CULTURAL EFFECT ON ELECTRONIC CONSUMER BEHAVIOUR:

The Effect of Uncertainty Avoidance on Online Trust for the Egyptian Internet Users

A thesis submitted for the degree of Doctor of Philosophy

by

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This thesis is dedicated,

with deepest love and everlasting respect,

to my parents: Laila El Shal & Refaat El Said.

Without their support and encouragement

I could not have reached this stage.

Ghada R. El Said

بكل الحب و الاحترام الدائم ,ما حييت,
أهدى هذه الرسالة الى والدي: ليلى الشال و رفعت السعيد
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DECLARATION

The following publications have been produced as a direct or indirect result of the research discussed in this thesis:

Journal Papers:

1. **El Said**, G., R. and Hone, K., S. (2005). Culture and E-Commerce: An Exploration of the Perceptions and Attitudes of Egyptian Internet Users. *Journal of Computing and Information Technology: Special Issue on Information Systems, Simulation Modelling and Knowledge Management,*13(2), June (2005), 107-122.

2. Warschauer, M., **El Said**, G., R. and Zohry, A. (2002). Language Choice Online: Globalization and Identity in Egypt. *The International Journal of Computer-Mediated Communication*, 7(4). Available at: http://jcmc.indiana.edu/vol7/issue4/warschauer.html, last access: 10 August 2005.

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4. Warschauer, M., **El Said**, G., R. and Zohry, A. (2003). Language Choice Online: Globalization and Identity in Egypt. In E. Jandt (Ed.). *Intercultural Communication: A Global Reader*. Sage Publications. 160-172. ISBN: 0-7619-2899-5.

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6. **El Said**, G., R. and Galal, H., G. (2004). Investigating Culture Issues in E-Commerce: A Human Computer Interaction Perspective. In A. Fahmy (Ed.). *The Second International Conference on Informatics and Systems: INFOS' 2004 CD Proceedings.* Faculty of Computers and Information, Cairo University, Cairo, Egypt, 6-8 March 2004. Abstract available at: http://simt-dev.unl.ac.uk/galal/abstracts/paper_abs.html#Said-Galal'04-Culture-Ecom, last access: 10 August 2005.

7.   **El Said**, G., R. (2004). Online Consumer Behaviour and Culture. In J. Knight (Ed.). *The First International Design for Engagability Conference: iDeC' 2004.* Birmingham Institute of Art and Design, Birmingham, UK, 6-7 July 2004.

8.   **El Said**, G., R. and Hone, K., S. (2003). Designing E-Commerce Sites across Cultural Barriers: An Elicitation for Internet Egyptian Users. In M. El-Hadidi (Ed.). *Ensuring Security in Information Technology Infrastructures: ICICT' 2003 Proceedings.* The First Information Technology Institute International Conference on Information and Communication Technology. Information Technology Institute Publication. Cairo, Egypt, 30 November-2 December 2003, 123 – 150.

9.   **El Said**, G., R. and Hone, K., S. (2003). Use of Card Sorting for Cultural Web-Preferences Data Elicitation: The Case of Egyptian Internet Users. In C. Stephanidis (Ed.). *Universal Access in HCI: Inclusive Design in the Information Society: Volume four of the HCI International' 2003 Proceedings.* The Tenth International Conference on Human-Computer Interaction. Lawrence Erlbaum Associates Publishers. Crete, Greece, 22-27 June 2003, 945 – 949. ISBN: 0-8058-4933-5.

10.   **El Said**, G., R. and Hone, K., S. (2001). Cross-Cultural Web Usability: An Exploration of the Experiences of Egyptians Users. In D. Day and L. Dunckley (Eds.). *Designing for Global Markets 3: IWIPS' 2001 Proceedings.* The Third International Workshop on Internationalization of Products and Systems. Digital Printing Service. The Open University, Milton Keynes, United Kingdom, 12-14 July 2001, 101-107. ISBN: 0-7492-53258.

11.   **El Said**, G., R. (2001). Cross-Culture Usability Research-in-Progress. In S. Kamel (Ed.). *Business Information Technology Management: Enabling Cultural Awareness: BITWorld' 2001 CD Proceedings.* The Third International Business Information Technology Conference. The American University in Cairo Publication. Cairo, Egypt, 4-6 June 2001.

12.   **El Said**, G., R. (2001). The Effect of Applying Human Computer Interaction Principles on the Geographic Information Systems Usability. In *Geographic Information Systems Applications in Planning and Sustainable Development: OICC' 2001 online Proceedings.* The Seventh International Seminar of the Organization of Islamic Capitals and Cities. Cairo, Egypt, 13-15 February 2001. Available at: http://www.oicc.org/seminar/papers/43-GRefaat/43-GRefaat-formated.htm, last access: 10 August 2005.

13.   Zohry, A. and **El Said**, G., R. (2000). Arab Demographers' Use of Computer and Internet Resources: Results of an Internet-Based Survey. *Egypt Population Research Centre: EGYPOP Technical Papers Series, No. 1.* Cairo, Egypt, November 2000. Available at: http://www.angelfire.com/in/egypop/tp01.pdf, last access: 10 August 2005.

ABSTRACT

The ubiquitous nature of e-commerce demands an innovative conceptualization of consumer behaviour that responds to various cultural preferences. Culture has been identified as an underlying determinant of consumer behaviour, and this extends to e-commerce. This research investigates this phenomenon for the Egyptian consumer.

This research designed a plausible, integrated framework for investigating the target phenomenon, especially for un-explored cultures. To help to identify salient components of the phenomenon, a three-study exploratory phase, that included: interviews, a survey, and card sorting sessions, was undertaken. The exploratory results highlighted the roles of *trust*, *uncertainty avoidance*, *Internet store familiarity*, and *reputation* as the main salient factors affecting the perception of the targeted group toward e-commerce. The research hypotheses were then developed based on the exploratory results. Finally, a model testing phase to empirically assess the research hypotheses through a laboratory experiential survey with 370 Egyptian Internet users was undertaken.

The experiential survey results support the significant role of the Internet store's perceived *familiarity* and *reputation* as the main antecedents of online *trust*. The relationship between trust and its two antecedents are found to be culturally sensitive; the high uncertainty avoidance of the consumer is found to be associated with a stronger effect of the store's reputation on trust, and a stronger effect of store's familiarity on trust. The research also highlights the significant effect of *trust* on the attitude towards and the willingness to buy from an e-commerce site.

This research, by providing an understanding of the cultural drivers of e-commerce, contributes to building a theory of consumer's cultural trust within an Internet store context. The research reports on the development of an integrated cultural trust model that highlights recommendations for expanding the adoption of e-commerce. The systematic research framework, introduced by this research, can be a robust starting point for further related work in this area.

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CHAPTER 1

INTRODUCTION

"We can no longer think in terms of imposing a "universal" product; culture has won this battle. A key question is how can we develop products for multiple and non-familiar cultures."

(De Souza and Dejean, *Cultural Influence on Design*, 2000)

1.1 Research Background and Motivation

Sociologists have pointed to the current era as manifested by a struggle between global networks and local identities (Castells, 2003; Barber, 1995). The universal stream of media, market and business imposed on our lives has given rise to globalization on one hand, strengthened people's attachment to their local identities on the other hand, and produced defending reactions as people attempt to preserve their dialects and culture from a globalized control (Warschauer, El Said and Zohry, 2002). Therefore, studies that facilitate the exchange of data between cultures and support international trade are crucial for communication and prosperity among cultures.

The information and communication technology evolution and its application such as electronic commerce (e-commerce), provides new development opportunities for many developing countries, and promises to homogenize the world's economies unconstrained with time or distance barriers. It also raises crucial questions concerning the perception and preferences of customers from different cultures. As companies seek to expand globally, there is augmented pressure to provide appropriate products and services for increasingly diverse users. While the issues of

the cross-cultural use of technology have existed for many years, it has been e-commerce that has brought the issue into sharp focus. Economic and market globalization, pushed along by this rapid diffusion of the Internet, creates a strong demand for understanding different cultures (Warschauer et al, 2002).

Cultural diversity makes it unrealistic for designers to rely on intuition or personal experience, therefore, a number of researchers from different disciplines have pointed the need to investigate cultural issues in e-commerce interface design. Most of these researchers argue that the development of e-commerce interfaces which target users from different cultures presents interface designers with new dilemmas and trade-offs. The following represents the opinion of some of the human computer interaction and psychology researchers in that context:

> "It is well understood that people from different cultures perceive and understand things differently, and this extends to the domain of human computer interaction."
> (Dunckley and Jheita, 2004: p. 91)

> "There is a clear need for more cross-cultural research into the understanding and perception of interfaces. This cultural awareness should be fuelled by the desire to offer equal opportunities in technological development for all people." (Evers, 1999: p. 153)

> "After several faux pas and reprehensible failures on the transfer of technologies, which were not assimilated and incompatible for cultures different from the original ones, we begin to have a greater conscience of the fact that societies are culturally specific. Manufactured products are representatives of their cultures, as much as being their carriers …We can no longer think in terms of imposing a "universal" product; culture has won this battle. The current approach is to develop products in a way to allow them to evolve, harmonising with the cultural particularities of the users in the target societies. The key question that everybody is attempting to answer is: How can we develop products for multiple and non-familiar cultures?" (De Souza and Dejean, 2000: p. 69)

This thesis investigates cultural issues in consumer behaviour within e-commerce. The thesis is looking at the phenomenon under investigation from various angles, such as cultural differences, consumer perceptions, and human behaviour. Therefore, the research context comprises, as illustrated in **figure 1.1**, three main

disciplines, Culture, Human Computer Interaction, and Electronic Consumer Behaviour. The following section highlights these three research dimensions as bordering the research context, while a detailed literature review of the three disciplines is provided in chapter 2 of this thesis.

Figure 1.1: Research Context
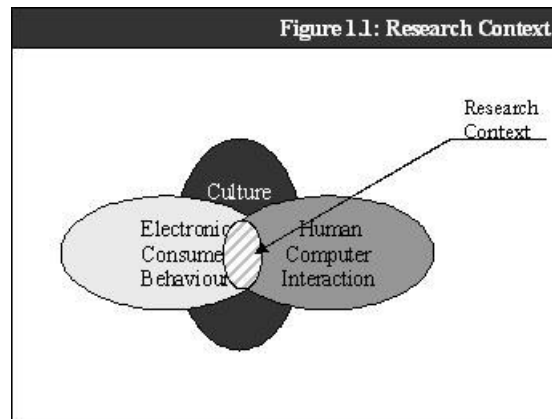
1.1.1 Culture

Culture is used to name a group of individuals sharing a similar way of thinking, feeling or behaving (Thomas, 1997). There are a number of existing models, which aim to broadly classify different cultures according to particular variables. Hofstede's (1991) cultural model is the one considered in this thesis as it serves as the most influential model among social science research (Pavlou and Chai, 2002). Furthermore, much of the existing literature concerned with cultural issues in the Information Systems (IS) field relied on Hofstede's variables (Myers and Tan, 2002). Hofstede identifies five cultural variables, which are *Power Distance*, reflecting attitudes to authority and power, *Collectivism versus Individualism*, reflecting attitudes to group membership, *Femininity versus Masculinity*, reflecting the values placed upon work goals by women and men, *Long-term versus Short-term* orientation, reflecting concerns about the present, past and the future and

Uncertainty Avoidance, reflecting the degree to which individuals felt threatened by the unknown.

There have been several attempts to use the Hofstede's cultural variables to interpret the attitude towards technology for users from various cultures (Gillham, 2004). *Power Distance*, *Collectivism-Individualism* and *Uncertainty Avoidance*, in particular, are argued to have potential implications in the adoption of information and communication technologies for some cultures (Kortemann, 2005; Loch, Straub and Kamel, 2003). While there is some evidence of cultural differences in the e-commerce adoption, it is still unclear whether these can be related to established cultural variables (Shoib and Jones, 2003). Additionally, there is shortage in literature investigating e-commerce adoption for some unexplored cultures.

This research investigates how Hofstede's (1991) cultural variables affect the e-commerce consumer behaviour in the context of the Egyptian culture. As an example of an Arab country, Egypt represents a cultural group that have not been sufficiently investigated by previous studies of consumer behaviour in e-commerce.

1.1.2 Human Computer Interaction (HCI)

The main goal of Human Computer Interaction (HCI) is generally to make tasks easier, more effective, more satisfying to perform, and safer (Norman, 1998). In a global market place, such as the Internet, target users for a given product will come from increasingly diverse cultural backgrounds. The interaction of consumers from various cultures with the Internet interfaces inspired the review and re-evaluation of HCI principles and guidelines.

Early research on cultural determinants in the field of human computer interaction focused on *visible* manifestations of culture such as colours, symbols and layout (Barber and Badre, 2001; Del Galdo, 1996). More recent research started to investigate how users from different cultures differ in their perception of the purpose of the Internet, and consequently exhibit differences in their online behaviour and general attitudes (Dunckley and Jheita, 2004; Kumar, 2004). While some researchers have recently sought to use cultural models to interpret how users from

different cultures interact with the Internet (Marcus, Baumgartner and Chen, 2003), there are not yet sufficient evidence that cultural models can be directly used to inform web sites design (Gillham, 2004).

This research investigates salient e-commerce features that shape the perception of the Egyptian consumers. The research is aiming to interpret this perception by linking these features with the Hofstede's (1991) cultural variables.

1.1.3 Electronic Consumer Behaviour

The main goal of consumer behaviour research is to understand how consumers make product choices and purchase decisions. There is a general consensus within marketing theorists to accept culture as one of the underlying determinants of purchase decision (Robertson, 1970; Howard, 1994). Consequently, ignoring culturally specific needs and preference has led many products to limited success or even failure (Head, 2004; Siala, O'Keefe and Hone, 2004). While the conventional commerce literature holds sufficient evidence to support the effect of culture on purchase decisions, less empirical evidence is currently available to support this phenomenon in the e-commerce context (Miles, Howes, and Davies, 2000).

In the e-commerce context, the consumer's willingness to buy is often used as a useful surrogate dependent measure when assessing e-commerce site effectiveness (Jarvenpaa et al, 1999). There is now a growing body of research linking various web design features with intention to buy.

This research is looking to design a hypothetical consumer behaviour model that links e-commerce features with consumer's intention to buy; it aims to empirically assess the significance of the effect of culture on the suggested model.

1.2 Research Aim and Objectives

The main aim of this thesis is:

> *To investigate how a consumer's culture affects online behaviour. The ultimate aim is to contribute to the understanding of the e-commerce drivers for cultural groups that have not been sufficiently explored by previous studies and to contribute to building a theory of consumer's cultural trust within an Internet store context.*

The research objectives are listed as follows:

☐ Design an appropriate research framework to study the effect of culture on electronic consumer behaviour, making an informed decision about the appropriate research methods and analytical tools adapted.

☐ Undertake exploratory studies within the suggested framework to hypothesize a model that relates salient e-commerce features to consumer behaviour and purchase decisions, while linking these features with the consumer cultural characteristics.

☐ Empirically assess the significance of the effect of culture on the hypothesized model.

☐ Describe implications that emerge from the research for future e-commerce design and for building a theory for cultural e-commerce consumer behaviour.

1.3 Research Scope

This research aims to explore how culture affects consumer behaviour and purchase decision in an e-commerce context. The research investigates the most salient factors that shape the perception and use of e-commerce in the context of the Egyptian culture. The research starts with exploratory studies which led to a

narrowing of the research focus to concentrate on the issues of online trust and uncertainty avoidance cultural variable.

The scope of this research is constrained to study one particular aspect of culture which is national identity. Participants from a single country, Egypt, were employed in all the thesis studies. Another approach for studying the effect of culture on consumer behaviour would be to include participants from various countries known to be of different cultural characteristics. This thesis does not involve itself in providing a means of comparison between countries in terms of e-consumers attitude. The thesis advocates considering the preferences of consumers from cultures that had not been sufficiently investigated by researchers, such as the Egyptian culture.

The scope of this research is also limited by applying already established models of culure, namely Hofstede's (1991) cultural model, rather than seeking an understanding of the concept of culture from scratch. Hofstede's model treats the concept of culture as measurable variable through the use of scores. The model compares the similarities and differences of cultures and sub-cultures by using cultural variables and indices.

1.4 Introduction to Previous Cultural E-Commerce Studies Limitations

Most of the early research in the area of e-commerce emphasised the technological infrastructure and problems surrounding e-commerce. Little effort has been made at that time to analyze the consumer's preference and perception when interacting with Internet stores. Recently, research has begun to address user attitudes towards, and behaviour with, e-commerce sites in a few alternatives cultural settings (e.g. Dunckley and Jheita, 2004; Kumar, 2004; Siala et al, 2004). However, the results of these previous studies present some inconsistency of results regionally. There is still little empirical evidence for how the consideration of cultural variables could improve the interface design. While conventional commerce literature holds sufficient empirical evidence to support the theory that culture can determine

specific consumer behaviour, less empirical evidence is currently available to support this phenomenon in the e-commerce context, where more data and more theory are needed.

In some of the previous work that investigated the effect of culture on information technology adoption, the role of Uncertainty Avoidance (UA) had been highlighted as having a significant effect on the acceptance and attitude of high UA users towards technology (Shoib and Jones, 2003). It could be argued that this effect could be more significant in the case of e-commerce technology. Engaging in e-commerce can be seen as an example of an activity with an uncertain outcome (Einwiller and Will, 2001). While e-commerce is a suitable venue for testing how the level of consumer's UA affects online behaviour, little research has looked into this phenomenon in a cultural context known to be of high UA.

The highest majority of previous studies in this area tend to consider only US, European or even Far Eastern users. Most of these research studies focused on non-western versus western cultures; they rarely considered cultures that have been newly introduced to the Internet, such as the Arabic-Speaker's culture. Meanwhile, the applicability of the findings in other un-explored cultures is unknown as a theory that affects one culture does not necessary affect other cultures (Igbaria and Zviran, 1996). While there is some evidence of cultural differences in the e-commerce adoption in the Arab countries, it is unclear whether these can be related to established cultural variables characterising this culture (such as uncertainty avoidance). It is also unclear to what degree this impacts online consumer behaviour for this target culture. While this section provides an introduction to limitation of previous cultural e-commerce studies, a detailed discussion of gaps in the field is presented in section 2.8 of chapter 2 of this thesis.

1.5 Introduction to Research Framework

Investigating cultural issues in e-commerce is extremely challenging since usually multiple perspectives and interpretations must be taken into account. To date, cultural study approaches, especially for un-explored cultures, are still facing lots of challenges where more exploratory processes are needed (Tan and Hunter, 2001).

Giddens (1984) suggests three levels of understanding for complex social phenomena; first, an exploration of the phenomenon is aimed through the elicitation of the perception of human participants' understanding. Here, an exploratory approach is used for investigating the main components of the phenomenon. Second, the main constructs of the phenomenon are generated based on the interpretation of the participants' understanding, thus leading to generate research hypotheses; and third, a formal testing of the research hypotheses is conducted by applying empirical assessment for verifying or disconfirming the hypothetical model. This framework seems initially plausible for investigating a complex area such as cultural issues in e-commerce since there are not yet sufficient findings linking e-commerce behaviours to cultural variables, especially for the culture considered in this research.

Gidden's levels of understanding were reflected in the research framework as two main research phases, the *exploratory phase* and *the model testing phase,* as shown in **figure 1.2**. First, the *exploratory phase* starts with an *investigation process,* in which an overall understanding of the phenomenon is acquired through literature review and exploratory studies. Based on the exploratory findings, research constructs are identified, hypotheses are spelled out and the hypothetical model is designed within a *model designing process*. Second, a *model testing phase* that includes a *testing process* in which empirical testing of the research hypotheses is conducted. What follows is an *analysis process* where statistical analysis of the data is conducted, and research hypotheses are verified.

This research develops a methodological framework for understanding the e-commerce perception within a cultural context. The research aims to suggest such a framework for similar studies considering users from other cultures. While figure 1.2 illustrates a summary of the research framework, a full version of the framework with detailed methodological process and data collection and analysis techniques used in each process is illustrated in figure 3.1 of chapter 3 of this thesis. Section 3.6 of the same chapter discusses and justifies the design of each phase of the research framework.

Figure 1.2: An Introduction to Research Framework
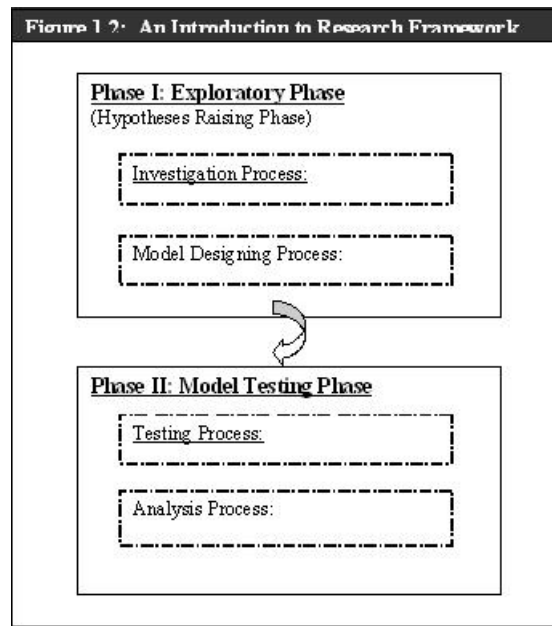
1.6 Thesis Outline

The thesis is structured around seven chapters; the flow of the chapters is organized according to the research framework.

