# DEVELOPMENT OF A FRAMEWORK FOR UNDERSTANDING ONLINE CONSUMER BEHAVIOUR

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## ABSTRACT

Developing conceptual models of user behaviour is a prerequisite of interaction design, however methodologies such as task analysis or participatory design are often inadequate when designing online shopping sites due to the complexity and diversity of online consumer behaviour. To address this shortcoming a framework for conceptual modelling is needed that facilitates comprehension of online consumer behaviour within interaction design. To develop this framework, interviews and observations were conducted with 24 online shoppers across three domains – Grocery, Travel and Christmas shopping. By integrating previous research into online and terrestrial consumer behaviour with the results of the ethnographic studies, seven themes of online consumer behaviour have been identified as the basis for the framework.

## KEYWORDS

Human-Computer Interaction, Electronic Commerce,

## 1. THE PROBLEM OF ONLINE CONSUMER BEHAVIOUR

In the age of Internet shopping the 'user' – the conventional concern of HCI research – must also be recognised as a consumer. Research has demonstrated that consumer behaviour is a complex phenomenon affected by a myriad of economic, cultural, psychological, emotional and environmental variables (Schiffman & Kanuk, 2004; Solomon *et al*, 2002) with the relationships between these variables often intricate, context dependent and not necessarily obvious to the researcher (Underhill, 2000). Consumers themselves come in a variety of types, backgrounds, motivations and profiles, exhibiting different behaviour depending on context or domain (Miller *et al*, 1998). Adding to this complexity and diversity is emergence of the 'postmodern' consumer who actively initiates and shapes his/her shopping experiences (Szmigin, 2003). Marketing and retail researchers develop their understanding of consumer behaviour by recognising these issues, using techniques such as market segmentation to divide consumers along demographic, psychographic (interests, opinions, attitudes) or other recognised profiling criteria in order to address diversity.

So given the complexities identified by consumer research how should interaction designers understand and model online consumers? As online consumers interact rather than react to stimuli, modelling behaviour in the context of terrestrial stimulus-based retail design is clearly insufficient yet modelling in the context of interaction design is also problematic. The definition of 'user' within HCI has evolved from the mechanistic executor of a specific function within a system to an active shaper of the interaction environment (Kuutti, 2001), analogous to the emergence of the postmodern consumer. It is also recognised that user behaviour can be intricate and influenced by a variety of factors. However there has been a historical tendency to promote artefact or task-based perspectives of user behaviour in order to model the interaction, and use of this approach encourages concentration on individual behavioural aspects such as trust or technology adoption which reflect only a portion of a consumer's behaviour (Clark & Wright, 2005). Interaction designers also utilise various segmentation techniques, most notably creating personas, to address diversity when modelling user behaviour (Cooper, 1999). These personas are developed by identification of relevant behavioural

variables followed by mapping participants against these variables (Goodwin, 2002). But in the case of online consumers the complexity of their behaviour can lead to an unworkable number of observed variables with no obvious indication of their relevancy while critical variables can be missed altogether.

These problems point to the need for understanding online consumer behaviour as that of both a consumer and a user of interactive technology. To support this understanding, we propose the use of a multi-dimensional framework for exploring online consumer behaviour that facilitates comprehension of behavioural complexity and diversity. Such a framework should, by identifying common interdependent themes of behaviour, provide a structure for exploring online consumer behaviour through rich and innovative design dialogues. This paper describes the development of such a framework using Grounded Theory, a qualitative methodology particularly suited to developing frameworks from observed complex behaviours (Goulding, 2002).

## 2. BUILDING THE FRAMEWORK

To build the framework a set of ethnographic studies were conducted using fifteen female and nine male UK participants, aged 19 to 60, performing actual online shopping activities in particular domains – groceries (cyclic and predictable shopping), Christmas (one-off shopping for unfamiliar items), or travel (shopping for services). Recordings of all sessions were made, and open coding was then performed against the session transcripts to identify and map specific behavioural phenomena to nodes. From existing consumer research and models we constructed seven basic questions or concerns that the online consumer may have while shopping, and used these questions to categorise the behavioural nodes uncovered in our study.

**Self-Efficacies – Can I do this?** Consumer research has shown that terrestrial consumers will evidence different types of shopping behaviour, particularly levels of product involvement, depending on their skills, knowledge and/or confidence in purchasing a particular item (Adcock *et al*, 2001). In the case of the online consumer this question becomes more complex. Previous research has shown Internet expertise to be a strong predictor in consumer adoption of online shopping (Eastin, 2002), but other types of expertise must also be considered, as a consumer with high levels of Internet expertise may have little experience in selecting and purchasing particular types of products or indeed particular types of online shopping.

