer reviews of products		.863		
NMI3 - From this site it was impossible to see what other users thought of the products		.788		
NMI4 - I could access product reviews on this site		.672		
Factor 3 – Visual Impact. 5 items. Alpha: .882				
VI3 - The website had a visually pleasing design			.913	
VI4 - The website was aesthetically appealing			.843	
VI7 - This website was dull visually			.850	
VI8 - This site had no visual impact			.727	
VI9 - The graphics elements of this site were boring			.766	
Factor 4 – Experiential Intensity. 5 items. Alpha: .710				
EF4-This website replicated the kind of experience I have when I shop				.749
EF5 - This website was incapable of reproducing the excitement of shopping				.636
EF6-When I navigated this website I felt I was shopping for real				.825
EF7- This site felt more like reading a text than being in a shop				.638
EF8-The experience of shopping was not there when I navigated on this site				.758
Total variance explained: 55.771%				

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization. KMO Measure of Sampling Adequacy: .865. Bartlett's Test of Sphericity= 1673.11, df=300, p=.000. Sample size – n=150.

APPENDIX 7

SITE COMMITMENT – MEASURE PURIFICATION

Initial Exploratory Factor Analysis¹

A first step in the analysis consisted in an initial Exploratory Factor Analysis of all items purported to tap the construct of Site commitment, using Principal Components Analysis.

A total of 2 components had an Eigenvalue superior to 1, the scree plot suggested the extraction of 1 or 2 factors and the parallel method suggested the extraction of just 1 factor. An oblique rotation of 2 factors was produced, but it was not interpretable. The item loading the strongest on to the second factor was removed, and the analysis re-run until the analysis returned only 1 Eigenvalue greater than 1. Three items (WOM3, WOM4 and REL1) were thus removed. The next step of the analysis consisted in assessing the scale's internal consistency.

Internal consistency

All remaining 13 items had good correlations with one another, as shown in Table 9-54, and strong corrected inter-total correlations, as shown in Table 9-56. The 13 items therefore were taken to the next stage – of studying means and standard deviations, also shown in

¹ Due to layout constraints, the tables in this appendix do not show which items were reverse-coded. The reader however can refer to Appendix 2 on page 334 to identify reverse-coded items.

Table 9-44. The means of all 13 items are acceptable, ranging from 2.01 to 2.79. Standard deviations range from 1.046 to 1.340. All 13 items were therefore taken to the next step, of assessing their correlations with the Social desirability bias scale.

Table 9-54: Site commitment – Inter-item correlation matrix

	ir3	ir4	ir5	ir6	ir7	ir8	wom1	wom5	wom6	wom8	rel2	rel3	rel5
ir3	1.00	.730	.711	.753	.561	.466	.674	.621	.692	.687	.492	.690	.720
ir4	.730	1.00	.872	.839	.737	.393	.682	.540	.646	.583	.422	.616	.603
ir5	.711	.872	1.00	.881	.734	.416	.703	.514	.701	.630	.517	.679	.647
ir6	.753	.839	.881	1.00	.661	.418	.725	.530	.688	.650	.546	.681	.695
ir7	.561	.737	.734	.661	1.00	.244	.582	.421	.571	.497	.473	.502	.466
ir8	.466	.393	.416	.418	.244	1.00	.372	.331	.351	.323	.208	.335	.315
wom1	.674	.682	.703	.725	.582	.372	1.00	.541	.701	.678	.440	.600	.607
wom5	.621	.540	.514	.530	.421	.331	.541	1.00	.596	.540	.349	.463	.449
wom6	.692	.646	.701	.688	.571	.351	.701	.596	1.00	.690	.417	.746	.699
wom8	.687	.583	.630	.650	.497	.323	.678	.540	.690	1.00	.506	.719	.704
rel2	.492	.422	.517	.546	.473	.208	.440	.349	.417	.506	1.00	.542	.551
rel3	.690	.616	.679	.681	.502	.335	.600	.463	.746	.719	.542	1.00	.833
rel5	.720	.603	.647	.695	.466	.315	.607	.449	.699	.704	.551	.833	1.00

Social desirability bias assessment

As shown in Table 9-55, a number of items displayed a significant correlation with social desirability, namely: WOM8 and REL3 at the .01 level and WOM6 and REL5 at the .05 level. All 4 items were removed from further analysis, leaving 9 items to measure Site commitment, with a Cronbach's Alpha of .919.