Chapter One: *Introduction* gives an overview of the motivation for this research, as well as the research aims and objectives. **Chapter Two: *Literature Review*** provides a multidisciplinary analytical review of theories and approaches in the three research areas where this research is based: culture, HCI and electronic consumer behaviour. Additionally, research studies related to the effect of culture on user's interaction and trust towards e-commerce are analysed in order to differentiate this research from similar studies. The chapter highlights gaps in the field relating to the scope of this research.

Chapter Three: *Research Methodology* elaborates on the ontological and epistemological assumptions that this research is based on. Detailed presentation of the research framework followed is given. The chapter discusses and justifies the research philosophy and data gathering techniques chosen at various research stages. Important notions in the research such as the cultural study approach, the sampling technique and triangulation are also discussed in this chapter.

Chapter Four: *Exploratory Phase* argues the literature and methodological needs for an exploratory phase and discusses the findings of the three exploratory studies of this research (semi-structured interviews, e-survey and card sorting sessions). The chapter discusses the exploratory findings in line with the literature review, leading to identification of the research constructs, generation of the research hypotheses and design the research hypothetical model.

Chapter Five: *Model Testing Phase, the empirical setting* elaborates on the model testing phase, where it discusses the conceptualisation, operationalisation, and measurement scale of the research constructs. All measurements of constructs in this research are drawn from well known literature. The selection of web sites, participants, tasks, the experiential survey design and procedures as well as piloting phase, are also discussed in the chapter.

Chapter Six: *Model Testing Phase, data analysis and results* provides an in-depth analysis of the empirical assessment of the research model. The chapter discusses, using Structural Equation Modelling (SEM), the validity and reliability of the measures and presents the statistical analysis of each hypothesis of the research model. The chapter then discusses the results in terms of interpretation of each hypothesis, linking findings with previous work in the field. The chapter ends with an overall conclusion of results and findings.

Chapter Seven: *Findings and Further Research* offers an overview of the main findings of this research and the contribution of this thesis to knowledge. The limitations of the research are also discussed as well as possibilities for further research. For ease of reference, the structure of this thesis is summarised in **table 1.1.**

Table 1.1: Thesis Outline		
Chapter	Research Phase	Role in the Thesis
Chapter 1	**Exploratory Phase**	▪ Explore the need for research ▪ Set research aims, objectives and context ▪ Set research scope and structure
Chapter 2		▪ Conduct a multidisciplinary literature review ▪ Discuss inconsistency in literature ▪ Discuss limitations and gaps in literature
Chapter 3		▪ Set research's theoretical foundation ▪ Select research's philosophy and data gathering techniques ▪ Discuss the overall research framework
Chapter 4		▪ Conduct exploratory studies ▪ Discuss exploratory research findings in line with relevant literature ▪ Identify research constructs and hypotheses ▪ Design research hypothetical model
Chapter 5	**Model Testing Phase**	▪ Identify conceptualisation and operationalisation of research constructs ▪ Design of the assessment instrument and sample
Chapter 6		▪ Assess the validity and reliability of instrument ▪ Assess the research hypotheses and verify the research model
Chapter 7		▪ Discuss research findings and implications ▪ Highlight research contributions ▪ Discuss limitations and future work

CHAPTER 2

LITERATURE REVIEW: CULTURE, HCI, ELECTRONIC CONSUMER BEHAVIOUR

"If no use is made of the labours of past ages, the world must remain always in the infancy of knowledge."

(Cicero, *De Orator II*)

2.1 Overview

Electronic commerce, while providing new development opportunities for many countries, organizations and individuals, also raises crucial questions concerning the perception and preferences of customers from different cultures. A number of areas related to culture's effect on e-commerce have been neglected in the literature. Based on the limitation of previous cultural e-commerce studies introduced in chapter 1, this chapter offers an analytical overview of the existing literature in the three research areas where this research is based, culture, Human Computer Interaction (HCI) and electronic consumer behaviour. The chapter aims to position this research in relation to existing work, and to provide the background theory for models and approaches that will be used in carrying out the research presented at the later chapters of this thesis.

The literature review in this chapter covers the established theories in the areas of culture and conventional commerce consumer behaviour, along with current research in Internet consumer behaviour. Moreover, HCI served as an important theoretical tool as far as Internet design principles for users with cultural diversity are concerned. Furthermore, conventional commerce trust theories and consumer behaviour research initiatives served as an important research background.

First, the chapter will start by providing an overview of cultural models and cultural variables, which are measures to compare similarities and differences between cultures. Then the chapter will provide an overview of the HCI design approaches dealing with users' cultural diversity. Then, it will review the literature discussing consumer behaviour theories. The focus of the literature review about consumer behaviour will entail a discussion about the psychological, behavioural and cultural factors involved in a buyer's purchase decisions. Finally, the chapter will highlight the importance of trust and relevant trust theories in both conventional and electronic commerce. Focus will be given on previous work on cultural effect on e-commerce trust as the main phenomena investigated in this research. During this review of literature, the role of cultural variables in building online trust will be highlighted.

There are two reasons why we will review the literature of topics in this sequence. The first reason is to explore the different sources that are responsible for evoking trust; the second motive is to understand how culture influences the consumer's behaviour and trust toward a vendor or product in the context of e-commerce. **Figure 2.1** displays the sequence of the topics which will be reviewed in this chapter.

During this literature review, the chapter will identify shortage in literature considering behaviour of consumers from cultures that are newly introduced to the Internet, such as the Egyptian culture. The chapter will discuss the Egyptian Internet users' profile and will end with a comprehensive identification of some research gaps that exist in the field and that this thesis is aiming to bridge.

Figure 2.1: The Sequence of Topics Discussed in the Literature Review

HCI

Design Approaches dealing with users' cultural diversity

↓

Cultural Research in HCI

Culture

Culture Models

↓

Cultural Variables

↓

Hofstede's Model Evaluation

Consumer Behaviour

Consumer Behaviour Theories

↓

Consumer Behaviour Studies

Conventional Commerce

E-commerce

↓

Importance of

⇩

Culture, HCI & Consumer Behaviour

Cultural and HCI issues in Consumer

Conventional Commerce

E-commerce

↓

Cultural Studies on Online Trust

Trust Antecedents

Trust Outcomes

2.2 Culture

Culture is one of the most difficult and complex terms (Williams, 1985). This section will not attempt to produce an ultimate definition for culture, but rather, a way to understand and analyse the concept of culture as it is used in the current research. Traditionally, the topic of culture had been addressed by anthropologists to describe a group of people who have common aspects of life. There are various definitions for culture; some of them are discussed below.

For Hall (1973), culture stands for the way of life of groups of people, for the sum of their learned behaviour patterns, attitudes and material things. This broad definition of culture suggests that people from the same culture form a frame of reference and understanding of each other; based on the way they were brought up.

According to Thomas (1997), culture is an orientation system that is universal but highly typical of a society, organization or group. This orientation system comprises specific symbols that are handed down from generation to generation within the society, organization or group. It influences the perception, thoughts and actions of all the members and therefore defines their affiliation.

For Hofstede (1991), culture is described as the *software of the mind* which distinguishes the member of one group or category of people from another. He emphasized that culture is learned, not inherited, where people acquire patterns of thinking, feeling and potential action which remain intact until the later stages of their lives. He argues that culture is not genetically contingent, but that it is affected by the social milieu where people are interacting. Hofstede (1991) extends his definition of culture as a distinctive "Collective programming of the mind, which distinguishes the members of one group or category of people from another." (p. 5).

A similar interpretation of culture is also given by Del Galdo (1996), where she sees culture as a learned behaviour of a group or society, induced by their immediate environment and surroundings, the history and traditions they have grown accustomed to and their social rules and communication practices. For her, culture is used to name a group of people identified with a specific set of factors; this

encompasses individuals who share a similar system of values, history, symbols and/or language.

While Hofstede (1991) argues that within the same culture, people unavoidably carry several *layers of mental programming*, such as gender, age group, education, profession, language, and religion; Del Galdo (1996) argues that these demographics groups represent sub-cultures that exist across larger ones, such as "African Americans Politicians" or "Females Teenagers". On the other side, Bourges-Waldegg (2000), who sees culture as a system of social factors such as values, traditions, religion, language, conventions, and social behaviour, also suggests that sometimes it could be difficult to specify the bounds of a particular culture in these terms as many of these cultural attributes are not unique and cultural boundaries are not generally neat.

The above definitions of the term culture refer to a set of common rules according to which a group of people behaves. Most of these definitions suggest that culture has an impact on human behaviour; this can be applied to large societies as well as groups of people within the same country. For the use of this research, these definitions allow the speculation that, within a society, consumers' culture impacts their behaviour and preferences. This speculation is supported by Hofstede (1991) who suggests that people from the same culture think the same way because they share the same learning process. Additionally, Krober and Parsons (1958) argue that culture creates patterns of values and ideas that shape the human behaviour. For them, culture has a direct and significant impact of human behaviour. This interpretation of the nature of culture allows the speculation that culture impacts consumer behaviour and preferences, perhaps also in e-commerce. Additionally, it supports the notion that trust, and perhaps online trust, may be culturally defined, as consumers in different cultures might have differing expectations of what makes a web merchant trustworthy (Jarvenpaa, Tractinsky, Saarinen and Vitale, 1999). This research aims to provide an understanding on how culture might affect electronic consumer behaviour through its effect on trust.

2.2.1 Cultural Models

A cultural model compares the similarities and differences of two or more cultures or sub-cultures by using cultural variables, which are categories that organise cultural data (Hoft, 1996). Some leading cultural anthropologists have developed their models of culture as a result of questionnaires, surveys, extensive interviews, focus groups, and years of experience and observations. Each cultural model uses its own scope and variable to identify culture characteristics. The following section will discuss three of these models, which are mostly cited in cultural studies.

2.2.1.1 Hofstede's Cultural Model

Geert Hofstede (1991) built his cultural model based on a multinational survey that dealt mainly with the employees' personal values related to work. The survey included 100 items and covered 116,000 IBM employees distributed through 72 countries, with 38 occupations, using 20 languages, and at two points in time: around 1968 and around 1972. According to Hofstede (1991), the participants of his survey, working in the local subsidiaries of the large multinational corporation from one country to another, represent matched samples as they are similar in all respects expects nationality. Hofstede argues that this makes the effect of nationality differences in their answers stand out unusually clearly.

Based on the results of his survey, Hofstede (1991) highlighted cultural differences across nations based on the following aspects: the degree of integration of individuals within groups, the differences in the social roles of women versus men, the ways of dealing with inequality, and the degree of tolerance for the unknown. He classified these differences to five cultural variables, or *cultural dimensions*; these were *Power Distance*, reflecting attitudes to authority and power, *Collectivism versus Individualism*, reflecting attitudes to group membership, *Femininity versus Masculinity*, reflecting the values placed upon work goals by women and men, *Uncertainty Avoidance*, reflecting the degree to which individuals felt threatened by the unknown and *Long-Term versus Short-Term* orientation, reflecting concerns about the present, the past, and the future.

These five cultural variables together form the Hofstede's model of differences among national cultures. Each country in this model is characterized by a score on each of the dimensions. For example, based on the *Power Distance* variable, the model suggests that Latin American countries, Asia and France for example, tends to own *high-power-distance*, where it is expected and accepted that power is unequally distributed, Unlike the United States and Great Britain, having *low-power-distance.* In these countries, subordinates are more likely to challenge bosses. In *Individualistic* cultures such as The United States and Germany, for example, people are expected to look out for themselves, and there is little social cohesion. While in *Collectivist* cultures, such as Japan and Mexico, people provide unquestioning loyalty to the group. Considering the *Uncertainly Avoidance* cultural variable, according to the Hofstede's model, the Egyptian culture for example, was found to be of strong uncertainly avoidance, where uncertainty is a continuous threat that must be fought. On the other hand, the culture in Great Britain was found of weak uncertainly avoidance, where uncertainty is a normal feature of life.

2.2.1.2 Trompenaars' Cultural Model

Fons Trompenaars (1993) conceptualised his cultural model using a three layer *Onion* Model. This three layer model consists of a *Core*, representing the implicit and unspoken assumptions that underlie the way people cope with their environment; a *Middle Layer*, which encompasses the norms and values which determine whether things are good or bad or right or wrong, and an *Outer Layer* contains all the aspects of life, such as language, dress and rituals. As reported in Hoft (1996), Trompenaars has quantified his model with data from an extensive multinational survey. This survey posed 16 questions across 30 companies and 50 countries. The respondents were 15,000 managers. The model defines culture as the way in which a group of people solves problems. One of the main variables of culture in this model is *Universalism* versus *Particularism*. *Universalists* are rule-based, defining morality and ethics. In a serious situation involving another person, *Universalists,* British for example, tend to apply these rules regardless of their relationship. While, *Particularists* are relationship-based, where in serious situation, *Particularists,* Japanese for example, base their solution to the problem on the

relationship that they have with the other person. Another main variable is *Specific* versus *Diffuse*, *Universalists* were found as *Specific Value* orientation, where public and private lives are separated; while *Particularists* were found in *Diffuse* cultures, where there is very little differentiation between a public and private life. *Achievement* versus *Ascription* is another variable in Trompenaars' model, relating to the derivation of personal status, whether it is from background or achievement. According to Hoft (1996), this last variable could associate the perception of quality for some consumers with some ascriptive perceptions such as reputation and brand name.

2.2.1.3 Hall's Cultural Model

For Edward Hall (1973), culture is a program of behaviour. In order to study how people from different countries tend to respond to various situations, he used *Context*, *Space* and *Time* as studying variables. Hall connected context with the space variable, as in *Low-Context* cultures. He argues that in Germany for example, a loud conversation is perceived as infringing on another's private space. On the other hand, in *High-Context* cultures, Italy for example, loud conversations are not perceived as infringing on invisible boundaries. In a later work (cited in Hoft, 1996) Hall (1977) connected context to the time variable. According to his model, high context culture, Middle-East people for example, are more comfortable with *Polychronic* time. Where unrelated activities are normally conducted simultaneously and interruptions are accepted. While low-context cultures, such as Europe, are more comfortable with *Monochronic* time, where a single activity is conducted at a time and interruptions are not accepted. Furthermore, Hall's cultural model states that in high-context cultures which value relationships and information more than schedules, the information flow tends to be very fast and free, while in low-context cultures, where everything tends to follow procedures, the information flow tends to be slow (Hoft, 1996).

2.2.2 Cultural Variables

Cultural models consist of various variables by which groups of people can be classified. Models compare the similarities and differences between cultures using variables to organise cultural data. These cultural variables measure the degree of belonging to a certain culture or sub-culture (Hoft, 1996), they are categories, under which cultural data could be classified.

For Hoft (1996), cultural variables, also called *International Variables,* can focus on *Objectives*, easy-to-research cultural differences like differences in the way that format the time of day, dates and numbers; also identified by Nakakoji (1994) as *Surface-Level* variable. However, these variables can also focus on *Subjective* information like the value and behavioural systems of one or more cultural groups; also identified by Nakakoji (1994) as *Unpredictable-Level* variable. **Table 2.1** sums up some of the subjective cultural variables as described by the three cultural models discussed in the previous section, while other cultural variables, suggested by other anthropologists, are listed in Appendix A.

Table 2.1: Cultural Variables		
Cultural Variable	**Researcher**	**Interpretation**
Power Distance (high vs. low power distance)	Hofstede	The extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally. High Power Distance Low Power Distance - centralized power - decentralized power - tall hierarchies - flat hierarchies - superior/subordinates unequal - equal
Uncertainty Avoidance (high vs. low uncertainty avoidance)	Hofstede	The extent to which the members of a culture feel threatened by uncertain or unknown situations. High Uncertainty Avoidance Low Uncertainty Avoidance - emotions to be shown - emotions not to be shown - expressive people - quiet/ controlled people -what is different is dangerous - what is different is curious
Individualism vs. collectivism	Hofstede	The extent to which individuals are integrated within groups. Individualism Collectivism - right to privacy - group invade private life - individual decisions - group decisions - laws and rights same for all - laws and rights per group - everyone looks after himself - group protect individuals

Table 2.1: Cultural Variables (Cont.)		
Cultural Variable	**Researcher**	**Interpretation**
Masculinity vs. Femininity	Hofstede	The extent to which roles of women versus men are different in the society. Masculinity / Femininity - focus on work goals / - focus on personal goals - assertiveness/ competitive / - modesty - concern for material success / - concern for quality of life
Confucian Dynamism (long-term vs. short-term)	Hofstede	The extent to which long-term and short-terms gratification of needs is traded-off. Short Term / Long Term - traditions respected / - traditions modernized - unlimited social obligations / - limited social obligations - quick results expected / - persistence for slow results - concern with 'face' / - concern with purpose
Universalism vs. Particularism	Trompenaars	The extent to which, in a problem, people base their solution on rules versus relationship with others. Particularist / Universalist - relationship based / - rule based - break rules if necessary / - strictly apply rules
Specific vs. Diffuse	Trompenaars	The extent to which public and private life and public and private personal spaces are separated. Diffuse / Specific -public/ private life diffused / - public/ private life separated -personal nature for business / - business/ friendship separate - sympathy reactions / - judgementally reactions
Achievement vs. Ascription	Trompenaars	The extent to which achieving versus being values are stressed. Being culture / Doing culture - emphasis social relations / - emphasis accomplishments - emotional oriented / - activity oriented - words for social effect / - words match actions
Low-context vs. High-context	Hall	The extent to which meaning is found in the context versus in the code. High Context / Low Context - meaning in context / - meaning in message - implicit / - explicit - direct and obvious / - indirect and non-obvious
Time Perception (Polychronic vs. Monochronic time perception)	Hall	The extent to which time variable is perceived. Polychronic / Monochronic - many things at once / - one thing at a time - simultaneous/ concurrent / - sequential/ linear - interruption accepted / - interruption refused - time duty objective / - time duty critical - committed human relations / - committed to the job - change plans easily / - strict to plans - life time relationship / - short term relationship

2.2.3 Cultural Variables and the Arab Culture

Few anthropologists have considered the Arab culture while building their cultural models. The following is the profile used by researchers to describe the Arab culture using cultural variables:

Hall (1973) characterized the Middle Eastern culture as *Polychronic* referring to a cultural preference for carrying out several tasks simultaneously. In business this might appear in a tolerance for interruptions during a business meeting. Hall (1973) also identified the Arab culture as a *High Context* culture. In such a culture, context supplies a considerable portion of meaning and information is implicitly stated. If however, the context is lost, further information must be supplied to restore the meaning. Trompenaars's (1993) findings showed that the Arab is a highly *Ascriptive* culture, where one's background, connections and education, rather than actual achievements and actions accrue respect and status. For Zaharna (1995), the Arab culture is *Oral* dominant and relies more on the emotional resonance and symbolism rather than the factual accuracy and the analytical content of a message.

Hofstede (1991) is one of the few anthropologists who specifically considered the Egyptian culture. In his study, he included seven Arab countries, Egypt, Iraq, Kuwait, Lebanon, Libya, Saudi Arabia, and United Arab Emirates. According to his cultural dimensions, Egyptians manifest a high position of *Uncertainty Avoidance*, explaining their tendency to view unknown situations as threatening. On the other hand, Hofstede suggested that Arab culture in general, manifest an extreme score of *Power Distance*; this emerges as an authoritarian and autocratic relationship.

It could be guessed that the Hofstede's model seems initially plausible for describing and classifying sub-cultural groups within the current research context. The following section discusses the criticisms and arguments about the Hofstede's model as one of the cultural study approaches suggested to be used in the current research context.

2.2.4 Hofstede's Model Evaluation

A number of criticisms were addressed to Hofstede's (1991) model, especially when applied in the Information Systems (IS) field. Walsham (2002) criticized Hofstede's work *as rather crude and simplistic* (p. 373). He claimed that Hofstede's model sees culture as a static phenomenon, while the nature of culture is reflexivity and change. Walsham also claimed that Hofstede describes aggregate differences between cultures but provides no link to cross-culture contradiction and conflicts. Furthermore, he discussed that Hofstede's cultural variables are not easily translated into effect on work patterns.

While Hofstede admits that profound cultural differences based on region or social stratum may emerge within a single nationality, still most of the criticisms of his work focus on his implicit assumption of the homogeneity of national culture (Walsham, 2002; Myers and Tan; 2002). These critics stress on the heterogeneous nature of culture, and claim that there is much evidence against treating the concept of national culture through the use of scores on particular variables (Walsham, 2002; Korpela, 1996). Hoft (1996) criticized the questionnaire design in Hofstede survey, claiming that the questions reflected *Western* values and hence some responses to the survey did not fit into the original international variables. For Hoft, items should be developed and tested by human factors specialists from around the world to *eliminate cultural bias in the questions* (p. 60). Hofstede recognized that his study was developed from a Western perspective and the underlying philosophy was *to try to find out if they were like us*.

On the statistical level, Spector and Cooper (2002) criticized the Hofstede's scales for their poor internal consistency reliability; for them, this may lead to the conclusion that the scales do not assess a single homogeneous construct and that it should be used with caution. As a reply to this criticism, Hofstede (2002) admit that his scales might produce low reliability scores at the individual level, simply because the scales were designed for comparing country level data. For him, the reliability of an instrument designed for comparing country means can only and should only be tested across countries; *one should not expect that applying a*

reliability formula like Cronbach Alpha across individuals provides information about reliability across countries (Hofstede, 2002: p. 171).