Our study showed that participants relied on both their existing product, technical and online shopping expertise plus various levels of self-assurance where skills were weak – for example dedicated online grocery shoppers had in some cases relatively low levels of technical skills and most of the Christmas shoppers were purchasing unfamiliar items. Therefore, we have decided to call this category Self-Efficacies – the belief in one's ability to successfully perform a task.

**Beliefs – Will this meet my expectations?** Consumer research has shown that consumers hold a variety of beliefs about vendors, brands, products and service (Solomon *et al*). These beliefs are influenced by and influence in turn consumer loyalty, and these beliefs also influence reactions to persuasive messages (Schiffman & Kanuk). While the extent to which the online consumer believes they can rely on a transaction has an impact on overall willingness to shop online (Shneiderman, 2002), issues of trust are not necessarily seen by online consumers as a major contribution to their shopping experience (Cho, 2004). Other belief-related issues such as consumer loyalty can be manifested differently in the online environment (Gupta *et al*, 2004), and computer systems can have unique capabilities for persuasion such as interaction, adaptability and persistence (Fogg, 2003).

The participants in our study showed various strategies for minimising perceptions of risk such as relying on credit card security guarantees. But regardless of the specific strategy used, transactional trust was a secondary issue for participants because they had developed a working belief in online shopping, a belief that transcended any specific perception of online security offered by their computer, vendor or bank card system. Loyalty was weak, as shoppers expressed preferences for particular vendors but were often easily swayed by offers of better prices from competitors. Reactions to persuasive media varied, with Christmas shoppers reacting particularly well if the cue was targeted.

**Economics – What does it cost?** The consumer's economic requirements – obtaining what is perceived by the consumer as value for money – has been shown to be a key driver of price comparison activity and related behaviour (Adcock *et al*, Solomon *et al*). However, for the terrestrial consumer the ability to compare prices is often constrained by physical and/or temporal factors. The online consumer can increase the extent

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of searching done and the amount of information gathered, allowing consideration of more alternatives. This may in turn lead to more consideration of other factors in determining value for money such as service quality and brand loyalty (Biswas, 2004).

In our study, price comparison activity varied with the domain. Grocery participants did little or no price comparisons across vendors while travel participants were fanatical in their pursuit of the lowest price. Factors other than price were used to determine value for money, but participants with strong perceptions of price dispersion (price differences amongst vendors) considered these other factors only after they had satisfied themselves as to the lowest price available.

**Affects – How do I feel about this?** Consumer research has shown that to many consumers shopping is not simply a task but also a form of entertainment, a source of pleasure or a means of self-expression and self-actualisation (Solomon *et al*; Underhill). While shopping from home is rated lower in terms of affective aspects such as entertainment and social interaction (Chen *et al*, 2002), given the number of people who already use the Internet for entertainment and interaction it is not unreasonable to assume that people may also have similar expectations of online shopping (Shang *et al*, 2005).

The participants in our study who enjoyed such activities as researching information on the Internet derived pleasure and entertainment from online product and service research. There was also a strong desire among participants to control their shopping experience, but this desire for empowerment sometimes set up a tension with the desire to experience new or unfamiliar products, particularly for the grocery shoppers who consequently experienced various levels of frustration as they felt they weren't being exposed to new experiences online.

**Connections – Have I done this before?** Consumer research has shown that positive remembrance of previous shopping experiences will often lead to the consumer repeating the same behaviour (McNeal, 1973). This construction of connections from previous encounters and use of these connections in determining current and future actions, should be manifested in online consumers as well, and include attitudes and expectations derived from terrestrial shopping experiences.

The participants in our study made connections from previous positive and negative experiences with vendors that affected their choice of vendors and their interaction with the vendor. Connections were also made between terrestrial and virtual shopping experiences, dictating purchasing strategies including combined terrestrial and virtual shopping activities.

**Logistics – How do I get what I want?** Adcock *et al* have broken down the logistics of the purchase transaction into four stages – information search, evaluation of the results of information search, application of decision-making criteria and action. The online consumer also goes through search and selection processes, and is faced with decisions concerning payment, delivery and support that will impact their behaviour accordingly (Dawson *et al*, 2003).