Table 9-55: Site commitment – Correlations with Social desirability bias

		ir3	ir4	ir5	ir6	ir7	ir8	wo m1	Wo m5	wo m6	wo m8	rel2	rel3	rel5
Total Soc. Desir'ty	Pearson Corr.	.120	.017	.049	.013	.047	.010	.132	.132	.190 (*)	.216 (**)	.113	.217 (**)	.173 (*)
	Sig. (2-t.)	.145	.841	.554	.870	.571	.902	.108	.108	.020	.008	.170	.008	.034

* Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

Table 9-56: Site commitment – Statistics and profile of items

Scale item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Mean	Standard Deviation
IR3: I will visit this site first when I want to buy books	.835	.734	2.25	1.135
IR4: I plan to use this website in the future	.824	.827	2.61	1.203
IR5: I intend to continue using this website in future	.866	.859	2.50	1.186
IR6: I expect my use of this site to continue in future	.872	.836	2.42	1.191
IR7: I am unlikely to use this website again	.686	.620	2.75	1.249
IR8: I will use a website other than the one I just visited next time I need a book	.429	.256	2.34	1.122
WOM1: I will recommend this site to other people	.780	.649	2.77	1.155
WOM5: I would have only good things to say about this website	.618	.475	2.79	1.046
WOM6: I would be proud to tell others that I use this website (dropped from analysis due to significant correlation with Social Desirability)	.799	.716	2.39	1.158
WOM8: If this website had a function to refer it to friends, I would use it (dropped from analysis due to significant correlation with Social Desirability)	.767	.653	2.13	1.060
REL2: I would refuse to let this website contact me for special offers or promotions	.572	.439	2.50	1.340
REL3: I would like this website to keep in touch with me through email (dropped from analysis due to significant correlation with Social Desirability)	.791	.771	2.03	1.096
REL5: I would register to receive newsletters from this website (dropped from analysis due to significant correlation with Social Desirability)	.777	.760	2.01	1.132
<i>Cronbach's Alpha – 13 items: .946; Cronbach's Alpha – 9 retained items: .919</i>				

Dimensionality exploration

The 9 items retained from the previous part of the analysis were submitted to a Principal Components Analysis to assess their dimensionality. The results are shown in Table 9-57. Both the KMO and Bartlett's Test of Sphericity indicated that the data was suitable for factor analysis. The Principal Component Analysis returned only one factor with an Eigenvalue greater than 1, which explained 62.398% of the total variance. All items loaded on a single factor, and the loading of all 9 items were well above .45 which is the significance point at the .05 level with samples of 150 (Hair et al. 1998).

Table 9-57: Site commitment – Factor matrix

Scale item (sorted by factor loading size)	Factor loading
IR5: I intend to continue using this website in the future	.917
IR6: I expect my use of this website to continue in the future	.917
IR4: I plan to use this website in the future	.901
IR3: I will visit this site first when I want to buy books	.857
WOM1: I will recommend this site to other people	.820
IR7: I am unlikely to use this website again	.781
WOM5: I would have only good things to say about this website	.679
REL2: I would refuse to let this website contact me for special offers or promotions	.618
IR8: I will use a website other than the one I just visited next time I need a book	.513

Extraction Method: Principal Component Analysis. 1 component extracted. Total variance explained: 62.398%.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.: .916.

Bartlett's Test of Sphericity= 1011.544, df=36, p=.000.

Sample size – n=150.

On conclusion of the Measure purification process, 9 items were retained for the Site commitment measure, whose statistics are given in Table 9-58.