On the other hand, Hofstede's (1991) cultural variables serve as the most influential culture theory among social science research (Nokata and Sivakumar, 2001; Pavlou and Chai, 2002). In addition, they are often chosen because they are the most widely cited and used in the cultural literature (Myers and Tan, 2002). Hofstede's cultural framework has also received strong empirical support; the replication studies of his work (1968 and 1972) over a period of time have largely confirmed his results (Sondergaard, 1994). Furthermore, Myers and Tan (2002) noted that much of the literature concerned with cultural issues in the IS field has relied on Hofstede's work. They analysed 36 studies from the cultural IS literature, and noted that 24 of these used some or all of Hofstede's cultural variables. The 2001 edition of Hofstede's book, *Culture's Consequences,* describes and analyses a large number of published cross-national studies (up till the late 1990s) in a variety of disciplines for which the results were significantly and meaningfully correlated with scores on his cultural variables. Most of this research reported Hofstede's variables to be reliable and valid.

2.3 Human Computer Interaction and Culture

Human Computer Interaction (HCI) is the study of how people use computer systems to perform certain tasks. The goals of HCI are generally to make tasks easier, more effective, more satisfying to perform and safer (Norman, 1998). There is now little doubt that culture affects how people interact with computers (De Souza and Dejean, 2000; Ess and Sudweeks, 2000; Dunckley and Jheita, 2004). Designers need to consider whether interfaces designed in, and for, one culture, will work for other cultural groups; therefore, the interest for the field of cultural issues in interface design has witnessed a steady increase during the last years.

Early research on cultural determinants in the field of HCI focused on *visible* manifestations of culture such as symbols and layout (Del Galdo, 1990; Barber, 1995). These initial research studies address problems ranging from date, time,

currency and language formats (Nielsen, 1993; Del Galdo, 1996) to the use of colour, icons and metaphor (Duncker, 2000; Nielsen, 2000). During the 1990s, several guidelines were produced for local conventions such as format convention for date, time, numbers, currency, units of measure, as well as layout convention for addresses and telephone numbers (Nielsen, 1990; Del Galdo, 1996; Dunckley, Hall and Smith 1999).

Later research investigated less visible concepts of culture, targeting interface elements that are intangible and culture sensitive such as icons, metaphors, functionality and perceived usefulness (Abdelnour-Nocera and Dunckley, 2005; Duncker, 2000; Evers, 2000). Most of this work illustrates how users from different countries differ in their perception and preferences, and consequently exhibit differences in their user behaviour and general attitudes toward the interface (Kralisch and Bettina, 2004; Yeo and Loo, 2004). More recently HCI professionals have sought to use predictive cultural models, mainly Hofstede's (1991) model, in design decisions and in the interpretation of results from user evaluation (De la Cruz, Mandl and Womser-Hacker, 2005; Dunckley and Jheita, 2004; Marcus, Baumgartner and Chen, 2003).

While, there are currently some available guidelines for designing interfaces for intercultural use, most of these guidelines are based on experience rather than empirical research. However, cultural diversity makes it unrealistic to rely on intuition or personal experience of interface designers (Dunckley and Smith, 2000). Large numbers of researchers have, therefore, started to look at approaches and techniques for assessing cultural differences and tools for international interface design and implementations. The next section discusses a number of these approaches.

2.3.1 HCI Approaches Dealing with Cultural Diversity

As discussed in the previous section, users from different cultures may experience various problems when interacting with a product. To help avoid such problems, design is supported by a variety of approaches to enable designers to better deal with

targeted cultures. Some of these design approaches are discussed in this section to help making an informed decision about the approach to be adopted in this research, as a framework to study the phenomena under investigation.

Globalisation, Internationalisation, Localisation, Culturalisation

Globalisation in design is the process of planning, designing and producing a product or service, which can be used internationally (Bourges-Waldegg, 2000). Globalisation is a life cycle model that includes Internationalisation, Localisation, project management, software development, testing, and technical writing. The result, a globalized product, is in essence, free from cultural bias, intended for use in a range of cultural contexts (Bourges-Waldegg, 2000; Barker, Barker and Doolan, 2000, Hall and Webb, 2000).

Internationalisation of software separates the software into two components, a culture-independent and a culture-dependent component (Del Galdo, 1996). To provide software for a particular cultural group, the localisation process is conducted. Basic parts of the localisation process include the Technical Localisation, National Localisation, and Cultural Localisation processes (Evers, 1999). Technical Localisation incorporates technical aspects to be considered to adapt the product into different markets (e.g. character sets, collating sequences, etc.). National Localisation covers translation, support to language punctuation and formats (e.g. dates, time, currency and numbers formats). Cultural localisation, also known as *Culturalisation* (Barber and Badre, 1998) goes beyond translation and functionality; it targets aspects like appeal, taste and beliefs of targeted user, as well as localisation of icons, symbols and metaphors, to ensure that they are not sensitive to the targeted culture. Appendix A lists some of the localisation guidelines as produced by Del Galdo (1990).

Bourges-Waldegg and Scrivener (1998) argued that the Culturalisation approach may be suitable to provide different localised version of standalone software application, but conversely, it is inappropriate for designing systems intended to support interaction between people from different cultures, like Internet applications. Bourges-Waldegg and Scrivener (1998) claimed that Culturalisation

over-depends on generic guidelines that may create or reinforce stereotypical views of users within a specific culture, which could be inappropriate, as cultures are continuously interacting. For them, this might be more damaging to the local cultural than the un-localised products. Bourges-Waldegg and Scrivener (1998) suggested the Meaning in Mediated Action (MMA) approach for better dealing with cultural diversity especially in Internet applications.

Meaning in Mediated Action

Bourges-Waldegg and Scrivener (1998) suggested the Meaning in Mediated Action (MMA) as a design approach for Internet applications targeting users with cultural diversity. MMA uses both quantitative and qualitative assessment of representations focussing on the users' understanding of intended meaning within the system context. It employs rapid prototyping and structured interviews tools approach. During this assessment, for each representation element, the participant is asked what the element depicts, and what it is used for. An interview record is created for each participant indicating the representation, its intended meaning, whether or not it was correctly understood by the participant, and finally the interpretation of the participant for this particular representation.

The objective of MMA is to reach an overall conclusion about a representation's ability to mediate action, in order to generalise about the use of that particular representation in that specific context, instead of generalising about the culture (Bourges-Waldegg and Scrivener, 1998). The MMA approach can be classified under the general concept User centred Design (UCD), which is a well known design concept in the development process of international interface. The field of Human Computer Interaction advocates UCD in general, as a development process to develop more usable, useful and easily learnable products (Preece, Rogers & Sharp, 2002). As culture can influence learning style, attitudes, and overall acceptance of technology (McLoughlin, 1999), UCD becomes particularly important when designers are not familiar with the culture of end users (Oshlyansky, Cairns and Foy, 2004).

International Usability Evaluation

Usability evaluation aims to answer the question of whether a system is good enough to satisfy all the users' needs and requirements (Nielsen, 1993). Usability Evaluation could be achieved through different methods of testing. These can be categorised in general to three types: Testing, Inspection and Inquiry (Nielsen, 1993). The growth of web technology makes user testing across cultures and remote geographical locations both feasible and lower in cost.

For Nielsen (2000), the ultimate international usability evaluation method is the *International User Testing*. Theoretically, usability tests are conducted in special usability labs that are equipped with cameras to record the user's comments and facial expressions. Nielsen (2000) suggested that international user testing could be administered remotely, where the user runs a *Self-administered test* on the computer through the web, while the experimenters observe over the Internet. He provided recommendations for some cultural consideration during testing, pointing out that, for example, gift-giving and appropriate levels of payment are highly culturally dependent. Nielsen (2000) provided the option of using a portable usability lab, which could be brought to the user's sites.

While Hariandja and Daams (2005) argue that cross-cultural usability testing is exceptionally useful when designing products for users from different cultures, Evers (2002) suggested that some user evaluation methods are less applicable than others are for a culturally diverse user base. She claimed that observation methods, for example, might not be as appropriate for users from some cultures, such as the Japanese culture, as it is for American culture. Furthermore, Smith and Dunckley (1998) criticized usability evaluation methods as being subject to cultural bias and practical difficulties. They highlighted the drawback of some of the international usability methods such as: the difficulty of multicultural heuristics, as well as the costly and logistically difficult recruitment of multi-cultural representative users for usability testing in laboratories. They proposed a user interface design approach for international system based on Kreitzberg's (1996) Logical User-Centred Interaction Design (LUCID) design methodology.

Logical User-Centred Interaction Design (LUCID)

LUCID methodology is a management strategy that provides a structure for scheduling needed steps for interface design approaches (Kreitzberg, 1996). *LUCID is designed to promote an orderly process, with iterations within a stage and predictable progress among stages; each progress is tied to specified deliverables and timely feedback* (Shneiderman, 1998: p. 107). Smith and Dunckley (1998) employed the LUCID approach to distinguish between the interface design factor that influences the usability across all users groups and those design factors, which are sensitive to cultural variables, so that localized and globalized versions can be developed.

According to Smith and Dunckley (1998) cultural comparisons are based not on individuals but rather on central tendencies from each country compared together. Instead of dealing with whole population, they suggested to test interfaces with a few typical users who will represent this population characteristics. They identify sub-groups of users on whom to focus the evaluation, based on objective factors (e.g. gender, age, mother tongue), and subjective factors (e.g. Uncertainty Avoidance and other Hofstede's cultural variables). By their application of the LUCID approach, Smith and Dunckley (1998) use rapid prototyping with user dichotomies and user arrays used on subjective factors. According to them, this allows testing a fraction of the user population and still obtaining a significant amount of usability information.

Cultural Models

HCI professionals have recently sought to use predictive cultural models in design decisions and in the interpretation of results from user evaluations. There have been several attempts to use the Hofstede model for culturally appropriate interface development (Gillham, 2004). Marcus (e.g. Marcus et al, 2003; Marcus and Gould, 2000), who has consistently advocated the link between Hofstede's cultural dimensions and characteristic factors of user interfaces, examined a number of these dimensions and their possible impact on user-interface design. Marcus and Gould (2000) found that features of a website design such as the degree of flexibility

allowed in completing a task will often reflect the Hofstede's country ranking scores for Uncertainty Avoidance.

Whilst no empirical evidence showed that cultural models can be directly used to inform design (Gillham, 2004), these models may be of some use in profiling cultures and their members. For Gillham (2004), cultural models can provide a subjective measurement of the gulf between the culture of origin and the localisation target culture. Hoft (1996) proposes that cultural models can be used to address some design issues, such as the extent to which localisation of a product is needed.

It could be concluded from the above discussion, that there is a tension between the approaches of designing a cross-culture interface. To date, researchers have reached no consensus concerning a reliable approach for the design of interfaces for cross-cultural use. While some researchers have recently sought to use cultural models to interpret and inform designing decisions, others are against treating the concept of culture through the use of scores on particular variables. To contribute to this debate, this research will, therefore, investigate appropriate approaches to study the effect of culture in e-commerce interface design.

2.3.2 Empirical Cultural Research in HCI

Recent research on culture issues in HCI rests along two major areas, culture's effect on interface attitude and preferences, and culture's effect on interface design elements. In the following section, some empirical studies related to these two research strands are presented because they are valuable for the current research, as they provide insight into approaches and techniques for studying the effect of culture toward user computer interaction.

Culture's Effect on Interface Attitude and Preferences

In a recent study, De la Cruz et al (2005) investigated how culture affects the web page perception of quality and evaluation factors. They used a questionnaire with over 350 Internet users from Peru and Germany. While their results indicated that criteria for web site quality evaluation are seen differently across cultures, the

correlation analysis failed to explain the results based on Hofstede's (1991) cultural variables. Still, they argued that there is no Internet global culture and that local cultures still dominate the web user behaviour (De la Cruz et al, 2005).

One strand of research in this context has investigated how culture affects users' attitude towards the use of specific systems, such as Group Support Systems (GSS). Abdat and Pervan (2000) argued that while research reveals promising results for GSS used for meeting facilitation in *Western* culture, these technologies are less effective when applied to different cultures of high power distance and low individualism, such as the Indonesian culture. Nakakoji (1994) confirmed the same results by discussing why business people from a high power distance culture, such as the Japanese culture, expressed a negative attitude towards a computer-based groupware system in meetings. In both studies, researchers claimed that, in a high power distance and collectivist cultures, it is considered socially unacceptable to challenge manager's ideas in public; negotiations are done prior to the meeting, and during the actual meeting, people just agree with their managers. Both studies suggested that there may be no point in using such systems in such cultures.

The findings of both the Abdat and Pervan's (2000) and Nakakoji's (1994) studies were contradicting by Griffith's (1998) results. Griffith (1998) investigated whether differences in power distance in Bulgaria and the U.S. would influence the use of group conference support system. Contradictory to what was expected, Bulgarian students, who are thought to have high power distance, were more likely to challenge authority in the system than American students. It might be that there were other factors that influenced the findings; still, the research indicates that making assumption on cultural attitudes in HCI based on anthropologically established cultural variables such as Hofstede's (1991) one needs to be done with caution.

In another study, Evers and Day (1997) investigated whether interface acceptance is different for Chinese and Indonesian users. Findings suggested the existence of cross-cultural differences in terms of systems usage. While Chinese satisfaction toward the system was built on usefulness, Indonesians' attitude of satisfaction was built on ease of use. This suggests that the Chinese will try to work with a useful interface, even when it is not easy to use, while Indonesians will tend to give up

more easily when an interface is hard to understand. The researchers related that to the fact that the Indonesian culture is described as higher in *Uncertainty Avoidance* than the Chinese. The study was replicated by Lim and Turk (1999), whose findings were dissimilar, as the same user groups did not show the same differences in responses. Both studies' findings are limited because of the use of English rather than translated instrument for the non-English native speaker participants.

Culture's Effect on Interface Design Elements

Another strand of study investigated the effect of user's culture on the interpretation of interface colours (Duncker, 2000; Bourges-Waldegg and Scrivener, 1998). These studies discussed the cultural sensitivity of colours, suggesting that consideration should be given to colour symbolism, and claiming that colour symbolism is not absolute as it varies dramatically between cultures. Findings of Evers and Day's (1997) study suggested that nationality correlates with interface design preferences among Indonesian and Chinese students. These were especially preferences in colours, menus, sounds, multimedia and input devices.

Some studies suggested that graphics and iconic representations are not universally understood, as they are culturally learnt (Andrews, 1994; Del Galdo, 1996; Evers, 2000). Certain graphics and images may offend one group of users on cultural or religious grounds. Furthermore, icons could be misleading or misunderstood, as a solution, they proposed that all graphic and icons symbolization should be labelled.

Furthermore, several studies looked at metaphor understanding within different cultures. While most of these studies supported the representational differences in various cultures (Nakakoji, 1994; Del Galdo, 1996; Duncker, 2000; Evers, 2000); others suggested that two persons from different cultures could have the same understanding of a representation if they both share the same context. As cultures interact continuously, people share many cultural contexts (Bourges-Waldegg and Scrivener, 1998)

Kralisch and Bettina (2004) looked at the impact of various cultural variables on search behaviour. Based on Hofstede's cultural variables, their empirical

investigation suggested that users' search behaviour on websites is affected by culturally determined information need (as determined by context cultural variable), time perception (as determined by long term orientation), space perception (as determined by power distance) and preference for a limited number of choices (as determined by uncertainty avoidance). They added that these differences in search behaviour are likely to be caused by inherent thinking patterns, which are determined by the users' cultural backgrounds.

Yeo and Loo (2004) found that user-preferred classification schemes varies within cultures, as different cultural groups may have their own classification schemes, which are dependent on the characteristics of their country. Del Galdo (1996) demonstrated that screen design directions have various psychological and social associations in different cultures, and that diverse users have different concepts of screen usage. Furthermore, Simon (2001) examined cultural differences related to website satisfaction among residents of Asia, Europe, Latin and South America, and North America based on Hofstede's model and found different preferences for colours and navigation.

The review of literature, discussed in this section, demonstrates the extensive use of cultural models in the interpretation of results of many empirical cultural studies in HCI. This review also highlights some gaps in this research strand, which the current study will target to bridge. The reviewed studies present some inconsistency of results regionally. They are predominantly based on self-reported data rather than actual observation of user behaviour. Furthermore, most of the available studies focused on cultural differences in acceptance rather than the users' understanding and perception. Additionally, there is still little empirical evidence for how consideration of cultural models could improve interface design. Many researchers stress on the need for more empirical cultural research into the perception and preferences of users towards computer in general, and toward the Internet specifically (Bourges-Waldegg, 2000; Evers, 2000; Ess, 2000). This research is aiming to validate the effect of culture on e-commerce in terms of consumer behaviour. Therefore, theories of consumer behaviours in conventional and electronic commerce are discussed in the following sections.

2.4 Consumer Behaviour Theories

Empirical studies in any strand of research are usually guided by particular theories. Research on consumer behaviour is mainly based on a number of theories that forecast and explain human behaviour in several domains. According to Grabner-Kräuter and Kaluscha (2003), the majority of established models on Electronic consumer behaviour are mainly based on three theories, the Theories of Reasoned Action (Fishbein and Ajzen, 1975), the Theory of Planned Behaviour (Ajzen, 1985) and the Technology Acceptance Model (Davis, 1989). This section discusses how these theories guided consumer behaviour studies in the e-commerce, and how this could be extended to the context of this research.

2.4.1 The Theory of Reasoned Action and the Theory of Planned Behaviour

The Theory of Reasoned Action, TRA, (Fishbein and Ajzen, 1975) and the theory of Planned Behaviour, TPB, (Ajzen, 1985) are well known intention models that have proven successful in predicting and explaining human behaviour across a wide variety of domains (Ajzen, 1985). The two theories are general models designed to explain virtually any human behaviour; they assert that behaviour is influenced by behavioural intention, and that a major determinant of intentions is the human's attitudes towards the behaviour.

For the TRA (Fishbein and Ajzen, 1975), behavioural intention is determined by both personal and social influence. The personal influence is reflected in attitude toward behaviour, which refers to the person's judgement about whether performing the behaviour is good or bad. The social influence is reflected in the subjective norms, which refers to the person's perception of social pressure to perform or not to perform the behaviour in question (Fishbein and Ajzen, 1975). Attitudes, in return, mediate between beliefs and intention, while subjective norm mediates between normative beliefs and behavioural intention. According to the TRA, if a person believes that performing certain behaviour will render positive results, s/he is likely to hold a positive attitude toward that behaviour. This result also happened when a person believes that other people with whom s/he is motivated to comply think s/he

should perform that behaviour. The TPB (Ajzen, 1985) complimented the TRA by adding the perceived behavioural control as a supplementary factor affecting behavioural intention. For Ajzen (1985) perceived behavioural control reflects the degree to which an individual feels that successfully engaging in the behaviour is completely up to her/him.

According to Jarvenpaa et al (1999), TRA and TPB have been evaluated and supported in many contexts, including IT usage behaviour; they claimed that the Internet shopping behaviour shares the volitional nature of the phenomenon which TRA tries to explain and predict. Many of the currently existing e-commerce consumer's behavioural models are based on the TRA and TPB theories (Pavlou, 2003; Jarvenpaa et al, 2000; Koufaris and Hampton-Sosa, 2002), where a shopper's intention to buy is preceded by the shopper's attitudes toward the purchase. Additionaly, there is a general consensus within researchers of e-commerce consumers' behaviours, for the purpose of comparing various Internet shopping sites, to assume that the degree to which people express their intentions to buy from a certain site relative to other sites is a reasonable predictor of actual purchase behaviour from this site relative to the others (Jarvenpaa et al, 2000).

As an example of application of TRA and TPB in e-commerce models, Jarvenpaa et al (2000) generated and validated a research model suggesting that the perceived reputation and the perceived size of an Internet store affect consumer's trust in that store, and accordingly build a positive attitude that would lead to purchase intention. They designed the model based on the understanding that perceived reputation, perceived size, and trust are beliefs that the consumer has formed on the basis of information that the consumer has about the merchant. According to TRA (Fishbein and Ajzen, 1975) and TPB (Ajzen, 1985), these beliefs affect the person's attitudes and attitudes in turn influence behavioural intention, which is a good predictor of actual behaviour. Jarvenpaa et al (2000) related the direct influence of perceived risk on the intention to the notion of perceived behavioural control in the theory of planned behaviour (Ajzen, 1985). They translated this in the e-commerce context as the fact that perceived risk associated with shopping in the store may reduce the consumer's perception of behavioural control, and the extent to which this occurs might negatively influence willingness to shop.

Based on TRA, Davis (1989) introduced the Technology Acceptance Model (TAM), for predicting IT usage. While TRA explains any human behaviour, the aim of TAM is to provide an explanation of the determinants of computer acceptance that is capable of explaining user behaviour (Davis, 1989).

