Chapter 13
From User Cognition to User Interaction Modalities in Consumer Behaviour

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ABSTRACT

Information and Communication Technology (ICT) has revolutionized science and commerce and has increased the innovation and the spread of a variety of virtual environments applications. These innovations are the result of the both technological development and cognitive studies. The chapter aims to underline the relationships between Human-Computer Interaction (HCI) and consumer behaviour, focusing the attention on the 3-D virtual environments dedicated to electronic and Internet e-commerce (e-retail) services. We introduce how the 3-D interfaces can contribute to the successful impact of online retail. The importance of the relationship between customer and system concerns the effective potentiality of the user interface. If a user interface is ineffective, the system's functionalities and usefulness will be limited and the users will be confused, frustrated, and annoyed, and therefore less likely to use the system again. Finally, we aim to outline the cognitive and technological aspects involved in the communication process between user and virtual e-retail system interface and directions for possible future research.

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INTRODUCTION

The application of direct e-retail services through Information and Communication Technology (ICT) to consumer behaviour represents an important challenge for the modern economy. In order to take full advantage of the range and volume of potential customers, a thorough understanding of both the user interface and the customer experience is required. Understanding provides the platform to help developers design and maintain high quality and efficient interactions between the system and final user (Benyon, Turner, & Turner, 2005). Many of the most recent applications of computer technology concern e-commerce systems. To take advantage of the new generation of e-commerce web sites, the goal of these systems is to include more interactive Web 2.0 services (Tatnall, 2010). These technologies adopt new interfaces that improve the communication between user and system. For example, users can personalize the information on their favourite portals to activate specific services like alert messages that inform them that a new product is available.

Effective Internet marketing requires an understanding of the customer's needs, but also of the user's behaviour and habits, such as how the user finds the necessary information. It is therefore important to understand how different models of presenting information can modify user behaviour; how users explore and utilize information about products and the impact that it may have on them. For example, interactive 3-D models of products can make more information available and transform the online experience by greatly enhancing the realism of the product presentation and making it more intuitive and compelling. This suggests that business success can be positively influenced by the use of advanced digital technology designed and applied within a human context. Technological advances should be implemented taking into account the human factors (Bainbridge, 2004; Carroll, 2000; Sears & Jacko, 2009). These include cognitive processes, user behaviour and preferences whilst interacting with products presented in a digital or virtual environment. When done well, businesses can reap rewards afforded by high sales and satisfied returning customers.

Advances in user interface technology, driven by mobile phone and games technology, have led to a wide range of Human-Computer Interfaces (Sears & Jacko, 2009). These interfaces include different interaction modalities such as touch screens, voice control, kinaesthetic interfaces, multimodal interactions, and so on. The main idea of these systems is to augment the communication between user and digital information, worlds or objects. However, despite the support from Cognitive Psychology in the design and development of such interfaces, it is still unclear how these can be fully utilized in a commercial setting. New information technologies are constantly emerging altering the traditional business models, and in particular the relationships between commercial organizations and their customers. Technological innovations open new challenges by developing different devices employing new communication modalities (Tatnall, 2010). Therefore, for successful application, it is essential to understand the impact that different interfaces and interactions modalities can have on customers and on consumer behaviour through different digital products and platforms. We need also to understand how mixed-modality interface integrated with the new generation of technologies offered by mobile systems, ubiquitous and pervasive communications can be combined with the existing marketing channels and practices.

The focus of this chapter is to emphasize the relationships between user cognitive aspects and system interfaces. In particular, we will describe the cognitive functions to be taken into account in the design process, and how it can affect the interaction between user and electronic system. We will also show the potentialities of multi-modal interfaces and virtual environments to business and marketing by: (1) providing an overview of the relationships between Human-Computer