Table 9-58: Site commitment – Statistics of items retained on conclusion of scale development process

Scale item	Factor loading	Mean	Standard Deviation
IR3: I will visit this site first when I want to buy books	.857	2.25	1.135
IR4: I plan to use this website in the future	.901	2.61	1.203
IR5: I intend to continue using this website in the future	.917	2.50	1.186
IR6: I expect my use of this website to continue in the future	.917	2.42	1.191
IR7: I am unlikely to use this website again	.781	2.75	1.249
IR8: I will use a website other than the one I just visited next time I need a book	.513	2.34	1.122
WOM1: I will recommend this site to other people	.820	2.77	1.155
WOM5: I would have only good things to say about this website	.679	2.79	1.046
REL2: I would refuse to let this website contact me for special offers or promotions	.618	2.50	1.340
Cronbach's Alpha – 9 items: .919			
Total variance explained: 62.398%			

APPENDIX 8

SKEWNESS AND KURTOSIS STATISTICS

An important assumption of Structural Equation Modelling is that observed variables are normally distributed. Ways to test for univariate normality are to consider the skewness and kurtosis of the individual variables. Details of skewness and kurtosis are shown in Table 9-59 (independent variables), Table 9-60 (mediating variables) and Table 9-61 (dependent variable).

Table 9-59: Independent variables' observed measures – Skewness and kurtosis statistics

	Skewness			Kurtosis		
	Stat.	Std. Error	Statistic/ SE	Stat.	Std. Error	Statistic/ SE
VISUAL IMPACT						
vi3	-0.32	0.14	-2.25	-0.63	0.28	-2.24
vi4	-0.32	0.14	-2.31	-0.41	0.28	-1.47
vi7	-0.41	0.14	-2.89	-0.79	0.28	-2.82
vi8	-0.42	0.14	-2.97	-0.66	0.28	-2.36
vi9	0.03	0.14	0.21	-1.00	0.28	-3.58
EXPERIENTIAL INTENSITY						
ef4	0.20	0.14	1.44	-1.21	0.28	-4.33
ef5	0.43	0.14	3.05	-0.76	0.28	-2.70
ef6	0.39	0.14	2.75	-0.86	0.28	-3.07
ef7	0.19	0.14	1.38	-1.01	0.28	-3.60
ef8	0.12	0.14	0.88	-0.75	0.28	-2.68
<i>(continued next page)</i>						

	Skewness			Kurtosis		
	Stat.	Std. Error	Statistic/ SE	Stat.	Std. Error	Statistic/ SE
<i>(continued from previous page)</i>						
MARKETER INFORMATIVENESS						
i1	-0.36	0.14	-2.53	-0.98	0.28	-3.50
i2	-0.40	0.14	-2.83	-0.58	0.28	-2.06
i3	-0.28	0.14	-2.02	-1.03	0.28	-3.68
i6	-0.48	0.14	-3.40	-0.60	0.28	-2.13
i7	-0.29	0.14	-2.07	-0.65	0.28	-2.31
i8	-0.35	0.14	-2.48	-0.85	0.28	-3.02
NON-MARKETER INFORMATIVENESS						
nmi1	-0.21	0.14	-1.50	-0.93	0.28	-3.32
nmi2	-0.55	0.14	-3.93	-0.53	0.28	-1.88
nmi3	-0.10	0.14	-0.68	-1.15	0.28	-4.11
nmi4	-0.55	0.14	-3.89	-0.53	0.28	-1.88
PAGE CLARITY						
il2	-0.50	0.14	-3.59	-0.56	0.28	-1.99
il4	-0.48	0.14	-3.45	-0.62	0.28	-2.22
il6	-1.23	0.14	-8.78	2.28	0.28	8.13
il8	-0.45	0.14	-3.19	-0.80	0.28	-2.85
SITE ARCHITECTURE						
Po1	-0.85	0.14	-6.05	0.94	0.28	3.35
Po4	-0.71	0.14	-5.02	-0.44	0.28	-1.57
Po7	-0.87	0.14	-6.17	0.69	0.28	2.47
Co1	-0.83	0.14	-5.89	0.01	0.28	0.04
Co5	-0.78	0.14	-5.54	0.59	0.28	2.09
Co6	-0.90	0.14	-6.44	0.32	0.28	1.15
Co7	-0.94	0.14	-6.72	0.82	0.28	2.91
Co8	-0.58	0.14	-4.13	-0.81	0.28	-2.91
eu2	-0.71	0.14	-5.06	0.29	0.28	1.04