2.4.2 The Technology Acceptance Model

The model posits that perceived usefulness and perceived ease of use are significantly correlated with systems use. Where perceived ease of use is defined as *the degree to which a person believes that using a particular system would be free of effort* (Davis, 1989: p. 320) and perceived usefulness is *the degree to which a person believes that using a particular system would enhance his or her performance* (Davis, 1989: p. 320). Based on TRA, the model postulates that the actual system use is determined by the user's behavioural intention to use, which is in return influenced by users' attitudes towards using the system. Finally, attitude is directly affected by beliefs about the system, which consists of usefulness and ease of use. TAM theorizes this belief, attitude, intention and behaviour relationship to predict user acceptance of technology.

Davis' (1989) TAM is a well respected model of IT adoption, it is one of the most influential models, widely used by IS researchers and practitioners, which provides a better understanding of system use (Rose and Straub, 1998). Some of the currently existing e-commerce consumer's behavioural models are based on the TAM theory (Gefen and Straub, 2000, 2003; Pavlou, 2003; Koufaris and Hampton-Sosa, 2002).

As an example of application of TAM in e-commerce models, Gefen and Straub (2003) generated and validated a research model in which they suggest that perceived usefulness of the e-commerce site would affect the purchase intention, and that the perceived usefulness would be on its part affected by perceived ease of use of the e-commerce site and social presence on the web site. In another application of the TAM, Gefen and Straub (2000) distinguished between the effects of perceived ease of use on two different e-commerce tasks: inquiry and purchase. According to Gefen and Straub (2000), when using the web site for inquiry, the characteristics of the IT itself should directly affect the ease of the information retrieval process and

the presentation of results. On the other hand, when users purchase from a web site, the primary task, purchasing and shipping the product, is not an inherent part of the IT. IT in this case is only an interface to the complex purchasing process. Thus, in their research model, Gefen and Straub (2000) postulate that perceived ease of use affects intended use when the e-commerce site is used for an inquiry task, while it does not affect the use in purchase task. The model also suggests that perceived usefulness influence both types of IT adoption, inquiry and purchase.

While this section looked at the theoretical framework that guided some of the existing e-commerce consumer behaviour models, the following section will discuss some of the empirical studies in this research strand. Reviewing this previous work guides the current research and it highlights gaps that need to be bridged in this research strand.

2.5 E-Commerce Consumer Behaviour Studies

As discussed in the previous section, several consumer behaviour theories assert that real behaviour is influenced by behavioural intention (Fishbein and Ajzen, 1975; Ajzen, 1985). Given the difficulty of using real sales as an outcome measure in research, the consumer's intention to buy is often used as a useful surrogate dependent measure when assessing e-commerce site effectiveness (Jarvenpaa et al, 1999). There is now a growing body of research linking various web design features with intention to buy and several researchers have proposed models to account for these relationships. This section briefly reviews some of the main findings in this area.

One major strand of research has investigated how interface characteristics affect purchase intentions. For example, Ranganathan and Ganapathy (2002) found that information content of a site design; specifically navigation aids, security and privacy all have some impact on the online purchase intent of consumers. Van der Heijden, Verhagen and Creemers's (2003) study of 228 potential online shoppers found some evidence to support the role of perceptions of the store interface in explaining purchase intentions. Similar work by Gefen, Karahanna and Straub

(2003) showed that perceived usefulness of the site affected purchase intentions for repeated customers but not for potential customers. The work of Gefen and Straub (2000) suggested that perceived usefulness did affect user purchase intentions. For them, perceived usability had no direct effect on purchase intentions but did affect ratings of perceived usefulness. Kim and Moon (1998) present a study which shows that visual design factors in the interface can induce feelings of trust and willingness to use in an e-banking system.

Although the effect of the site interface characteristics on purchase intentions is investigated by some research, it is still unclear whether this relationship is validated across cultures. As it is well understood that people from different cultures have different perception of computer interface (Dunckley and Jheita, 2004), it is essential to clarify how this influences people's willingness to buy from e-commerce. This thesis will therefore investigate this issue.

Another major research strand in e-commerce consumer behaviour studies has examined the link between trust in a site and intention to buy, trying to establish antecedents to trust. Previous research into trust in a business relationship has identified the important characteristics of trust as a fundamental principle that underpins every business relationship (Ganesan, 1994). The importance of trust is especially highlighted in the e-commerce context (Grabner-Kräuter and Kaluscha, 2003). Therefore, recent studies start to investigate the link between e-commerce and consumer behaviour through its effect on consumer's trust. The following sections discuss the issue of online trust as a main focus of the current research. The sections review the trust concept in general, the importance of trust in building consumer's behaviours in conventional and electronic commerce, as well as previous work in both domains. Focus will be then given to cultural effect on the antecedents and outcomes of trust, as the main focus of the current research.

2.6 Trust

Trust has been extensively studied in several disciplines, where the interpretation and understanding of the meaning of trust was suggested to be related across fields (Rousseau, Sitkin, Burt and Camerer, 1998). Building on the social psychology and industrial marketing tradition, trust could be defined as "A trustor's expectations about the motives and behaviours of a trustee" (Doney and Cannon, 1997: p. 37). Trust is also defined as "A willingness to rely on an exchange partner in whom one has confidence" (Moorman, Zaltman and Deshpande, 1992: p. 315). Trust is also conceptualised as existing when "One party has confidence in an exchange partner' reliability and integrity" (Morgan and Hunt, 1994: p. 20).

According to Luhmann (1988), interacting with other individuals, combined with the need to understand their actions, presents people with an overwhelming complexity. Since people need, nonetheless, to interact, they apply a variety of methods for reducing this complexity. Trust is one of the most effective of these complexity reduction methods (Luhmann, 1988), and thus a major factor in many interactions with other people. According to Luhmann's (1988) theory of *Trust and Power,* trust is multidimensional and context-dependent by its nature. The theory suggests that familiarity is a main antecedent of trust, as familiarity reduces uncertainty and complexity through an understanding, often based on previous interactions, of other's actions.

In a common point with Luhmann's (1988) trust theory, Ganesan (1994) confirms that trust is a multidimensional construct. He suggested *credibility* and *benevolence* as two main dimension of trust. In the buyer-seller context, Ganesan (1994) defines credibility as the extent to which the buyer believes that the seller has the required expertise to perform the job effectively and reliably, while he sees benevolence as the extent to which the seller believes that the buyer has intentions and motives beneficial to the seller. For Andrews (1994), lack of trust is the main obstacle to communication between parties, where the importance of trust manifests itself when a client deals with a merchant.

The importance of trust in buyer-seller relationship is strongly highlighted by literature, emphasizing the role of trust in supporting purchase decisions in trading (Doney and Cannon, 1997; Ganesan, 1994; Anderson and Weitz, 1989; Jarvenpaa et al, 2000). The following sections discuss previous work highlighting the importance of trust in both conventional and electronic commerce.

2.6.1 Trust and Consumer Behaviour in Conventional Commerce

Doney and Cannon (1997) label trust as *order qualifier* for purchase decisions; for them, consumers place an order only in the case of a trustworthy relationship with the merchant. In essence, trust creates the social environment in which businesses can function (Luhmann, 1988).

Since trust is an important aspect of commerce, understanding antecedents and outcomes of trust has been a prime concern of conventional commerce literature. In the context of traditional commerce, the reputation of a company is argued to be a significant antecedent for the establishment of trust between a consumer and a merchant (Quelch and Klein, 1996; Lohse and Spiller, 1998). In a study where Ganesan (1994) collected data by a mail survey of 150 retail buyers and 52 vendors; it was empirically confirmed that a retailer's favourable perception of a vendor's reputation leads to increased credibility, one of two dimensions of trust. Similarly, Anderson and Weitz (1989) proved that channel member's trust in a manufacturer is positively related to the manufacturer's reputation for fair dealings with channel members. Similarly, Doney and Cannon (1997) hypothesized a high correlation between the measures of selling firm trust and supplier reputation.

Some previous work, based on Luhmann's (1988) trust model, emphasized the role of past experiences with a marketing entity in building trust in the conventional business context. Gulati (1995) suggests that familiarity breeds trust and stresses on the implications of repeated ties for contractual choice in alliances. Other studies provide evidence supporting the argument that the relationship period and past experience with a buyer are highly correlated with consumer's perception of trustworthiness (Anderson and Weitz, 1989).

2.6.2 Importance of Trust in E-Commerce:

Grabner-Kräuter and Kaluscha (2003) see the high uncertainty that exists in the Internet environment as the main reason for the importance of trust in online purchase. They claimed that the degree of uncertainty of economic transactions in the virtual environment is higher than in traditional settings. For them "Internet–based commercial transactions can bring about several risks that are caused by the implicit uncertainty of using open technological infrastructures for the exchange of information" (Grabner-Kräuter and Kaluscha, 2003: p. 785). They described the Internet uncertainty as *Exogenous* and *Endogenous* uncertainty. While the exogenous uncertainty relates to technology-dependent risks such as software or hardware errors and security gaps, the endogenous uncertainty relates to transaction-dependent risks such as quality of products and services that are offered on the Web, which depend on the seller's ability.

A number of studies claimed that the reason why many people have not yet shopped on the web is due to the lack of trust in online commerce (Hoffman, Novak and Peralta, 1999). Keen (1997) argues that the most significant long-term barrier for realizing the potential of Internet marketing to consumers is the lack of consumer trust. Hoffman et al (1999) suggests that trust influences the level of risk and uncertainty arising from the Internet transaction process between provider and consumer, and consequently affects the long-term online relationship between these two entities. Quelch and Klein (1996) note that "Trust is a critical factor in stimulating purchases over the Internet, especially at this early stage of commercial development." (p. 70).

In conventional commerce, as discussed in the previous section, trust could be built, only when the consumer believes that the seller has both the ability and motivation to deliver goods and services of the quality expected, where the most salient source of trust is the salesperson (Donney and Cannon, 1997). This could be more difficult in the case of Internet, where the merchants depend on an impersonal electronic storefront to act on their behalf (Jarvenpaa et al, 1999). Furthermore, with the growth of the Internet and the complications of e-commerce security and privacy issues, trust has become a major concern for both vendors and consumers (Akhter,

Maamar and Hobbs, 2002). It could be therefore concluded that the context and nature of the Internet add further challenges engendering trust in a consumer. Therefore, a major research strand in e-commerce examines the link between Internet uncertainty and online consumer behaviour through its effect on consumer's trust. The following section will discuss some of the work in this area as it is closely related to the scope of the current research.

2.6.3 Trust and Consumer Behaviour in E-Commerce

De Ruyter, Wetzels, and Kleijnen (2001) explored the impact of organizational reputation, relative advantage and perceived risk in the adoption of e-services. They engaged 202 participants from the Netherlands in an experimental study. Running variance analysis the researchers confirmed that a high organizational reputation significantly increased the consumer's trust in the e-service, while a higher amount of perceived risk towards the e-service had a negative effect on trust. De Ruyter et al (2001) admit that the use of an experimental laboratory setting with offline role-playing scenarios, did not provide a real-life stimuli to work, which could effect the validity of there results.

Kim and Prabhakar (2002) explored initial trust in the adoption of online banking. They collected data through online survey from 266 US Internet users, where 196 of them are users of online banking. Using multiple regression analysis they confirmed the effect of propensity to trust and word of mouth referrals on consumer's initial trust. Contrary to what they expected, they failed to find a significant relation between the consumer's trust in the bank and the use of the Internet banking. A major limitation of this study is that only trusting beliefs and intentions were measured, participants were not allowed to actually perform any transactions, most likely because of security issues in Internet banking.

Jarvenpaa et al (2000) developed a causal research model based on Ajzen's (1985) Theory of Planned Behaviour, assuming that perceived reputation and perceived size of an Internet store are both positively related to consumer's trust in that store. They

hypothesized that trust in return would have a direct positive effect on attitude towards the Internet store. They also postulated that trust and attitude would have a direct effect on consumer's willingness to buy from the store. Their sample consisted of 184 undergraduate and MBA students in Australia. Participants performed four shopping activities on online book stores and online travel sites. Using structural equation modelling, Jarvenpaa et al (2000) found good fit for their model, confirming all the model's hypotheses. Perceived reputation was especially recognized as a strong antecedent to trust, having a much stronger effect on trust than perceived size. The study, like most of the research in the field, used convenience sample of students where a larger number of them are Internet users, and often have experience with Internet shopping. According to Grabner-Kräuter and Kaluscha (2003), students are not representative of the entire Internet consumers' population, and therefore they suggest that the results of Jarvenpaa et al's (2000) study may not be generalised to other types of customers.

Gefen (2000) based his trust model on Luhmann's (1979) Theory of *Trust and Power*, where he hypothesized that familiarity is a precondition for trust. He expected that familiarity with an Internet store, and people' disposition to trust, in general, will increase trust in that store. Additionally, he postulated that increased degree of familiarity and trust will increase a consumer's willingness to inquiry and purchase. Gefen (2000) applied an experiential survey approach, with 217 students from the US, where participants performed book search at Amazon.com online bookstore. The structural equation modelling of the suggested model confirmed that familiarity with an internet vendor increases trust in that vendor, although to a much higher degree trust was enhanced by the individual's disposition to trust. Additionally, familiarity and trust were found to have a significant effect on both intention to inquiry and intention to purchase. In addition to the limitation of using students, the study used a well-known Internet store (Amazon.com) to test the trust model. It is unclear whether the results can be generalized to lesser-known web sites.

Koufaris and Hampton-Sosa (2002) built their trust model based on Davis's (1989) Technology Acceptance Model, where perceived usefulness and perceived ease of

use of a web store are hypothesized to build consumer's trust in that store. They expected that online trust will, in return, affect a consumer's intention to return to the Internet store and a consumer's intention to purchase from that store. They used 111 students in an experiential survey with online questionnaire, where participants visited an unfamiliar web site and performed a product search. Koufaris et al (2002) tested the goodness-to-fit of their model using structural equation modelling, and results confirmed all the model's hypotheses. Contradicting with what was expected, consumers' propensity to trust, which was included as a control variable, did not have a significant effect on trust.

Pavlou (2003) integrated trust and risk with the Davis's (1989) Technology acceptance model and Ajzen's (1991) Theory of Reasoned action, into one research model. In his model, Pavlou (2003) expected that online trust would affect the consumer's perceived risk of the transaction, the perceived ease of use and the usefulness of the Internet store, as well as the consumer's intention to transact. Using Partial Least Square (PLS), a structural equation modelling software, he confirmed all of the model's hypotheses. Furthermore, the perceived reputation of the retailer and the satisfaction with past Internet transactions were found to have a significant effect on the consumer's intention to transact. One drawback of this study is that only trusting beliefs and intentions were measured; participants were not allowed to actually perform any transactions. This could affect the validity of the obtained results.

While research in online trust mainly looks at antecedents of trust, focus is also given to potential outcomes or consequences of trust in online shops, such as consumer attitude and willingness to buy online (Grabner-Kräuter and Kaluscha, 2003). There is now an increasing strand of research linking trust with attitude and intention to buy. The following section discusses these two major outcomes of trust as they are investigated in the current research.

2.6.4 Consequences of Trust

According to the Theory of Reasoned Action (Fishbein and Ajzen, 1975) and the Theory of Planned Behaviour (Ajzen, 1985), beliefs affect the person's attitudes, which could be conceptualised as the favourable or unfavourable evaluations of the web site. The theories declare that attitude in turn influences behavioural intention, which is a good predictor of actual behaviour. As previously discussed, in the context of e-commerce, the intention or willingness to buy is considered as a good prediction of the actual purchase from a site. Based on these two theories, there is now a growing body of research linking trust with attitude and intention to buy. Several researchers suggest that attitude and willingness to buy are two main outcomes of trust; some researchers have proposed models to account for these relationships. This section briefly reviews some of the main findings in this area.

In conventional commerce, previous work on buyer-seller relationship emphasizes that high levels of trust by buyers have been found to stimulate favourable attitudes and behaviour (Schurr and Ozanne, 1985; Anderson and Narus, 1990). Ajzen (1985) emphasizes the role of consumer's positive attitude toward vendors in supporting purchase decisions, where the shopper's intention to buy is preceded by the shopper's trust in the purchase.

In the e-commerce context, the effect of the consumer's trust in building a positive attitude and generating willingness to buy from a web store, has been highlighted by some researchers (Grabner-Kräuter and Kaluscha, 2003; Koufaris and Hampton-Sosa, 2002). Gefen and Straub (2003) for example, confirmed that trust in an e-service provider would be positively related to the consumer's purchase intention. Gefen (2000) suggests that trust in an online bookstore (Amazon.com) influences intentions to purchase. Similarly, Bhattacherjee's (2002) trust model postulated that the effect of consumer's familiarity with the electronic company and trust in the online store are both predictors for the consumer's willingness to transact with that company. Similarly, the work of Koufaris and Hampton-Sosa (2002) confirms that trust in a specific online company is found to be an antecedent of the consumer's intention to return to the online company and it also affects the consumer's intention to purchase from the online company.

Grabner-Kräuter and Kaluscha (2003) presented a review of 11 empirical research studies in online trust antecedents and outcomes, ranging from the year 1999 to the year 2002, which describes the previously mentioned studies and a number of other similar studies in more depth. In their review, they argued that there might be a relationship between the antecedents and outcomes of trust and culture which needs to be further investigated. They highlighted the shortage of research in that strand, especially in the e-commerce context. The following section discusses the previous work on culture effect on trust in conventional commerce, as well as some of the few works that considered this phenomenon in the e-commerce context.

2.6.5 Cultural Research on Consumer behaviour and Trust in Conventional Commerce

There is a general consensus within marketing theorists (McNeal, 1965; Robertson, 1970; Howard, 1994) to accept culture as one of the underlying determinants of consumer behaviour. For Henry (1976), culture represents the central themes of learned behaviour, which are shared by people living together in a society; these learned behaviour patterns influence the individual's day-to-day interpersonal experiences and therefore by necessity affect his behaviour as a consumer. According to Howard (1994), the values implicit in a culture are said to affect consumption motives, which in turn set the choice criteria used by consumer. He argues that if culture can shape the choice of what is or is not valued among a broad variety of products, then culture can be considered as a valuable marketing concept.

In the context of conventional commerce, literature holds sufficient empirical evidence that culture can determine specific consumer behaviour (Henry, 1976; McCort and Malhotra, 1993). Henry (1976) investigated the relationship between consumer habits and four basic culture dimensions describing the cultural orientation within American society, which are man's relation to nature, man's relation to others, time dimension and personal activity (Kluckhohn and Strodtbeck, 1973). Results empirically proved the significant correlation between these cultural dimensions and the product preference as an element of consumer behaviour.

Some research focuses on the effect of culture on consumer behaviour through its effect on trust. The work of Yamagishi and Yamagishi (1994) suggest a different effect on trust from the individualism-collectivism perspective. They looked at the perception of trust and commitments in the United Sates and Japan, and they suggest that in dealing with other than in-group members, collectivists are less trusting, while individualists have a high propensity of trust in general. They added that individuals from individualistic cultures are more likely to seek out others who have a good reputation. Collectivists, on the other hand, are more committed to their existing relationships and avoid new ones despite others' good reputation (Yamagishi and Yamagishi, 1994).

2.6.6 Cultural Research on E-Commerce Trust

While the conventional commerce literature holds sufficient empirical evidence to support the theory that culture can determine specific consumer behaviour, less empirical evidence is currently available to support this phenomenon in the e-commerce context (Miles, Howes, and Davies, 2000), where more data and more theory are needed. Many researchers, investigating trust models, argue that there may be a relationship between trust and culture, which needs to be further investigated (Gefen, 2000; Lee and Turban, 2001; Shankar, Urban and Sultan, 2002). Trust is an increasingly important element of website design, particularly across diverse cultures (Cyr, 2004). Understanding how to build trust and loyalty for diverse consumers is crucial. Not only is trust important as a feature relating to cultural sensitivity on the web, but it is also important in the processes by which global work is conducted.

Some research is beginning to address this issue with mixed results. Jarvenpaa et al (1999) report a cross-cultural validation study of their Internet consumer trust model (Jarvenpaa et al, 2000). This model hypothesises that perceived size and reputation of an Internet store act as antecedents to trust. Trust in a store is in turn hypothesised to predict attitude and willingness to buy. Support for all of these hypothesised relationships was obtained in separate studies conducted in three different countries, providing tentative support for the generalization of the model across cultures.

Jarvenpaa et al (1999) also hypothesised that there would be some specific differences between participants from different countries due to culture. Their argument concentrates on the individualism-collectivism dimension, which is thought to vary between the three selected countries (Hofstede, 2001). However, the data did not support Jarvenpaa et al's (1999) hypotheses in this case.

Simon (2001) compared the perceptions and attitudes of four cultural groups (North American, South American, Asian and European) towards four examples of web sites. Their sample was categorised into two cultural clusters, based on Hofstede's (1991) cultural dimensions. The first cluster, categorized with high power distance, collectivist and masculine, included South America and Asian participants. The second cultural cluster, categorized with low power distance, individualist and feminine, included North America and European participants. It was found that perception of trust did vary significantly by cultural cluster. However, these results could reflect a US/European cultural bias in the choice of national web sites rather than suggest more general differences between cultures.

Siala et al (2004) explored the role of Individualistic–Collectivist cultural variables as antecedents of trust with the main emphasis being on religious affiliation. They investigated the role of membership in a collectivist religion in the formation of trust in online stores. Participants recruited from Christian, Muslim and other faiths were asked to interact with online bookstores identified as Christian, Muslim or Neutral sites. They hypothesized that same-religion sites would be trusted and liked more than other religions or neutral sites. This hypothesis was partially supported, but only for the Muslim participants and it was not supported for the other two religious groups. Some evidence supported that those from a collectivist cultural grouping prefer to buy from sites from within their cultural in-group rather than from outside.