In our study we observed that information search behaviour often varied with domain. Grocery shoppers relied on lists generated from previous purchases, Christmas shoppers relied on search engines and price comparison sites, while Travel shoppers used as many types of search facilities as possible, often duplicating searches in case one combination yielded different pricing information than the other. Selection activity generally depended on combinations of previous product knowledge and results of the information search, again influenced by the shopping domain. Participants made decisions on what types of payment and registration facilities to use independent of the domain or type of purchase, while requests for service were governed by a variety of factors including convenience, scheduling and cost.

**Environments – What's going on around me?** Consumer research has identified a number of atmospheric influences generated by shop design that can have a profound effect on behaviour – from when and how the consumer moves through the shop to how much the consumer spends (Turley & Milliman, 2000). However, shop design is only one component of the circumstances under which the consumer is operating and consumer behavioural models recognise a variety of these external or environmental influences including social, psychographic, temporal as well as physical factors (McNeal, Schiffman & Kanuk, Solomon *et al*, Walters, 1976). The online consumer is also affected by these various environmental influences. For example, site design can influence behaviour and some principles of retail design have even been shown to be relevant to designing e-Commerce sites (Turley & Milliman)

The participants in our study were affected by a number of environmental influences, and subsequent behaviour was often domain dependent. Christmas and Travel shoppers engaged in polychronic activity that the grocery shoppers tended to avoid. Grocery shoppers were generally unconcerned about site layout or

appearance while the other participants valued design-related issues but were willing to overcome objections to poorly designed sites if the content or price was right.

## 3. THE FRAMEWORK AND FUTURE RESEARCH

Having categorised the results of our study, we propose the behavioural dimensions of Self-Efficacies, Beliefs, Economics, Affects, Connections, Logistics and Environments as a structure for understanding online consumer behaviour that we call the e-Consumer Framework, or "e-CF" for short (Fig.1).
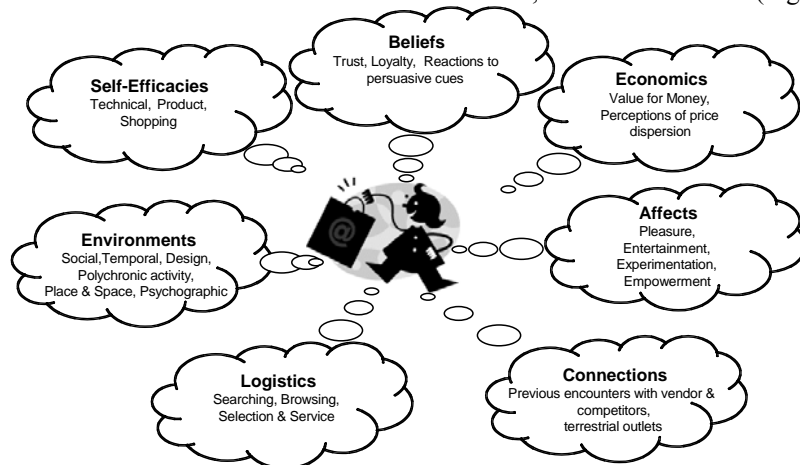


Figure 1. The e-CF

In addition to providing a basis for exploring online consumer behaviour within a domain, we anticipate the e-CF will facilitate discussion of correlations and relationships within a dimension, such as conflicts between empowerment and experimentation in grocery shoppers, as well as comparisons across domains. In our future research, we will demonstrate how the e-CF can be used as a tool to structure qualitative and quantitative studies of online consumers, ensuring that subsequent personas and surveys are robust and accurately reflect the issues that must be addressed in designing interactive shopping services. We will also explore the use of the e-CF as a framework for structuring formative evaluations and how such evaluations, by examining how well site design matches the needs and expectations of online consumers, can be of use to the interaction designer.

## 4. CONCLUSIONS

In this paper we have argued that established task and/or artefact-based approaches to understanding and depicting users are generally insufficient for interaction design of e-Commerce systems as these approaches cannot adequately convey the complexity and diversity of online consumer behaviour. Design tools such as personas, which are intended to develop a more three-dimensional view of the user, rely on the identification of a workable number of behavioural variables, an understanding of the dynamics of each variable, and an appropriate mapping of observed behaviour against these variables. However, without a comprehensive framework for characterising the online consumer, the interaction designer of an e-Commerce system runs the risk of not only neglecting critical behavioural variables but also assigning inappropriate priorities to behaviour variables or using unsuitable scales to map these variables to observed behaviour. We therefore propose the e-CF as a tool for identification of relevant domain-specific behavioural variables and as a basis for exploration of relationships between behavioural themes and comparison of behaviour across shopping domains. Use of the e-CF will give the interaction designer a comprehensive and coherent structure for exploring the complexity and diversity of online consumer behaviour.

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