The critical value for both measures of normality (calculated as per is extracted from a z-distribution. A value of 0 corresponds to perfect normality in the data distribution. This of course is rarely achieved in the social sciences area (West et al. 1995). A value of +/- 2.58 is the cut-off point for rejecting the normality assumption at the .01 error level, and +/- 1.96 is the cut-off point for rejecting the assumption at the .05 error level (Hair et al. 1998).

Equation 9-1: Formulas used to calculate the skewness and kurtosis z-values

$$Z_{\text{skewness}} = \text{Skewness statistic} / SE_{\text{skewness}}$$

$$Z_{\text{kurtosis}} = \text{Kurtosis statistic} / SE_{\text{kurtosis}}$$

Not unexpectedly, Table 9-59 shows some departures from normality in terms of both skewness and kurtosis. Twelve out of 33 variables have a z statistic for skewness within the -2.58 – +2.58 range, while 17 have a z-statistic for kurtosis within that same range. The highest absolute z-values are 8.78 (for IL6) for skewness, and 8.13 (for IL6 also) for kurtosis. However, the mean z-values are -2.91 for skewness and -1.43 for kurtosis.

Table 9-60: Utilitarian and Hedonic value – Skewness and kurtosis statistics

	Skewness			Kurtosis		
	Stat.	Std. Error	Statistic/ SE	Stat.	Std. Error	Statistic/ SE
UTILITARIAN VALUE						
Uv1	-0.45	0.14	-3.19	-0.80	0.28	-2.85
Uv2	0.08	0.14	0.59	-1.20	0.28	-4.28
Uv3	0.12	0.14	0.86	-1.16	0.28	-4.15
Uv4	-0.14	0.14	-1.02	-0.69	0.28	-2.46
HEDONIC VALUE						
Hv1	0.18	0.14	1.25	-0.63	0.28	-2.23
Hv2	0.21	0.14	1.52	-1.08	0.28	-3.85
Hv3	0.47	0.14	3.34	-0.73	0.28	-2.62
Hv4	0.18	0.14	1.31	-0.91	0.28	-3.23
Hv5	-0.38	0.14	-2.70	-0.58	0.28	-2.05
Hv6	0.08	0.14	0.54	-0.81	0.28	-2.91
Hv7	-0.12	0.14	-0.84	-0.77	0.28	-2.73
Hv8	0.36	0.14	2.57	-0.89	0.28	-3.17
Hv9	0.11	0.14	0.80	-0.99	0.28	-3.54
Hv10	0.34	0.14	2.39	-0.64	0.28	-2.29
Hv11	-0.21	0.14	-1.50	-0.65	0.28	-2.33

As per Table 9-60 some of the mediating variables display modest departures from normality in terms of both skewness and kurtosis. Twelve of the 15 variables have a z statistic for skewness within the -2.58 – +2.58 range, while 5 have a z-statistic for kurtosis within that same range. The highest absolute z-values are 3.34 (for HV3) for skewness, and 4.28 (for UV2) for kurtosis. The mean z-values are .40 for skewness and – 2.98 for kurtosis.