The findings of Siala et al (2004) contradict with the results of O'Keefe, Cole, Chau, Massey, Montoya-Weiss and Perry (2000), where they compared reaction towards automobile manufacture sites for participants from the United Kingdom, the United States and Hong Kong. The results did not observe any interaction between the origin of the site, the participant's location and the participants' reaction towards the

sites. Counter to what O'Keefe et al (2000) expected, there was no evidence that the origin of the site interacts with the individas an effect on the consumer behaviour.

In another cross cultural study Lightner, Yenisey, Ozok and Salvendy (2002) surveyed the e-commerce shopping behaviour and preferences of 300 Turkish university students. They then compared the results to those obtained from 64 US university students, looking for differences due to culture. The majority of the Turkish students cited that they had not shopped from the Internet before. The comparisons showed a similar pattern of results for both samples but revealed that the Turkish respondents were more concerned about security than US respondents. Furthermore, the lack of trust in shopping on the web was cited as the main reason of most of the concern of the Turkish group as a whole. This may simply be due to the relative inexperience of the Turkish group with the Internet compared to the US group, rather than to cultural differences.

In summary, the limited evidence available from cultural research on online trust suggests general concerns affecting online shopping behaviour across cultures. While there is some evidence of cross cultural differences, it is unclear whether these can be related to established cross cultural variables (such as the individualist-collectivist dimension) or to what degree they will impact behaviour in the longer term. Previous studies that investigated this issue are challenged with some limitations and they also reached mixed results.

This research is aiming to contribute in this area by looking at how culture affects online shopping behaviour through its effect on trust. As there also might be strong cultural effects on the attitude and willingness to buy through their effect on trust, this research aims to look at how culture affects the consumer's attitude and willingness to buy from an Internet store, through its effect on trust. The research is targeting the Egyptian culture, one of the many cultures that remain typically unexplored in that field.

2.7 The Internet Profile in Egypt

Egypt is an interesting case to study in this research for several reasons. Egypt has always been the political and cultural centre of the Middle East. Because of the country's proximity to the markets in Europe and the Gulf, as well its 72-million strong domestic market, Egypt became attractive to foreign investors since the start of the economic reforms in 1991. As an example of an Arab country, it represents a cultural group that have not been sufficiently investigated by previous studies of consumer behaviour in e-commerce. Egypt, together with Saudi Arabia and The United Arab Emirates, is a leader in the region in terms of web uptake (Loch, Straub and Kamel, 2003). In June 2005, there were around 4.4 million Internet users in Egypt (MCIT, 2005; Shaaban, 2005), and the government of Egypt has identified development of the information technology (IT) industry as a national priority, and has been aggressively working to stimulate rapid development in this sector. In Egypt, the modernisation, expansion and liberalisation of telecommunications services and related infrastructure are national development priorities (EIU, 2004). The Egyptian government is actively encouraging Internet uptake through schemes such as the subscription to free Internet initiative and the PC for every home initiative (Mohsen, 2005). In May 2004, the Egyptian president declared an Egyptian "Broadband" initiative which promotes the use of high-speed Internet services. These new endeavours are attributed to the significant leap in the number of Internet users and the drastic increase in the number of homes that had access to this service.

Loch et al (2003) describe Egypt's policies for IT diffusion as exemplary. Shoib and Jones (2003) identify Egypt as being in a special position amongst Middle Eastern countries in that it has highly trained individuals whom it exports to the region, where the government is also driving IT development and the country is nurturing a software industry. A five-year plan to make the country a regional information technology (IT) hub was announced in 2000. All tariffs, duties and charges on IT imports were removed in January 2005.

A recent field study conducted in the summer of 2004 (Shaaban, 2005) that covered 350 cyber café users in different governorates in Egypt highlights some of the

demographic characteristics of the Egyptian Internet users. According to the study, males represent the majority (75%) of Egyptian Internet users. Young university graduate represent the highest majority of users, with (81%) of users are within age range between 20 and 34, while (85%) of them are university graduates.

While uptake of the Internet is increasing rapidly in Egypt, achieving widespread adoption of e-commerce is seen as more challenging (Mohsen, 2005). Although there may have been a few attempts at exporting Egyptian products through the Internet (e.g. www.t-shirtsegypt.com), most attempts at establishing e-commerce have been limited and directed to the local market. The Internet is also used by Egyptians to import goods, such as books and software, but compared to other parts of the world; the scale is still very limited. In a study conducted by the Economist Intelligence Unit (EIU, 2004), Egypt was given 4.6 out of ten on e-readiness, ranking the 49th in a group of 60 countries; where e-readiness focus primarily on the resources available to trading parties located in developing countries. The same study indicated that e-commerce in Egypt is considered as in its infancy, and beset by legal and regulatory hurdles; however, with strong support from the government, it has been suggested that Egypt would witness an e-commerce boom (EIU, 2004). Companies from both within and outside Egypt will increasingly want to exploit this opportunity to sell their goods online. However, little is currently known about the factors that affect online purchasing within this culture. Insight into these factors could help companies to design sites that will be more effective in Egypt. Some of the work investigating IT adoption in Egypt and the Arab countries are discussed below.

2.7.1 Previous Studies on the Adoption of the Internet and IT in Egypt and the Arab Countries

Few studies (e.g. Mohsen, 2005; El Nawawy and Ismail, 1999; El Nawawy, 2000) analysed the situation of e-commerce in Egypt and identified a number of deterrents to its use. El Nawawy and Ismail (1999) considered language as a barrier against the use of Internet in Egypt. They also believed that the use of the Internet in Egypt is not for business at large. Thus the value addition presented by the Internet is limited.

They suggested that the reason why the Internet business value is not felt is because of lack of awareness. El Nawawy's (2000) study reported culture as one of the main barriers to the implementation of e-commerce in Egypt. He claims that decision makers are used to doing business in a certain way and do not want to change the way they work. The high costs for establishing and maintaining an e-commerce operation is reported as one of the challenges facing the adoption of e-commerce in Egypt (Mohsen, 2005). While some of the previously mentioned studies highlight some of the barriers against the adoption of e-commerce in Egypt, however, little empirical work has been done to investigate these barriers.

In their study on IT adoption in Arab countries, Hill, Loch, Straub and El Sheshai (1998) suggested the preference for face-to-face communications, and the fear of this group of users towards the unknown effects of technology on personal, family, and work lives are seen as a driving resistance to technology. Hill et al (1998) concluded that these findings are in line with the literature on cultural features of the Arab world, known to be of high uncertainty avoidance (Hofstede, 1991).

Rose and Straub (1998) tested Davis's (1989) Technology Adoption Model (TAM) to understand factors that lead to technology adoption in five Arab countries (Jordan, Egypt, Saudi Arabia, Lebanon, and The United Arab Emirates). They suggested the applicability of TAM in the targeted Arab society, confirming that the two main variables of TAM, ease of use and perceived usefulness, might aid in the adoption of IT in the Arab world.

In a recent study Loch et al (2003) examined cultural specific inducements and impediments to using the Internet in the Arab world. They used a questionnaire that was filled out by 100 Arab Internet users, where 85% of them were Egyptians. The findings suggested that culture could be a barrier to Internet usage in Arab countries, due to the highly social and family oriented nature of Arab culture. They linked this collectivist nature of the Arab world (Hofstede, 1991) to the limited use of the Internet, as the majority of participants expressed that they would feel threatened about how Internet will affect family and community life. Lock et al (2003) also suggested that the "lack of awareness of the Internet and its restrictiveness of

language that is lack of Arab language sites, are barriers to adoption" (Loch et al, 2003: p. 53).

Hasan and Ditsa (1999) conducted a qualitative study in the Arab and Middle East countries, which adopted Hofstede's (1991) uncertainty avoidance dimension. They interviewed representatives of the IT community in the Middle East (Egypt, Jordan and Turkey) and compared their findings with Australia. The study suggested that the high uncertainty avoidance of Middle Easterners is blamed for the resistance to IT. Furthermore, according to Hasan and Ditsa (1999), *western* IT is designed for low-context cultures, which decompose functions and abstract data and processes. This is presented as incompatible with the high context culture of the Middle East.

Shoib and Jones (2003) described the previously mentioned research studies and a number of other similar studies in more depth. They presented a review of 28 empirical research studies describing the status of IS in the Arab Countries, where 8 of these studies focused especially on Egypt. Although these studies provide useful information, this is certainly not sufficient material to build a reliable picture of the IT use in the Arab countries and in Egypt. Additionally, little research has yet considered how consumers in the Arab world perceive e-commerce sites or their subsequent online shopping behaviour. Nevertheless, as the use of the Internet in Arab countries continues to grow, more and more e-commerce sites are starting to appear in this market. Most of the previous work that investigated the effect of culture on the IT adoption in the Arab countries linked this effect to Hofstede's (1991) cultural variables characterising the Arabic culture. The role of uncertainty avoidance, in particular, has been highlighted in most of these research studies, as having a significant effect the perception and attitude of Arabs towards technology (Shoib and Jones, 2003).

While there is some evidence of cultural differences in the e-commerce adoption in the Arab countries, it is unclear whether these can be related to established cultural variables (such as uncertainty avoidance) or to what degree they will impact online consumer behaviour in the longer term. Research is also away from providing detailed e-commerce design recommendations for this culture. On the basis of the discussion above, the need for research on Egyptians' perceptions of e-commerce is

essential and timely. Such research can lay the foundations for future model testing. It will also help to guide the design of e-commerce applications for use within this culture.

2.8 Gaps in Cultural E-Commerce Studies

The review of relevant literature done in this chapter highlighted some of the gaps in the field of cultural studies in e-commerce that this thesis is aiming to tackle.

While there are available guidelines for designing interfaces for intercultural use, most of these guidelines are based on experience rather than on empirical research. However, cultural diversity makes it unrealistic to rely on intuition or personal experience of interface designers. To date, researchers have reached no consensus concerning a reliable approach for the design of interfaces for cross-cultural use. While some researchers have recently sought to use predictive cultural models, such as Hofstede's (1991) model in designing decisions and in the interpretation of results from user's evaluation; many researchers, on the other hand, strongly criticize this approach. These critics stress on the changing and heterogeous nature of culture, claiming that there is much evidence against treating the concept of national culture through the use of scores on particular variables. To contribute to this debate, more empirical validations need to justify the use of cultural model in this research strand. Furthermore, a recent assessment of these models would highlight any changes in culture within the target population.

The review of previous work on culture effect on HCI highlights gaps in this research strand. The studies present some inconsistency of results regionally. They are predominantly based on self-reported data rather than actual observation of user behaviour. Furthermore, most of the available studies focused on cultural differences in acceptance rather than users' understanding and perception. On the other hand, there is still little empirical evidence for how consideration of cultural variables could improve interface design. Accordingly, there is an urgent need for more empirical cultural research into the perception and preferences of users towards computer in general, and toward the Internet specifically.

As little doubt is now considered concerning the important role of trust in e-commerce, several studies start to investigate online trust. Less focus is given on how culture affects online trust. Many researchers argue that there may be a relationship between trust and culture, which needs to be further investigated, highlighting the shortage of research in that strand, especially in e-commerce context. While conventional commerce literature holds sufficient empirical evidence to support the theory that culture can determine specific consumer behaviour, less empirical evidence is currently available to support this phenomenon in the e-commerce context, where more data and more theory are needed.

While there is some evidence that the risk and uncertainty arising from the Internet highlights the importance of trust e-commerce, it is unclear how this can be related to established cultural variables, and to what degree it will impact online consumer behaviour in the longer term. Although it is suggested to be one of the major factors affecting online purchase, the effect of uncertainty avoidance is rarely empirically investigated in culture studies in e-commerce.

Furthermore, there might be strong, worth considering, cultural effects on the attitude and willingness to buy through their effect on trust. To date, there is a shortage in literature for studies that investigate the effect of culture on trust outcomes. This research is aiming to investigate this area by looking at how cultural variables affect online attitude and willingness to buy through its effect on trust.

While there is some evidence of cultural differences in the e-commerce adoption in the Arab countries, it is unclear whether these can be related to established cultural variables characterising this culture (such as uncertainty avoidance). It is also unclear to what degree this impacts online consumer behaviour for this target culture. Research is also some way from providing detailed e-commerce design recommendations for this culture.

On the basis of the discussion above, the need for research on the effect of culture on electronic consumer behaviour is essential and timely. Such research can lay the foundations for future model testing. It will also help to guide the design of e-commerce applications for use within this culture.

2.9 Summary

This chapter gave a detailed description and critical overview of the theoretical background of this thesis. In chapter 1 it was made evident for the shortage of research on user attitudes towards, and behaviour with, e-commerce sites in various alternative cultural settings. It was also shown that the electronic commerce literature is predominantly western-culture driven and that issues related to consumers from other cultures that are newly introduced to the Internet, such as the Arab culture, are generally neglected.

This chapter has discussed the available literature relating to cultural models, Human Computer Interaction approaches towards international interface design, as well as consumer behaviour theories and practices. Particular emphasis was placed on consumer cultural properties as a major consumer buying behaviour influencing factor both for conventional and virtual retailing. However, trust, as a major determinant of online purchase was investigated in more depth. Furthermore, several studies measuring the antecedents and outcomes of trust in conventional and electronic commerce were discussed. The literature review suggests that a precondition for trust to become significant is the natural presence of uncertainty and risk in the environment where a trading decision is being contemplated. Accordingly, the Internet's eligibility becomes a suitable venue for testing the effect of level of consumers' uncertainty avoidance toward building trust. The literature has reported only limited evidence in this area, especially for Arab users.

The review done in this chapter has helped to identify gaps in literature that this thesis is aiming to bridge, which will guide the empirical work in the next chapters. These gaps can be summarised as:

☐ There is a need for more empirical cultural research into the perception and preferences of consumers towards e-commerce

☐ There is little empirical evidence for how the consideration of cultural variables such as Hofstede's could improve web and interface design

☐ There is a severe shortage in studies considering behaviour of consumers from cultures that are newly introduced to the Internet, such as the Arab culture.

☐ While the Internet's eligibility is a suitable venue for testing the effect of level of consumer's uncertainty avoidance toward trust, little research investigated the effect of this cultural variable in building online trust.

☐ Exploratory research on cross-cultural online trust has failed to find significant differences; however, many authors argue that there may be a relationship between trust and culture which needs to be further investigated

☐ While there might be strong cultural effects on the attitude and willingness to buy through its effect on trust, the cultural effect on these two consumer behaviour factors is poorly considered in the e-commerce research studies.

While the outcome of this literature review has helped to draw the main concepts that constitute the intersection between consumer culture and trust within e-commerce; the following chapter; chapter 3, will discuss the theoretical framework to study these concepts. Chapter 3 will discus the methodological approach pursued by this research that will be used as a basis for the empirical study of the issue under investigation.

The main concepts that constitute the relationship between culture and trust, discussed in this chapter, will then be investigated in more depth for the Egyptian Internet consumers, within the hypothesis raising phase discussed in chapter 4. Chapter 4 will complement the literature review by an exploratory approach to investigate the underlying interrelationships that may exist between theses different concept for the Egyptian Internet users.

CHAPTER 3

RESEARCH METHODOLOGY

> *"In most aspects of information systems, a research approach with universal applicability is highly unlikely."*
>
> (Galliers, *Researching Information Systems,* 1992)

3.1 Overview

Information systems research is a complex multidisciplinary field, which can involve particular research styles and employ different methods (Galliers, 1992). In that sense, there is no single methodology, which covers all the domains of knowledge essential for the study of information systems (Land, 1992). Accordingly, a researcher in this field has to be aware of the variety of research approaches and techniques in order to make informed decision about the appropriate research methodology.

This chapter aims to illustrate the research approach used in this thesis to investigate the main concepts that constitute the intersection between consumer culture and trust within e-commerce. The chapter examines first the ontological, epistemological and methodological assumptions, which form the basis of this research. It proceeds to discuss the selected research philosophy and data gathering techniques. This is followed by illustrating the suggested research framework, including research phases and process, with a discussion of data gathering instruments and analysis

techniques used in each phase. The chapter ends with an argument about generalisation, sampling and culture study approach concerns, with a discussion about how these concerns are dealt with in the current research.

3.2 The Importance of the Selection of an Appropriate Research Approach

Information systems are a multidisciplinary endeavour as contributions to its study come from variety of disciplines. In that sense, there is no single framework, which covers all the domains of knowledge essential for its study (Land, 1992). Orlikowski and Baroudi (1991) argue that in information systems research there is a wide range of philosophical assumptions regarding the underlying nature of phenomena under investigation. They argue that much can be gained if a plurality of research perspectives is effectively employed to investigate information systems phenomena.

Furthermore, Galliers (1992) argues that it is highly unlikely that there is an information systems research approach with a universal applicability. He adds that information systems researchers are becoming increasingly aware of the limitations of the scientific approaches to their work, given the socio-technical nature of their field of study. The author makes a point of stressing that information systems research may embody a particular style and may employ different methods and techniques. Therefore, selecting the appropriate research approach, when studying information systems, is one of the most challenging decisions for a researcher. Accordingly, awareness of the whole range of research paradigms, assumptions and methods may facilitate informed choice. The next section presents the research paradigms and methods selected during the development of the thesis framework, as well as the rationale for the selection of the specific approaches.

3.3 Underlying Research Assumptions

The set of beliefs that guide a researcher's action is known as paradigm (Denzin, 2000). For Denzin (2000), paradigms are theories about how the world works, what the character of humankind is and what it is feasible to know and not know. According to Guba and Lincoln (1994), a paradigm offers a way of categorising a body of complex worldviews that guide action. For them, it comprises three basic beliefs namely ontology, epistemology and methodology, which they define as follow:

☐ *Ontology* raises the basic questions about the nature of reality to be known (Guba and Lincoln, 1994).

☐ *Epistemology* is concerned with how we know the world and what the relationship between the inquirer and the known is. It represents the assumptions about the nature of the relationship between the knower, or *the would-be knower,* and what can be known (Guba and Lincoln, 1994).

☐ *Methodology* focuses on how we obtain knowledge about the world. It indicates which research techniques are considered appropriate for collecting valid empirical evidence (Guba and Lincoln, 1994).

According to Guba and Lincoln (1994), the major paradigms that structure and organize social science research are positivism, post-positivism, critical theory and constructivism or interpretivism. Differences between these paradigms and their associated strategies, approaches and methods are illustrated in **table 3.1**, based on Guba and Lincoln's (1994) interpretations.

Table 3.1: Basic Beliefs of Alternative Research Paradigms (adapted from Guba & Lincoln, 1994)				
Philosophical Aspect	**Positivism**	**Post-Positivism**	**Critical**	**Constructivism/ Interpretivism**
Ontology	*Realist, Naïve Realism*: *real* reality exists independent of humans. It is unproblematically apprehensible, measurable and operates according to fixed laws of a cause-effect form.	*Critical realism:* *real* reality is assumed to exist but only imperfectly. It is probabilistically apprehensible due to the imperfectability of human cognitive and intractable nature of phenomena.	*Historical realism: virtual* reality shaped by social, cultural and ethnic values historically crystallizes over time. Humans are not confined to existing in a particular state	*Relativist*: reality is relative to observer, as there are many socially constructed realities that are not subject to any natural laws. Humans continuously construct and reconstruct their reality.
Epistemology	*Dualism/ Objectivism*: The observer and the observed *object* don't affect each others. The aim of the inquiry is to establish cause-effect relationships between the objects of its study. Empirical testing results are assumed to reflect *true* explanation of object's aspects.	*Modified Dualism/ Objectivism*: Preference is given to critical tradition and critical community. The aim of the inquiry is explanation and prediction of knowledge. Findings are *probably true* but always subject to falsifications.	*Transactional/ Subjectivist*: Preference of long-term historical and ethnographic studies. The aim of the inquiry is critique and transformation of knowledge. Findings are *value mediated.*	*Transactional/ Subjectivist*: The observer and the object are interlocked. The aim of the inquiry is understanding and reconstruction of knowledge. Findings are thus created by the observer's interpretation and by the investigation process.
Methodology	*Experimental/ Manipulative:* The inquiry process seeks to verify hypotheses established as facts or laws, and eliminate confounding factors so as to explain the phenomenon as it really is. The aim is to predict and control using empirical quantitative tests.	*Modified Experimental/ Manipulative*: Hypotheses are initially assumed to be false; they are probable facts or laws. Inquiries are done in more natural settings and while collecting more situational data. Multiplism of several methods that may include qualitative techniques.	*Dialogic/ Dialectical*: The inquiry involves a dialogue between the investigator and the participants to transform ignorance into more informed consciousness, initiating changes in the social relations and practices.	*Hermeneutic/ Dialectical*: The inquiry involves a continuous argumentative that seeks to critique, analyse and reanalyse. The aim is to reach a joint construction of a phenomenon by those parties to it.

Positivist and interpretive paradigms represent two opposing constellations of beliefs about how valid knowledge may be generated (Denzin, 2000). A major advantage of the positivist approach is that it is unprejudiced in the sense that one can attempt to replicate the findings in a different study or in a different context (Winfield, 1990). However, a repeated criticism made about the positivist approach argues that positivism is a poor and misleading approach to conducting social science research as it assumes an objective external reality upon which inquiry can converge (Hirschheim, 1992). On the other hand, interpretive research has emerged as an important strand that has the potential to produce deep insights into social phenomena. However, there is a strong argument that what can be discovered in the interpretivist approach are not generalizations to larger population but contextual findings (Winfield, 1990).

Guba and Lincoln (1994) (see **table 3.1** above) clearly separate the interpretive and critical paradigms supporting that the latter is mainly characterised by an evaluative perspective which is not obvious in interpretive research. Walsham (1993) in contrast, sees that the two theories are related. He argues that critical theory emphasises the role of the interpretive approach for the research that has a social content.

On the other hand, the post-positivist approach that is positioned between positivism and interpretivism was introduced as a need to overcome challenges of positivism (Lincoln and Guba, 2000). Many researchers support a paradigm shifting from positivism's dualist objectivist assumption, to post-positivism's critical realism, which grants that reality cannot be perfectly understood (Winfield, 1990). Some researchers give support to an appropriate post-positivist stance in information systems research, arguing that the use of multiplism of several methods, emphasized by post-positivism, is suitable for the nature of information system studies (Hirschheim, 1992). Based on the characteristics of the different research paradigms, the next section discusses the selection of a research approach appropriate to the context of the current study.

3.4 Selecting the Post-Positivism Research Approach

In this thesis the choice for research approach has been determined by the nature of the problem being addressed. This research is primarily investigating the effect of culture on e-commerce behaviour. The ultimate aim of the research is to test a causal relationship among constructs conceptualising culture and e-commerce behaviour. As discussed in chapter 2, there is shortage in literature investigating e-commerce adoption for certain cultures, such as the Egyptian culture considered in this research. Little research has yet considered how consumers from this population perceive e-commerce or their subsequent online shopping behaviour. Therefore, it is not applicable to generate the research hypotheses based on the available literature only. An in-depth understanding of the phenomenon is argued to be needed at the start of this research to generate mature hypotheses which are potentially most important for the considered culture. It will be possible then to formulate the problem in terms of testable hypotheses. Within these two phases of the research, as both descriptive and quantified description of the phenomenon will be aimed, a hybrid technique for inquiry that combines both quantitative and qualitative techniques is suggested.

While the post-positivism inquiry seeks to verify cause and effects relationships between hypotheses, which are initially assumed to be false (Guba and Lincoln, 1994). Post-positivism is also characterized by the assertion that there is no single correct method of science but many methods (Hirschheim, 1992). Therefore, the approach emphasizes the usage of multiple measures and observations, which might include both qualitative and quantitative techniques.

On the basis of the above discussion, there are both epistemological and technical reasons for adopting the post-positivist research approach as the underlying research assumption of this research. The reasons for that choice are twofold. First, this thesis is aiming to explore the different context of the phenomenon under investigation, subsequently establish a cause and effect relationships between the phenomenon's constructs. This goal cannot be classified as either purely positivistic nor purely interpretivist research, as it incorporates elements of both paradigms. Therefore, the present research logically can fall under post-positivist approach, which is

positioned between positivism and interpretivism (Lincoln and Guba, 2000). Second, the hybrid approach for inquiry adopted by the research is argued to fall under the post-positivism approach that stresses the use of a multiplicity of techniques from the positivist and the interpretivist paradigms. Having discussed the reasons for selecting the post-positivist research approach, the theoretical foundations of this approach are described in the next section in order to identify their implications for the research design of this thesis.

3.5 Theoretical Foundations of Post-Positivism

According to Lincoln and Guba (2000), reality in post-positivism is assumed to exist but only imperfectly, due to the *intractable nature of phenomena*. This is reflected in the post-positivist ontology stressing that reality must be subjected to the widest possible critical examination *to facilitate apprehending reality as closely as possible*; replicated findings are *probably* true but always subject to falsification (Guba and Lincoln, 1994). In contrast to positivists, post-positivists reject the idea that individuals see the world perfectly as it really is. For them, the observer is biased and all observation can be affected, hence, to achieve objectivity, there is a need for multiple perspectives (Hirschheim, 1992). Therefore, methodology in post-positivism emphasizes critical multiplism as a way of assessing hypotheses (Guba and Lincoln, 1994).

For Guba and Lincoln (1994), post-positivist methodology redresses some of the positivism problems, in the social sciences particularly, by doing inquiry in more natural settings, and while collecting more situational data to investigate the meanings that people ascribe to their actions. For Kuhn (1996), the post-positivist goal matches with the goal of information system (IS) research in studying reality putting in mind that there is likelihood that one may never be able to attain that goal. Furthermore, for Winfield (1990), post-positivism is continuously gaining ground in the field of IS as a methodological approach appropriate for this type of research.

In this context, it might be helpful to retain a distinction between the "philosophical" methodology, inspired from the paradigm that emphasizes the research assumptions,

and that of the "technical" methodology, in terms of the choice of the data gathering technique whether it is qualitative or quantitative (Bryman, 1998). The relationship between philosophy and actual practice is usually translated into a mandate to investigate the most suited technique that accommodates the research assumptions (Bryman, 1998). The following sections discuss the research philosophy adopted in this thesis, and how it influences the selection of the data gathering techniques used in the research.

3.6 Research Philosophy Adopted in this Thesis

Giddens (1984) asserts that post-positivism informs social theorizing and empirical investigation and posits the existence of three levels of understanding for social phenomena. In this research, the research philosophy is inspired by Giddens' (1984) levels of understanding and derived from both the research assumptions and the research objectives. Subsequently, a framework to study the phenomena under investigation is suggested to include the following methodological steps:

- First, the researcher seeks a *subjective understanding* of the phenomenon under investigation throughout an exploratory phase. This phase aims to explore the phenomenon and generate research constructs through elicitation of the perception of human participants' understanding of the phenomenon.

- Second, the researcher seeks an *interpretivist understanding* based on interpretation of the participants' understanding. This leads the researcher, with knowledge gained from literature, to generate relationship between research constructs and build the research hypothetical model

- Third, a *positivist understanding* is aimed throughout a model testing phase. In this phase, formal testing of the research hypotheses is conducted by applying empirical assessment for verifying or disconfirming the hypothetical model.

This framework seems initially plausible for investigating a complex phenomenon such as the one considered in this research. Since there have not been sufficient

findings linking e-commerce behaviours to cultural variables, especially for the culture considered in this research, the need to start with an interpretivist understanding of the problem is essential in the current study.

Several researchers support Gidden's (1984) approach by arguing the need for an exploratory phase as a starting point of a research (Krathwohl, 1997; Straub and Carlson, 1989). For Krathwohl (1997), the exploratory approach allows researchers to understand different components of the phenomenon and to express the perceived interaction within these components. Straub and Carlson (1989) argue that a typical IS research cycle starts with an exploratory phase to be followed by a confirmatory phase.

Table 3.2 illustrates the research phases suggested in this research and the methodological process under each phase, as relevant to the current study. The research starts with an exploratory phase that includes an investigation process and a model designing process. This is followed by a model testing phase that includes a testing process and an analysis process.

Table 3.2: Research Philosophy	
Methodological Process	**Objective**
Exploratory Phase	
- Investigation Process	Target a profound *subjective understanding* of the phenomenon under investigation, as well as an *interpretive understanding* of research hypotheses and constructs. Review literature covering more than one discipline within the scope of the research, and give insights on relevant previous work.
- Model Designing Process	Identify research hypotheses, research constructs, and constructs inter-relationships, thus building the hypothetical research model.
Model Testing Phase	
- Testing Process	Data gathering instruments design, experiential survey process design, and sample design. Gather quantitative data. Provide a *positivist understanding* of the phenomenon by empirically testing the research model.
- Analysis Process	Analyse the data, validate results, provide conclusion and recommendations, and give a resultant list of the research limitations and contributions.

For Bryman (1998), the next step after setting a research philosophy is to link it with actual practice. This is done by selecting the most suited data gathering techniques that accommodates the research assumptions and responds to the research methodological processes.

Accordingly, the following section will focus on the nature of quantitative and qualitative research approaches, being the two main different approaches in technical research methodology (Krathwohl, 1997). The section will discuss the relevance of these approaches to the current research, and proceeds to suggest the suitable techniques for the current research.

3.7 Methods of Inquiry

Krathwohl (1997) illustrates quantitative and qualitative research approaches as the two sides of the methods of inquiry continuum. This section discusses the nature of each approach in order to justify their relevance to this research. Quantitative research methods seek to verify universal cause-effect relationships between variables. They produce educated guesses or hypotheses, which are then used to examine the data. Quantitative methods typically use a deductive approach where the explanation guides the development; they concentrate mainly on the statistical significance of the results, generated from empirical tests (Maykut and Morehouse, 1998). On the other hand, qualitative research methods aim to discover meanings and patterns, looking closely at people's words, actions and records, as important human artefacts. Qualitative methods typically use an inductive approach where the explanation grows out of the data; this is usually done through close observation, and through analyses of the research topic (Rubin and Rubin, 1995).

Rubin and Rubin (1995) argue that a common drawback in quantitative methods is that they routinely reduce complex information to summary measures, often ignoring the details and richness of individual behaviour, and what is difficult to quantify. In contrast, for them, qualitative methods provide rich insights of human behaviour and functions, as they are primarily interested in deriving meanings and cognition of a phenomenon rather than measuring or quantifying. On the other hand,

a common drawback in qualitative methods is that what can be discovered by qualitative research are not generalizations but contextual findings (Krathwohl, 1997). It is also argued that since qualitative methods build on one's verbal skills, they require skilful interpretation of data (Maykut and Morehouse, 1998).

While Krathwohl (1997) suggests that the quantitative research method tends to support the positivist epistemology, and the qualitative approach is more in favour of a constructive/ interpretive epistemology. For Coolican (2004), the positivist treats qualitative data as a complementary tool to consolidate and enlighten statistics obtained from the research instruments. Furthermore, Bryman (1998) sees no apparent reason why a qualitative technique cannot be used to test theories in the manner typically associated with the positivistic research (Myers, 1997).

In the strand of information systems research, the choice of multiple research techniques is supported by various researchers (Galliers, 1992; Hirschheim, 1992; Winfield, 1990; Straub and Carlson, 1989). According to Galliers (1992), the field of information systems is essentially a pluralistic scientific field that "can best be understood and analyzed only with the help of pluralistic models" (p. 148). Furthermore, information systems are seen as social communication systems, embedded in cultural context; multiple perspectives and interpretations must be taken into account when researching this field, where the use of multiple of research techniques is essential (Winfield, 1990). For Krathwohl (1997), the use of a combination of techniques from the quantitative and qualitative is particularly important in social science research. He argues that combining methods not only can compensate for the flaws of one method with the strengths of another, but can also provide different perspectives and details.

The need for multiple research techniques is rooted in the post-positivism ontology, where the observer and the observed phenomenon are expected to affect each other. Because all measurement is fallible, the post-positivist emphasizes the importance of multiple measures and observations (Hirschheim, 1992), a process known as triangulation, each of which may possess different types of error. Abrahamson (1983) cites that the triangulation approach prevents the researcher from becoming method-bound; counterbalancing the strengths from one measure to another can

improve the research designs and strategies. Section 3.11 of this chapter elaborates more on the triangulation concept in this thesis.

On the basis of the discussion above, a hybrid approach that combines both quantitative and qualitative approaches is selected in the present thesis. This involves the use of a variety of data gathering instruments. Based on the previous discussion of the research assumptions and methodologies, the following section will summarise the overall research framework, providing details of data elicitation techniques in each of the research phase and process.

3.8 Research Framework

This research investigates how consumer's culture affects online behaviour. As previously discussed in this chapter, there are no sufficient findings linking e-commerce behaviours to cultural variables, especially for the culture considered in this research. Therefore, the research starts with an exploratory phase to gain an in-depth understanding of the phenomenon constructs and raise research hypotheses. This is followed by a model testing phase that empirically assesses the hypothetical model. **Figure 3.1** illustrates the overall research framework, including the two main phases of the research and their associate process, data gathering instruments, and analysis techniques.

The Exploratory Phase: The Investigation Process

The investigation process of this research intended to gain a profound understanding of the phenomenon under investigation through elicitation of the perception of human participants' understanding of the phenomenon. It starts with semi-structured interviews aiming to develop an understanding of how cultural dimensions might affect Egyptians' perception and preferences on the Internet. According to Smith (1995), interviews are appropriate tools for understanding interviewees' opinion and belief about a particular matter or situation. Semi-structured interviews assist researchers in acquiring a detailed picture of a respondent's beliefs about, or perceptions of, a particular phenomenon (Smith, 1995). Interviews are also

suggested to be appropriate for oral dominant societies such as the Arabic culture (Zaharna, 1995).

Following the interviews, a survey study was used aiming to collect more data and complement the findings of the interviews on a larger sample. Hoft (1996) suggests that surveys are practical methods for identifying cultural preferences, where the use of Likert-type scales is suggested in order to reduce variables that could be created by misinterpretation of linguistically complex questions and of subsequent responses given. In the exploratory phase, a Likert-type survey was used in the form of electronic survey distributed over three Egyptian e-groups to supplement the semi-structured interviews, and to investigate the findings of the interviews on a larger sample.

Card sorting sessions were then employed to examine the e-commerce interface features that are most salient to this user group and to explore how these relate to user intentions to engage in Internet shopping. Card sorting is a method of knowledge acquisition to model the cognitive processes of humans (Shadbolt and Burton, 1995). Its use derives from Kelly's (1955) Personal Construct Theory which posits that in their attempt to understand the world, people will develop categories and sets of representations about the world, *personal constructs*. Card sorting techniques are suggested to be exceptionally useful to elicit cultural perception of interface quality (Maiden and Rugg, 1996).

The sorting technique was used as the main exploratory study in this research. Two sorting sessions were designed in the investigation process of this research to examine the e-commerce interface features that are related to user intentions to buy, and to investigate if these features are linked to cultural variables. Detailed reporting and discussion of the three exploratory studies (semi-structured interviews, electronic survey and card sorting) is included in Chapter 4 of this thesis.

Figure 3.1: Research Framework

Phase I: Exploratory Phase
(Hypotheses Raising Phase)

Investigation Process:

- Literature Review
- 3 Exploratory Studies

Model Designing Process:

- Identify Research Constructs & Hypotheses
- Designing Research Model

Objective:
Target a profound *subjective understanding* of the phenomenon under investigation, and an *interpretive understanding* of research hypotheses.

Data Gathering & Analysis Techniques:
- Semi-Structured

Objective:
Identify research hypotheses, research constructs, and constructs inter-relationships, thus

Phase II: Model Testing Phase

Testing Process:

- Instrument & Sample Design
- Experiential Session Design & Piloting

Objective:
Provide a *positivist understanding* of the phenomenon by empirically testing the research model.

Analysis Process:

- Descriptive Analysis
- Qualitative Analysis
- SEM Measurement and Structural Model Analysis
- Final Model & Conclusions

Objective:
Assess validity and reliability of findings, empirically test the model, and provide conclusion and recommendations.

Data Analysis Techniques:
- Descriptive Analysis
- Structural Equation

The Exploratory Phase: The Model Designing Process

Based on the findings of the exploratory studies, the model designing process incorporated the identification of the research hypotheses; research constructs, and constructs inter-relationships, thus building the hypothetical research model. The analysis of data collected from the three exploratory studies revealed some interesting findings about the way in which Egyptian users interact with the Internet. Some of these findings suggested e-commerce interface features that are most salient to this user group, relating these features to user intentions to engage in Internet shopping. This allows an understanding of different components of the phenomenon and an expression of the perceived interaction within these components; it also allows the researcher to narrow the research scope. Subsequently, this led to the identification of the research constructs, the specification of the relationships between these constructs and thus to a statement of the research hypotheses. The research model was then designed to conceptualize these constructs' relationships. The findings from the exploratory phase are discussed in details in Chapter 4 in relation to relevant previous work in the field

The Model Testing Phase: The Testing Process

The model testing phase aimed to provide a positivist understanding of the phenomenon by empirically testing the research model. *Laboratory experiential survey method* (Grabner-Kräuter and Kaluscha, 2003) was the main data gathering instrument in the model testing phase. In this phase, the problem is formulated in terms of hypotheses which can be tested, and the aim is to check a causal relationship among constructs. During the experiential session, participants are usually given the time to browse Internet sites; to search for a specific item, and to fill a shopping experience evaluation survey.

The laboratory experiential survey method is used and recommended as a suitable research methodology in several empirical research studies in online trust (Jarvenpaa, Tractinsky and Vitale, 2000; Gefen, 2000; Gefen and Straub, 2000). The method is reported to represent a *live* environment, thereby making the participants' behaviour more natural (Gefen and Straub, 2000). The experiential survey method is also reported as an effective instrument to explore consumer behaviour (Siomkos and Vrechopoulos, 2002). Chapter 5 of this thesis describes in details the application

of the laboratory experiential session including e-commerce sites selection, as well as participants, location, equipments and experimenter selection. The chapter also discusses session's tasks, procedures and piloting details.

The Model Testing Phase: The Analysis Process

Structural Equation Modelling (SEM), content analysis and cluster analysis are the main data analysis methods used in this thesis. While the next section discusses the use of these methods in analyzing the research data, chapter 6 of the thesis reports data analysis results, including measures reliability and validity and research model evaluation. Chapter 7 of the thesis expands the research findings into implications, highlighting the main research contributions.

The following section demonstrates some of these instruments; focus is on the instruments employed in this thesis, discussing their relevance to the current study.

3.9 Data Gathering Instruments Adopted in this Thesis

According to Krathwohl (1997), gathering data through methods of inquiry is the key activity in a research project; it should be directed by the research objectives, and influenced by the environmental factors researchers have investigated. In this research, the data gathering instruments (methods of inquiry) are selected based on the research philosophy and objectives. **Table 3.3** lists the strengths and weakness of the selected data gathering instruments used in the study (Krathwohl, 1997; Galliers, 1992), and provides examples of their use in the thesis.

Table 3.3: Strengths & Weakness of Data Gathering Instruments and Use of in this Thesis			
Instruments	**Strengths**	**Weaknesses**	**Use in the Study**
Interviews	▪ Allow depth of response ▪ Ensure questions comprehensibility ▪ Flexible and adaptable ▪ Capture non-verbal responses	▪ High cost on time and personnel ▪ Require skilled and trained personnel ▪ Difficult to analyze and summarize ▪ Interviewer might influence responses Rely upon participants ability to explicitly verbalise their views	Semi-structured interviews with participants at the exploratory phase to investigate general perception and preferences toward Internet
Surveys	▪ Quick and economical ▪ Easy to score and summarize ▪ Provide snap shots of practices or situation at a particular point in time	▪ Usually low response rate (in case of questionnaire collected by mail or e-mail) ▪ No assurance of questions comprehensibility ▪ Responses might be subject to response sets such as acquiescence set (tendency to "yes" or "true" responses. and/or the halo effect (tendency to respond to rating scales in terms of a general image of the person)	▪ Electronic questionnaire distributed over various Egyptian E-groups at the exploratory phase to investigate general perception and preferences toward e-commerce ▪ Experiential survey sessions conducted with participants in laboratory environment at the model testing phase to empirically assess research model
Card Sorting	▪ Useful in building theory that can subsequently be tested ▪ Creation of new ideas and insights	▪ Assumes that people can describe their own categorisation of the world with reasonable validity and reliability	Two card sorting sessions with participants at the exploratory phase to investigate salient factors affecting electronic purchase decision

3.10 Data Analysis Methods Adopted in this Thesis

As the research adopts a hybrid data gathering approach, data analysis is, accordingly, driven from both qualitative and quantitative strands. The main analysis of quantitative data is done through the Structural Equation Modelling (SEM) technique. While qualitative analysis techniques applied in the research are, content analysis and cluster analysis. This section discusses the use of these techniques within the two phases of the research.

3.10.1 Structural Equation Modelling Analysis

The structural equation modelling (SEM) is a technique that seeks to represent the observed data in terms of a number of *structural* parameters defined by a hypothesized underlying model. SEM is a theory-based approach that has the ability to bring data and theory together (Tabachnick and Fidell, 2000). SEM is characterized by its capability for simultaneous analysis, where the relationships among multiple independent and dependent constructs are modelled simultaneously. This capability differs greatly from most *first generation statistical tools* such as correlation, regression and factor analysis, which can analyze only one layer of linkages between independent and dependent variables at a time (Chin, 1998). SEM has allowed social scientists to perform path analytic modelling with latent variables, which in turn has led some to describe this approach as an example of a *second generation of multivariate analysis* (Hair, Anderson, Tatham, and Black, 1998).

SEM not only assesses the causation among a set of dependent and independent constructs (the structural model analysis), but in the same analysis, also evaluates the loadings of measurements on their expected constructs (measurement model analysis). Thus, in SEM, factor analysis and hypotheses are tested in the same step. According to Gefen et al (2000), the combined analysis of the measurement and the structural model enables measurement errors of the observed variables to be analyzed as an integral part of the model, as well as factor analysis to be combined in one operation with the hypothesis testing. The result is a more rigorous analysis of the proposed research model and, very often, a better methodological assessment (Bollen, 1989).