Table 9-61: Site commitment – Skewness and kurtosis statistics of observed measures

	Skewness			Kurtosis		
	Stat.	Std. Error	Statistic/ SE	Stat.	Std. Error	Statistic/ SE
ir3	0.33	0.14	2.38	-1.05	0.28	-3.77
ir4	0.17	0.14	1.24	-1.01	0.28	-3.62
ir5	0.09	0.14	0.67	-1.17	0.28	-4.18
ir6	0.24	0.14	1.71	-1.08	0.28	-3.84
ir7	0.09	0.14	0.66	-1.24	0.28	-4.42
ir8	0.51	0.14	3.63	-0.59	0.28	-2.11
wom1	-0.09	0.14	-0.62	-1.06	0.28	-3.78
wom5	-0.01	0.14	-0.10	-0.84	0.28	-3.01
rel2	0.45	0.14	3.19	-1.10	0.28	-3.93

Table 9-61 shows that only a small number of the dependent variables depart from normality in terms of skewness, while a larger number are platykurtic. Two of the 9 variables have a z statistic for skewness within the $-2.58 - +2.58$ range, while only one has a z-statistic for kurtosis within that same range. The highest absolute z-values are 3.63 (for IR8) for skewness, and 4.42 (for IR7) for kurtosis. The mean z-values are 1.42 for skewness and -3.63 for kurtosis.

Taken together, these statistics indicate that the data does depart somewhat from a normal distribution. However, the magnitude of these departures is quite common in the social sciences. Further, one must bear in mind that with reasonably large sample, skewness does not make a substantive difference in analysis and that with samples of over 200 observations, the risk of underestimating variance is also reduced (Tabachnick and Fidell 1996). Furthermore, since the maximum likelihood estimation technique in Structural Equation Modelling fares well in situations where the normality assumption is not grossly violated (Chou and Bentler 1995; Curran et al. 1996; Hoyle 1995), all variables can be used with good levels of confidence as to the validity of their results.

APPENDIX 9

LIST OF ACRONYMS AND ABBREVIATIONS USED IN THIS THESIS

AVE	Average Variance Extracted
BPM	Behaviour Perspective Model
CFA	Confirmatory Factor Analysis
CR	Composite reliability
EFA	Exploratory Factor Analysis
HCI	Human-Computer Interaction
IS	Information Systems
KMO	Kaiser-Meyer-Olkin measure of sampling adequacy
OSE	Online Shopping Environment
SE	Standard error
SEM	Structural Equation Modelling
TAM	Technology Acceptance Model
UTAUT	Unified Theory of Acceptance and Use of Technology
RC	Reverse-coded

GLOSSARY

The core concepts covered by this study are listed and defined here in alphabetical order.

Experiential Intensity	the ability of the website to produce an involving shopping experience
Hedonic value	"an overall assessment of experiential benefits and sacrifices, such as entertainment and escapism" (Overby and Lee 2006, p. 1161)
Involvement	"an observable state of motivation, arousal or interest. It is evoked by a particular stimulus or situation and has drive properties. Its consequences are types of searching, information processing and decision making" (Rothschild 1984, p. 216)
Marketer informativeness	the extensiveness of marketer information available on the site
Non-marketer informativeness	the extensiveness of information available on the site, which originates from non-marketer sources
Online shopping environments	virtual environments which may be perceived and experienced both cognitively (information, orientation, understanding of tools sense-making etc.) and affectively (sensory, experiential, interactive, playful) by consumers through a technology-mediated interaction with their computer screen
Online shopping experience	the interaction with a virtual environment, which comprises of environmental, informational, interactive and technology-mastering factors
Online shopping navigation	see <i>online shopping experience</i> above
Page clarity	"the ease with which one can grasp the organisation of the scene" (Kaplan 1992)
Retail websites	see <i>online shopping environments</i> above
Shopping value	"all factors, both qualitative and quantitative, subjective and objective, that make up the complete shopping experience" (Schechter 1984)
Site architecture	the shoppers' perception of the organisation of the different pages of the website as a coherent, understandable whole
Site commitment	the degree to which the consumer is willing to remain associated with the retail website
Utilitarian value	"an overall assessment of functional benefits and sacrifices" (Overby and Lee 2006, p. 1161)
Visual impact	the attention-grabbing, aesthetic visual diversity of individual web pages