Not surprisingly, SEM tools are increasingly being used in behavioural science research for the causal modelling of complex, multivariate, data sets in which the researcher gathers multiple measures of proposed constructs (Hair et al, 1998). According to Gefen et al (2000), a casual glance at the IS literature suggests that SEM has become increasingly considered in validating instruments and testing linkages between constructs. Gefen et al (2000) reported a heavy increase in the use of SEM in well known IS journals. On the other hand, the use of SEM analysis in

the IS field has substantially increased due to several software packages that are now available to perform SEM such as LISREL, AMOS and PLS-Graph (Chin, 1998).

3.10.1.1 The Reasons Structural Equation Modelling was adopted in this Thesis

Structural Equation Modelling is selected as the main analysis technique in the model testing phase of this research, for the following reasons:

 SEM is practically useful when one dependent variable becomes an independent variable in subsequent dependence relationship (Tabachnick and Fidell; 2000). The current research mainly looks at the antecedents and outcomes of trust within a cultural context. Therefore, it is expected that the *Trust* construct will act as a dependent variable affected by trust-antecedents. On the other hand, Trust will also act as an independent variable affecting trust-outcomes. Using a first generation statistical tool, such as regression analysis, a large number of multiple analyses would be required. This could complicate the statistical analysis of the current research.

 While first generation statistical tools, such as regression analysis, cannot accommodate complex modelling which is particularly valuable when investigating consumer behaviours; SEM, on the other hand, is more suited for the mathematical modelling of complex processes to serve both theory and practice (Gefen et al, 2000).

 SEM has the ability to incorporate latent variables into the analysis (Tabachnick and Fidell, 2000). As the current research looks at cultural issues in human behaviours, it is expected that the majority of variables to be unobserved concepts that can only be approximated by measured variables.

 SEM employs confirmatory modelling strategy (Tabachnick and Fidell, 2000), while the objective of the current research is to confirm the hypothesized relationships between the model's variables.

SEM analysis is usually carried out via one of two distinct statistical techniques: Covariance analysis (employed in LISREL, EQS and AMOS), and Partial least squares (employed in PLS and PLS-Graph). These two distinct types of SEM differ in the objectives of their analyses, the statistical assumptions they are based on, and the nature of the fit statistics they produce (Gefen et al, 2000).

In this thesis, the PLS-Graph software is used as the SEM analysis tool. The statistical objective of PLS is to show high R^2 and significant T-values, thus rejecting the null hypothesis of no-effect (Thompson, Barclay and Higgins, 1995). The objective of covariance based SEM, on the other hand, is to show the goodness to fit of the assumed research model with all its paths. It is suggested that PLS is more suited for exploratory research and theory building, in contrast to covariance-based SEM (Chin, 1998).

PLS performs an iterative set of factor analyses combined with path analyses until the difference in the average R^2 of the constructs becomes insignificant. At the structural level, PLS estimates path coefficients and correlations among the latent variables, together with the individual R^2 and AVE (Average Variance Extracted) of each of the latent constructs (Thompson et al, 1995). Once the measurement and structural paths have been estimated in this way, PLS applies either a Jack-Knife or a Bootstrap approach to estimate the significance T-values of the paths (Chin, 1998).

Unlike LISREL, while there are no overall model fit statistics produced by PLS, a good model fit in PLS is established with significant path coefficients, acceptably high R^2 and internal consistency (construct reliability) being above 0.70 for each construct (Thompson et al, 1995). Assessing the confirmatory factor analysis in PLS is then done by verifying constructs' convergent and discriminant validity by checking that the AVE of each construct is larger than its correlation with the other constructs, and that each item has a higher loading on its assigned construct than on the other constructs (Gefen et al, 2000).

Chapter 6 of this thesis illustrates in detail the results of both the PLS-Graph measurement and structure models. The chapter discusses how the findings from this

analysis contributed in assessing the research model, in terms of accepting or rejecting hypotheses.

3.10.2 Textual Analysis

According to Maykut and Morehouse (1994), one of the defining characteristics of the qualitative method is its inductive approach to data analysis. They argue that in inductive approaches, data are collected in relation to the focus of inquiry, where relevant variables are not predetermined. In this research, hypotheses are not generated prior to the beginning of the study, instead they are raised at the exploratory phase, based on the phenomenon understanding provided by qualitative studies. The qualitative analysis techniques used in this research includes textural analysis and cluster analysis. While the latter is used to analyse the sorting sessions data, textual analysis is used to analyse semi-structured interviews data as well as the open ended surveys' questions.

According to Miles and Huberman (1994), textual analysis assists researchers in developing an understanding of the phenomenon of interest that they are investigating. They argue that it is a reliable tool to interpret and derive meanings from textual or audiovisual content. This technique involves counting the frequency of key phrases or words occurring in the text of transcribed responses to open-ended questions in surveys or in transcribed recorded interviews and then analysing the frequencies of each key phrase or word, which are known as coding units (Coolican, 2004). Coding is used to categorise the data, hence generating themes or patterns that are noteworthy in participants' answers. Miles and Huberman (1994) specify steps that a researcher should go through during textual analysis, these steps are as follows:

☐ Summarize the data in a comprehensive representation

☐ Affix codes to a set of words or phrases drawn from observations or interviews

☐ Sort through the material to identify patterns and relationships, distinct differences and similarities within responses

☐ Relate these patterns and relationships to data obtained from other methods so as to validate the textual analysis and provide missing information

☐ Elaborate a small set of generalisations that cover the consistencies discerned in the data.

☐ Confront those generalisations with a formalised body of knowledge in the form of constructs and theories.

Chapter 4 of this thesis illustrates the use of these steps in the analysis of data collected through semi-structured interviews. The chapter discusses how the findings from the semi-structured interviews analysis, complemented with findings of the other two exploratory studies, assisted the researcher in raising the main research hypotheses.

3.10.3 Cluster Analysis

Cluster analysis is suggested to be a powerful qualitative analysis technique for card sorting results, as it emphasises establishing categories within the data based on commonalities between the category judgements made by multiple participants (Eberts, 1994). In the current research, data collected from the two card sorting sessions was analysed using cluster analysis, where clusters were calculated using the EZCalc tool developed by IBM (Dong, Martin and Waldo, 2001). According to Eberts (1994), in EZCalc, the degree of category relatedness between items is indicated by a tree structure. The shorter the path that can be traced between two items through the tree, the more likely the items are to belong to the same category. Chapter 4 of this thesis illustrates the use of cluster technique in the analysis of data collected through the exploratory card sorting sessions. In this thesis, cluster analysis of card sorting sessions played a major role in generating research constructs and estimating relationships between them, hence raising research hypotheses.

3.11 Research Credibility

A common concern about any research is its degree of credibility. The credibility of any research is usually based on the validity and reliability of the research findings, as well as the findings' capability of providing basis for scientific generalisation. This section discusses the extent to which the validity of measures, reliability and generalisability of findings were achieved in this research. **Table 3.4** demonstrates the three concepts based on Krathwohl (1997).

Table 3.4: Questions of Validity, Reliability, and Generalisation (based on Krathwohl, 1997)	
Credibility Concept	**Related Questions**
Validity	Does an instrument measure what is supposed to measure?
Reliability	Will the measure yield the same results on different occasions (assuming no real change in what is to be measured)?
Generalisability	What is the probability that patterns observed in a sample will also be present in the wider population from which the sample is drawn?

One of the major advantages of the post-positivist approach, adopted in this research, is its capability to support research validity and reliability through the *methodological pluralism* concept that emphasizes the use of multiple methods of measures (Hirschheim, 1992); such an approach is also known by researchers as triangulation. Triangulation is a way of achieving validity and reliability of research findings as means of validating the results. According to Janesick (2000) there are five types of triangulation, namely data, investigator, theory, methodological and interdisciplinary triangulation. **Table 3.5** highlights in bold the four types of triangulation applied in the present research.

Furthermore, as discussed in Chapter 5, to ensure the validity and reliability of the findings, all of the construct's measures used in the present research are drawn with no modification from literature where they are reported reliable measures to the construct they suppose to assess. Chapter 6 provides statistical evidence for the validity and reliability of measures through PLS measurement model.

The post-positivism approach is also known by its capability to provide basis for scientific generalisation. Winfiled (1990) argues that what can be discovered in the post-positivist approach can, to a great extent, be generalized to a larger population.

Generalisation of research findings can as well be achieved through sampling technique, as discussed in the following section. Chapter 7 of this thesis discusses some evidence that the findings of this research have generalisability to practice, theory and research methods.

Table 3.5: Types of Triangulation and their Application in the Research (triangulation types applied in this thesis are highlighted in bold)		
Triangulation Type	**Meaning**	**Application in the current Research**
Data Triangulation	The use of variety of data sources in a study	data is collected through different sources, such as: • Three exploratory studies • Literature review • Experiential study
Investigator Triangulation	The use of several different researchers or evaluators	Not applicable in the current research
Theory Triangulation	The use of multiple theoretical perspectives to interpret a single set of data	Cultural model theories, trust and human behaviour theories are combined to study the effect of culture on electronic consumer behaviour
Methodological Triangulation	The use of multiple methods to study a single problem	Various data gathering techniques are used such as • Semi-structured interviews • Electronic survey • Card sorting sessions • Experiential survey session Various data analysis techniques are used such as • Structural Equation Modelling • Textual Analysis • Cluster Analysis
Multidisciplinary Triangulation	The use of investigation of issues related to more that one discipline	This thesis is of a multidisciplinary nature and constitutes a hybrid research in the field of culture, consumer behaviour and e-commerce. The research is built on investigation of methods and approaches from these three disciplines.

3.12 Sampling Techniques

Another common concern about any research is sampling technique, where research can build up on a subset of population, which is used to represent the population under study. Statistics can be subsequently used to investigate the likelihood that a pattern observed in the population be a replication of the sample pattern, thus providing a basis for research generalisation (Krathwohl, 1997). As one can never

reach an entire population, research is based on samples. Sampling techniques are typically divided into probability and non-probability techniques. **Figure 3.2** illustrates sampling techniques as discussed by Krathwoh (1997), highlighting the technique used in this research in bold. A description of the characteristics of each technique and justification for selecting the convenience sampling technique in this research is presented in the rest of this section.

Probability sampling "involves random sampling of units from the population at some stage in the sampling process" Krathwohl (1997: p.163). It enables the researcher to make inferences about characteristic of the population. The probability sampling technique includes simple random, stratified, systematic, and cluster sampling methods.
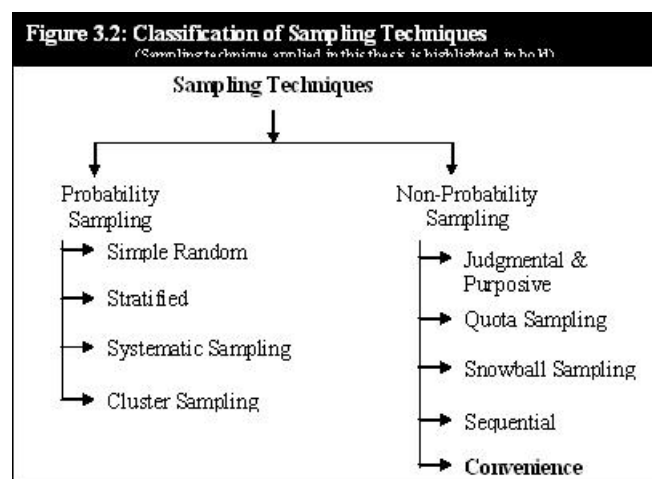
Figure 3.2: Classification of Sampling Techniques
(Sampling technique applied in this thesis is highlighted in bold)

While all methods under the probability technique create a sample using a random process for selection of elements from the entire population, the non-probability sampling does not. "Non-probability sampling methods are procedures that do not include random sampling at some stage in the process; because of their convenience, they are common" (Krathwohl, 1997: p.171). Non-probability sampling technique includes judgmental & purposive, quota, snowball, sequential, and convenience sampling methods.

Judgmental and purposive sampling involves judgements by researchers of which characteristics of the target population should be included in the sample. In quota sampling, researchers establish quotas for characteristics of individuals, often on the basis of demographic data, to ensure they are distributed in the sample as they are in the population. Snowball sampling is used to discover members of population not otherwise easily identified, by starting with known members and asking for referrals to other knowledgeable individuals. Sequential sampling involves gathering data in successive waves until some criterion of adequacy is met. The convenience sampling enables the researcher to select a number of cases whose size depends mainly of participants' availability and ease of data collection. According to Krathwohl (1997), the convenience sampling method, also called the *grab* method, is *the most commonly used* non-probability technique (p.171).

3.12.1 The Reasons Convenience Sampling was adopted in this Thesis

This thesis uses a non-probability convenience sampling technique. The convenience sampling enables the researcher to select a number of cases whose size depends mainly of participants' availability and the ease of data collection. It consists of groups of individuals who are easily accessible to the researcher. The advantage of this method is that it enables the researcher to improvise with the resource available for the research.

Although random sampling techniques are not employed consistently throughout the methodology of this research, it was found that the sample characteristics satisfied the criteria for the target population, as suggested by previous research on targeted population. This suggests, as discussed in Chapter 6, that the research participants share many similarities with the overall targeted population. On the other hand, this thesis targets users of the Internet; the Internet represents a unique problem for surveying since there is no central registry of all Internet users. As such, research targeting Internet users attempts to answer questions about all users by selecting a subset of users to participate. Furthermore, unlike other similar studies, which mainly depended on students' participation, this study targeted young professionals.

This sample reflects the characteristics of those who are currently most likely to have access to the Internet. It also serves as good sample for Internet buyers in general, and it is an integral part of the population of online buyers (Grabner-Kräuter and Kaluscha, 2003). Meanwhile, participants of this study were targeted from four different institutes, as a study of participants from a particular affiliation would not be sufficient, and a cross section of the variety of participant would be needed (Malhotra and Birks, 2003).

The selection of a sampling technique is only one step in the sampling design process. According to Malhotra and Birks (2003), the sampling process usually involves a number of tasks and decisions as follows:

☐ Definition of the population from which the sample is to be drawn

☐ Determination of the sampling frame

☐ Definition of the sampling technique

☐ Determination of the sample size

☐ Execution of the sampling process

☐ Sample validations

Chapter 5 discusses the application of these steps in the current research, providing justification for the selected sample design of the research based on research question, assumptions and resources.

3.13 Cultural Research Approaches

Cultural study has been one of the most growing developments in several fields during the past years (Van de Vijver and Leung, 1997). This growing interest is inspired by various factors, such as the globalisation of economic markets, and technological innovations such as the Internet. Cultural research is mainly grounded on either *Inter-cultural* (*Cultural*) psychology approach or *Cross-cultural* psychology approach (Honold, 1999). An understanding of the differences of these approaches can support the design for the current study.

The main characteristic of the cross-cultural psychology approach is its comparative nature, which involves the comparison of at least two cultural populations. Yet cross-culture research can also involve cross-national studies, where different groups from a single country are considered (Van de Vijver and Leung, 1997). This approach is grounded on the post-positivistic empirical tradition of psychology; using experimental, quasi-experimental tests and experiential surveys as data collection methods (Russon, 1995; Van de Vijver and Leung, 1997). In cross-cultural approach, experiments are implemented in parallel within different cultures, while same setting, context and tasks scenarios are maintained. Some researchers (e.g. Guba and Lincoln, 1994; Honold, 1999; Duncker, 2000) argue that in cross-cultural approach lots of existing differences between culturally different user groups is levelled off because of the artificial similarity of this testing situation. Consequently, important information about cultural differences is concealed. Honold (1999) suggests that observations and interviews with end-users in different cultures of interest should be conducted to complement the empirical setting. Hereby, the differences and similarities between cultural groups can be generated, which could be then confirmed by a complementary experimental study.

The Intra-cultural psychology approach concentrates more on understanding the intercultural situation and less on comparison of cultures. This approach is grounded on the qualitative-hermeneutic tradition of cultural psychology, using ethnologic field studies, observations, focus groups, and interviews as data collection methods (Russon, 1995). For Tan and Hunter (Tan and Hunter, 2001) qualitative research techniques would appropriately address Intra-cultural investigations as they allow more in depth investigation and interpretation of the phenomenon; they also allow the participants to decide on the content and descriptive nature of the response to the researcher's questions. This may permit new ideas to be discovered or different understandings to be documented by the researcher.

3.13.1 Cultural Research Approach Adopted in this Thesis

Cross-Cultural versus Intra-Cultural Approach

On one hand, the study is mainly focusing on the Egyptian culture, rather than looking at differences and similarities with other cultures. On the other hand, to study the effect of cultural variables, the research also involves cross-national study, where different groups from one country, Egypt, are considered (Van de Vijver and Leung, 1997).

Based on the definition and methodology of each of the cultural study approaches discussed earlier in this section, Intra-culture approach seems well matched with objective and philosophical assumption of the exploratory phase of this research. In this phase, the perception of participants from a single culture, the Egyptian culture, is investigated with no comparison with participants from any other culture. Qualitative techniques are heavily used in this phase, providing in-depth interpretation of the phenomenon. During the model testing phase of the research, participants were categorised under three cultural groups and empirical comparative analysis of these groups was done through experiential sessions. It could be argued that the objective and methodology of the comparative cultural approach in this phase of the research matches with a cross-cultural study.

Another approach for investigating the phenomenon under study would be to include participants from another country known to be of different cultural characteristics than the Egyptian participants. It could be argued that the approach of comparing samples from different countries is problematic since samples would differ in many other ways from the measured cultural variables. Although, using a country as a surrogate for culture is common in social studies, it is an *insensitive measure* and disregards the possibility that within-country cultural differences can be greater than the cross-country cultural differences (Jarvenpaa et al, 1999).

This thesis does not involve itself in comparison with other cultures. It mainly advocates for considering the preferences of consumers from cultures that have been neglected by previous research, such as the Egyptian and the Arab culture. In doing so, the research is aiming to provide recommendations for e-commerce designers

targeting the Egyptian and the Arab market. On the other hand, given the limited time and resources of the research, and the fact that the main research was conducted in Egypt, including participants from other countries would be challenging.

The Use of Hofstede Cultural Model

In the current research Hofstede's (1991) cultural model is used to understand the Egyptian users' perception towards e-commerce sites and to classify sub-cultural groups within the Egyptian Internet consumers. Being aware of Hofstede's criticisms as discussed in section 2.2.4 of chapter 2. This cultural model and variables seem plausible for the context of the current research for several reasons. Hofstede's model serves as the most influential culture theory among social science research (Pavlou and Chai, 2002), where the validity of the scale was supported by an extensive number of studies in various disciplines. Additionally, a large number of recent relevant literatures, investigating culture's effect on Internet consumer behaviour, were based on Hofstede's model (Dunckley and Jheita, 2004; Dunckley and Smith, 2000; Marcus, Baumgartner and Chen, 2003; Jarvenpaa et al, 1999; Jarvenpaa, Tractinsky and Vitale, 2000; Siala, O'Keefe and Hone, 2004). Therefore, it would be appropriate to use the same cultural model to be able to compare the results of the current research with previous work in the same field. This would check the applicability and validation of previous results within the Egyptian context.

Furthermore, Hofstede is one of the very few anthropologists who considered Arab-speaking countries in his survey. Egypt in particular, was considered with another six Arab countries in most of the survey items analysis; scores for the five cultural variables are calculated for the Arabic culture. This research assessed Hofstede's (1994) cultural index for the participants through the Values Survey Module (VSM94), a modified version of the original VSM used by Hofstede's in the IBM international study between the years 1968 and 1972. Knowing the dynamic nature of culture over time, it is aimed to validate Hofstede's index values for the Egyptians after years when they were first assessed.

3.14 Summary

This chapter presented the ontological, epistemological and theoretical foundations of the post-positivist approach, which forms the basis of this research. The chapter argues for the appropriateness of post-positivism, which emphasizes the use of multiple research methods, in investigating the multidiscipline phenomenon of culture effect on online trust.

The chapter presented the research philosophy as inspired by Giddens' (1984) levels of understanding, as it seems plausible for investigating a complex phenomenon such as the one considered in this research. This was translated in this research into three methodological steps providing a *subjective* understanding, followed by an *interpretivist* understanding, and finally a *positivist* understanding of the phenomenon under investigation. These steps were reflected in the research framework as two main research phases, an exploratory phase, targeting an interpretive understanding of research constructs and thus raising research hypotheses, followed by a model testing phase where research hypothetical model is empirically tested.

The chapter argued the importance of adopting a hybrid data gathering technique in studying the research context. Being a social phenomenon that involves culture and human behaviour, multiple perspectives must be taken into account, where the use of multiple research methods is essential. The use of data gathering instruments from both qualitative and quantitative strands was presented within the two phases of the research framework, which includes the use of interviews, electronic survey, card sorting sessions, as well as laboratory experiential survey. Justification for the selection of these instruments is given in this chapter, while detailed description of the way these instruments were designed and carried out is given in chapters 4 and 5 of this thesis.

Particular emphasis was given to the Structural Equation Modelling (SEM) data analysis technique adopted in the current research. The chapter justified the use of SEM (PLS-Graph tool) as the main quantitative analysis technique, over the first generation statistical tools, due to the complexity of the research model. The

quantitative analysis is complemented by textual and cluster analysis for the qualitative data collected mainly in the exploratory studies.

The chapter discussed the research credibility issue, through elaboration on the triangulation achieved in the research. Several types of triangulation, including data, theory, methodological and multidisciplinary triangulation, were achieved in the present research. This was argued to support the validity, reliability and capability of generalisation for the research findings. The chapter also justified the use of convenience non-probability sampling technique, and discussed how this is related to the generalisability of research findings. Finally, the chapter justified the design of the cultural study approach adopted for this thesis.

In the next chapter, chapter 4, a detailed description of the three exploratory studies of this research is presented. The findings of these investigational studies, together with the suggestions from relevant literature, led to raising research constructs. Subsequently, the design of research hypotheses and hypothetical model is also discussed in chapter 4.

CHAPTER 4

EXPLORATORY PHASE: THE HYPOTHESIS RAISING PHASE

> *"It is a capital mistake to theorize before one has data."*
>
> (Sir Arthur Conan Doyle, *The Adventures of Sherlock Holmes*, 1892)

4.1 Overview

This chapter describes the exploratory phase of the research in which research hypotheses are raised based on exploratory studies. According to the research methodology and the thesis framework, discussed in chapter 3, the exploratory phase in this chapter starts with an investigation process, aiming at a profound understanding of the phenomenon under investigation, as well as an understanding of research hypotheses. This is followed by a model designing process, where research constructs and hypotheses are identified based on the exploratory findings in line with the relevant literature; thus, the hypothetical research model is designed. The Chapter begins with discussing the literature needs and the methodological needs for this research to start with an exploratory phase. Then it proceeds with reporting the details of three exploratory studies conducted towards raising research hypotheses. Great emphasis is then placed on discussing the exploratory findings

with relevant previous literature. The chapter ends by suggesting the proposed hypotheses and the corresponding research model adopted by the present study.

4.2 The Need for an Exploratory Phase

This research investigates the effect of culture on the consumer's behaviour in the case of the Egyptian Internet users. This section argues the literature and methodological needs for the research to start with an exploratory approach for raising mature research hypotheses.

4.2.1 Literature Need

As discussed in the literature review in chapter 2, while there is some evidence of cultural differences in the e-commerce adoption, it is unclear whether these can be related to established cultural variables and to what degree these variables can impact online purchase decision. In addition, there is a shortage in literature investigating e-commerce adoption for certain cultures, such as the Egyptian culture, which is considered in this research. Little research has yet considered how Arabic consumers in general perceive e-commerce sites or their subsequent online shopping behaviour. Nevertheless, as the use of the Internet in Arab countries continues to grow, more and more use of e-commerce starts to appear in this region. Researchers interested in e-commerce in the Arab markets are thus "reliant on a fragmented and not easily accessible literature that presents a potentially distorted picture of e-commerce practice in these regions" (Shoib and Jones, 2003). Therefore, it is not applicable to build the research model of the current research based on the available literature only; an exploratory phase is argued to be needed at the start of this research to generate mature hypotheses which are potentially most important for the considered culture.

4.2.2 Methodological Need

Some social science researchers (e.g. Giddens, 1984; Straub and Carlson, 1989) emphasize that the information systems research cycle should start with an

exploratory research. As discussed in chapter 3, Giddens (1984) suggests three levels of understanding for social phenomena. First, a *subjective understanding* of the phenomenon achieved through exploratory studies to elicitate the perception of human participants' understanding. Second, an *interpretivist understanding* where hypotheses are generated based on interpretation of the participants understanding. Third, a *positivist understanding* achieved throughout empirical testing of the research hypotheses. This framework seem initially plausible for investigating a complex area such as cultural issues in e-commerce since there are not sufficient findings linking e-commerce behaviours to cultural variables, especially for the culture considered in this research.

On the other hand, research investigating culture issues in e-commerce often takes a survey based approach, collecting and analyzing the attitudes of large samples of users. It could be argued that it is not always appropriate to begin with this method. Surveys are most effective when they are designed to test specific hypotheses or models. In the case of some un-explored cultures, where little is known about web user attitudes in general, it may be premature to begin testing specific hypotheses within this population. It would of course be possible to test the validity of available e-shopping models (e.g. Gefen, 2002; Jarvenpaa, Trackinsky, Tractinsky, Saarinen and Vitale 1999) in this new cultural setting. However, the issues which are potentially most important for this culture may fail to be discovered using this approach since the range of questions will be constrained by what has been found elsewhere. This could limit the practical significance of any findings.

For Straub and Carlson (1989), information system research typically starts with an exploratory phase, where the use of qualitative, non-empirical techniques is suggested. For them, this is normally followed by confirmatory research, where hypotheses generated in the first phase are empirically tested.

Based on the discussion raised in this section, there are both literature and methodological needs for generating the research hypotheses through an exploratory phase. The following section elaborates on the three exploratory studies adopted for this thesis.

4.3 Exploratory Studies Adopted in this Thesis

Aiming at greater confidence in results, methodological triangulation was attained in the exploratory phase throughout three hypothesis raising studies. As interviews are useful for acquiring a detailed picture of a respondent's beliefs about a particular phenomenon (Smith, 1995), this research starts with semi-structured interviews as a tool for hypothesis collection in the early stage of the research. The interviews were conducted with 24 Egyptian Internet users. The interviews aimed to find out what the Internet was being used for and what problems, if any, the users experienced, while trying to link the findings with cultural variables. As the Arabic society has been classified as an oral dominant society (Zaharna, 1995), therefore, the interview technique was selected as an appropriate tool for hypothesis collection in this early stage of the research, enabling the researcher to diverge as appropriate from the prepared questions to explore the interesting points that came up. Second, an electronic survey was disseminated to collect data around the Egyptians use for the Internet and their perception of e-commerce. Electronic surveys are especially useful when substantial numbers of participants are to be questioned early in a research (Shneiderman, 1998). The survey was distributed over a larger number of users aiming to supplement the semi-structured interviews, and to assess the findings of the interviews on a large sample. Finally, card sorting sessions were conducted with 15 participants to examine the e-commerce interface features that are most salient to this user group and to explore how these relate to user intentions to engage in Internet shopping. The following sections describe the administration of the three studies, and discuss how the findings contributed in generating research hypotheses.

4.3.1 Study 1: Semi-Structured Interviews

4.3.1.1 The Sample

Interviews were conducted with 24 young Egyptian professionals who are Internet users. The participants were all between 25 and 35 years of age; hold university degrees, work in various professions, and have a good command of English. Although this sample group is, of course, not representative of the overall Egyptian Internet users population, the category of young professionals was chosen as the

target user group for all of the studies in this thesis, as it does reflects the characteristics of those who are currently most likely to have access to the Internet (Shaaban, 2005). The sample also characterizes the first generation of Internet users in Egypt, having used the Internet since it was first introduced (Warschauer, El Said, and Zohry 2002).

Thirteen of the participants were IT specialists having used the Internet for more than 6 years. Ten participants had dealt with the American and/or European culture by either receiving education in international schools, by working with multinational companies in Egypt, or by travelling extensively. Fourteen participants used English as their principal language of writing. Gender was equally represented in the sample. As discussed in detail in chapter 3, the non-probability convenience sampling technique was adopted for all of the thesis studies, where participants volunteered to participate.

4.3.1.2 Instrument Design

The interviews included five sections with a total of twenty open ended questions. Appendix B of this thesis includes the interview questions. In the first section, the questions were general and aimed to find out what the Internet was being used for and what problems, if any, the users experienced. In the other four sections, a number of interview questions were designed around different cultural variables, known to characterise the Egyptian culture namely: uncertainty avoidance, collectivism, high context, and time perception. The aim was to assess whether these variables have sufficient explanatory power in the way the Egyptians perceive and use the Internet that warrant further investigation.

4.3.1.3 Interviews Administration

The interviews were mainly conducted face-to-face at the user's workplace or home sites around Cairo during the months of December 2000 and January 2001. Four interviews were conducted by telephone due to the unavailability of users. The researcher conducted the interviews in Arabic, though some English terms were used where necessary.

4.3.1.4 Data Analysis

Interview answers were transcribed and analyzed through textual analysis. As discussed in chapter 3, textual analysis involves coding all the answers given by participants and classifying words under main groups. The frequency of the actual words and their synonyms that were used by the participants to answer the questions helped to identify patterns and relationships and to distinguish differences and similarities within responses.

4.3.1.5 Interview's Results

The analysis of the interview data reveals some interesting findings about the way in which Egyptian users interact with the Internet. The first general finding is that English is the language with which the majority of Egyptians interact online. This indicates that the most basic cultural variable, language, is not being addressed for this culture; users have had to adapt to using the English language. This result contradicts with previous investigations that suggest that language is one of the main barriers to the adoption of Internet in Egypt (El Nawawy and Ismail, 1999). It is interesting to note that some interviewees commented that they were not used to seeing Arabic on the screen and found it difficult to read the letters. Several respondents reported that they often use what is known as 'Romanized Arabic' in non-formal e-mails. Here Latin characters are used to approximate Arabic words. Additionally, 58% (14 out of 24) of interviewees reported that, although Arabic sites are rarely found on the net, these participants feel more comfortable using Arabic sites in social, religious and political contexts, while using English sites in technology and business contexts. To some extent, these preferences may relate to language, as computing and technology terms are more familiar in English, while religious and political terms are more familiar in Arabic.

For 65% of the interviewees, the main difficulty they face on the web is working successfully with search engines to get relevant links matching with their original query. This result may simply be due to problems in translation or lack of experience. However, it might also indicate a tendency to formulate less explicit text strings, as might be expected in a high context culture, such as the Egyptian culture.

Nearly 75% of the interviewees have reported that within non-formal contexts, e-mails and chat, they cannot express their true meaning with text alone. They all agreed that adding multimedia features such as images, symbols and sounds, to e-mails, would help them in expressing themselves more successfully. While the use of symbols is certainly not unique to Egyptian culture, the need for such additions could be felt particularly strongly in this oral dominant culture.

Nearly 83% of interviewees have reported that they work on two or more Internet sessions at a time, such sessions need not be related. Furthermore, they could combine work and personal subjects. This appears to be one area, at least, where standard interface design, using multiple windows, supports the preferred mode of working for Egyptian users.

The highest majority (83% of interviewees) have reported that they feel more comfortable using sites they have used before rather than searching for new sites. A common comment was *"I would feel more comfortable to use a site I know"*. This finding may indicate a tendency to feel threatened by the unknown, as might be expected in a high uncertainty avoidance culture, such as the Egyptian culture. Uncertainty avoidance variable characterises cultures according to the extent to which people feel annoyed by uncertain situations. Hofstede (1991) found Egyptian culture to be one of strong uncertainty avoidance. In the context of web interaction, uncertainty avoidance might be expected to manifest itself as a tendency to rely on known and trusted web sites, rather than explore alternatives. This result suggests that familiarity with a site affects the perception of this sample toward a site.

The last finding in particular, concerning the relation between familiarity and uncertainty avoidance and their effect on user's perception, can be highlighted especially in the e-commerce context, as deserving of further study. As the role of familiarity in the conventional business context is emphasized (Gefen, 2000), it could be argued that the same effect might occur in the e-commerce context. This finding and the overall results of the interview study were further investigated through the electronic survey for confirmation and more exploration within a larger sample.

4.3.2 Study 2: Electronic Survey

4.3.2.1 The Sample

The sample of the survey was divided into two categories, the IT respondents and the non-IT respondents. The IT group represented those working in the IT industry including information system specialists and computer engineers. The non-IT group represented those who are not working in the IT industry, including translators, evaluation researchers, and language teachers. The distinction between IT and Non-IT groups was done to investigate whether the Internet users' experience and background has an effect on their perception of the Internet.

A total of 57 users returned the survey electronically, including 33 IT respondents and 24 non-IT respondents. All survey takers were within the age range between 20 and 35. Gender was equally represented. Whereas most of participants hold university degrees, they all reported at least an intermediate level of English language, with more than the half mastering the language. Survey respondents had between 2 and 7 years of experience with the Internet. The majority reported 3 years Internet experience, while 46% reported more than 5 years of online experience. Half of the participants evaluated themselves as Internet experts, while the other half reported their Internet expertise as intermediate. Their Internet use varies between 5 and 50 hours weekly, with the majority using the Internet for more than 20 hours per week.

4.3.2.2 Instrument Design

The survey questions how Egyptian users perceive and use the Internet in general, including investigation for usage difficulties. Appendix B of this thesis includes the questions of the survey. All the questions of the survey were close. The survey included five questions about demographic information, inquiring about education, profession and English fluency. Eight questions about the general use of the Internet dealt with questioning about the time spent on different online activities and the perception of Internet usefulness. Four questions about language use inquired about the language, English or Arabic, choice in different types of communication online. Three questions investigated the possibilities of online miscommunication and the

efficiency of using search engines. Four questions touched upon the preference of familiarity with a site's interface.

4.3.2.3 Survey Administration

The survey was designed in the English language and was first pilot tested among a small group of people who were not in the final survey, and then it was finalized and distributed by e-mail to three Egyptian electronic groups (e-groups). The first e-group (iti@idsc.gov.eg), having an academic context, gathers Egyptian graduates of the Information Technology Institute in Cairo. The second e-group (agtbe@idsc.gov.eg), with a profession context, gathers Egyptian members of the professional association of graduates and trainees from the British universities. The third e-group (elshela@yahoo.com) is considered the largest Egyptian social e-group, gathering members from various background and affiliations in a social context. Surveys were asked to be returned to the researcher by e-mail no later than March 30th 2001.

4.3.2.4 Data Analysis

The surveys were coded and screened before data entry. Each survey was given a unique number, and each question was given a code to facilitate the data entry. Data were entered into SPSS 10.07, where the frequency and range of each variable were assessed. Outliers resulting from data entry were resolved and cases with missing values were evaluated for elimination. The sample size was adequate, as the Kaiser-Meyer-Olkin's (KMO) measure of sampling adequacy was found >0.5, while missing data may be termed ignored, representing less than 5% of the sample size.

4.3.2.5 Survey's Results

The analysis of the survey exposes some findings concerning the Egyptians' utilization of the Internet and difficulties faced online, where most of these findings support the interviews' result. Frequencies and means of survey items are included in Appendix B of this thesis.

Sending and replying to emails was reported as the main activity performed by the targeted sample on the Internet. This point was supported by analysing the duration spent daily by survey takers for different Internet activities. The mean of minutes spent daily in sending and replying to e-mails was found the highest, followed by browsing the Internet for information seeking, and then came reading material online and chatting. This priority of activities was found valid for both IT and non-IT respondents.

A previous study done on Egyptian Internet user's profile suggested that the use of Internet in Egypt is *predominantly non-business related* and that entertainment, social communication, and news seeking are the most common Internet activities for Internet users in Egypt (El Nawawy and Ismail, 1999). This point was investigated by the survey and it was found that these suggestions were supported in the case of non-IT respondents. For the non-IT respondents, social context was suggested as the most popular use of the Internet, followed by the entertainment context. An interesting difference was found in the case of IT respondents where education context was found as the most common interest, followed by business context. For IT respondents, the social context comes in the third priority followed by the entertainment context.

Confirming with the interview findings, the survey data suggested that in informal emails and online chatting, the majority of IT and non-IT respondents mix English with Romanized Arabic, where Arabic words are transliterated and written in Latin characters. Symbols and numbers are used as well to represent phonemes that are not easily rendered in Roman. While the majority of survey respondents have a good command of the English language, this use of symbols might have other explanations than the lack of familiarity with English. This may simply be due to the oral and high context dominance in Egyptian culture, in which oral communication is more valued and preferable over literature one. The use of Romanized Arabic, numbers and signs may be a way of replacing oral and high context communication in the literature dominant Internet environment. On the other hand, similar to interviewees, for both groups of survey takers, IT and non-IT respondents, the difficulty of using a search engine was reported by the majority (82%) of respondents.

The importance of the site's familiarity is stressed by the majority of survey takers. Over 80% of IT and non-IT respondents mentioned that they would be *"Annoyed if the interface design of a site they are used to use, has been changed"*. Furthermore, 93% of respondents selected *Familiar Design* as the most "*important feature for a web site"*. This finding is certainly in line with the interview's findings suggesting that the perceived familiarity of a site is an effective variable for Egyptians when interacting with the Internet for both experienced and novice users. These results might be justified by the high uncertainty avoidance cultural variables characterizing the Egyptians, along with other Arab countries (Hofstede, 2001).

A high percentage of participants (75%) expressed their objection to e-commerce, and that they do not encourage online shopping. The same high majority of participants are unlikely or very unlikely to reveal personnel information when requested online. A higher percentage of participants (80%) never used the Internet for shopping, and mentioned that the main reasons that discourage them to buy through the Internet are lack of trust in e-commerce sites and lack of credit card security. This finding in particular, concerning the effect of trust, can be highlighted especially in the e-commerce context, as deserving of further study. A number of studies have claimed that the lack of trust is the main reason why many people have not yet shopped on the web (Hoffman, Novak and Peralta, 1999), and that the lack of consumer trust is the most significant barrier for e-commerce adoption (Keen, 1997; Quelch and Klein, 1996).

The findings of the interviews and the survey mainly highlighted the role of trust and uncertainty avoidance culture variable as two major variables shaping how the targeted sample perceives the Internet in general. The role of uncertainty avoidance was mainly suggested to influence e-commerce purchase decision through its effect on trust. Accordingly, this led to a narrowing of the research focus to concentrate on the issues of uncertainty avoidance and trust. Consequently, the third and main exploratory study in this research, the card sorting study, investigated whether the effect of these two factors on the perception of the target group towards e-commerce would be further supported.

4.3.3 Study 3: Card Sorting

As discussed in chapter 3, card sorting is a method of knowledge acquisition to model the cognitive processes of humans (Shadbolt and Burton, 1995). Its use derives from Kelly's (1955) Personal Construct Theory which posits that in their attempt to understand the world, people will develop categories and sets of representations about the world known as *personal constructs*.

Card sorting techniques are suggested to be the primary method for elicitation of perceptions of quality and design aspects in web pages (Rugg and McGeorge, 1997). It is now widely used in the design and evaluation of interactive systems, where they are found to be exceptionally useful to elicit cultural perception of web pages quality (Dunckley and Jheita, 2004). The method has the advantage of being culturally neutral as it does not implicitly impose the researcher's view of the world upon the participants, thus increasing the possibility of discovering new insights.

Upchurch, Rugg and Kitchenham (2001) describe the use of card sorting to elicit web page quality attributes. They used screen dumps of web pages as the material to be sorted and were able to generate criteria by which web pages could be judged. The sorting study in this research, takes a similar approach to this. The next sections discuss the selection of the sorting technique, the sorting session design and administration.

4.3.3.1 Selecting the Appropriate Sorting Technique

This study looked to establish the criteria and categories by which the sample differentiate and categorise e-commerce websites. This approach permits the collection of data around the nature and commonality of constructs generated, as well as the highlighting of similarities in perception between participants. The identification of criteria and categories based on which cards are sorted helps to find out which symptoms of a phenomenon are considered by the user to be significant. Therefore, it is best used as an exploratory technique as part of piloting work (Rugg and McGeorge, 1997).

The basic idea behind the sorting techniques is simply to ask participants to sort entities into groups. The entities may be objects, pictures, or words. In the current study, word sorting, which means sorting of cards holding a web site name or address, would not be practical as participants would probably not know enough information about a web site from its name. Object sorts would be not practical as well, on ground of resources and time, as participants would be asked to work with web sites online, which requires computer and Internet connection availability. This left picture sorts as the best choice.

There are several varieties of picture sorting techniques; each has its context within which it is advisable to be applied in. Two sorting techniques were selected in this study for their appropriateness for the objectives of the study. A *Repeated Single Criterion Sorts* followed by a *Single Forced Criterion Sorts* were conducted (Maiden and Rugg, 1996). In the first sort, participants are asked to look at the cards and to choose a criterion by which the web site home pages could be distinguished from one another. Having named the sorting criterion they would name categories for this criterion and sort the remaining cards into these categories. This procedure is repeated until the participants could think of no more criteria. Here, the choice of criteria reveals the design feature variations that are noticed by participants, and those that are chosen most frequently reveal which features are most salient (Rugg and McGeorge, 1997).

A single forced choice sorting study is then selected to link the results of the first sorting session to user's purchase intentions. Here participants were asked to sort all of the sites according to the criterion: "I would/ would not buy from this site". This approached aimed to link the salient features of e-commerce interface, suggested by the first sort, with the users' willingness to make purchase decision from an e-commerce site.

4.3.3.2 The Sample

Useful card sorting results can be obtained with sample sizes which are relatively small compared to those required for other techniques such as survey (Maiden and Rugg, 1996). In the reported study, fifteen Egyptian professionals (9 males, 6 females) participated. The participants were aged between 23 and 36 (with 50% under 30). All were regular Internet users with between three and ten years of experience in using the Internet. All participants were university educated and eight had an IT background. While all participants were Internet users, logging to the Internet from 3 to 60 hours per week, around half of the sample had never shopped online. The remaining participants had shopped online, and mainly used international sites with English interfaces. 75% of these participants bought books online.

4.3.3.3 Instrument Design

An initial card sorting task was designed, based on the findings of the previous two exploratory studies, in order to identify the most salient features of e-commerce web sites that Egyptian users are most likely to notice when comparing several sites. The sorting session was aiming to assess users' initial perceptions of a web site, which would be formed on the basis of a view of the site's homepage. In sorting techniques, it is recommended to select entities from the same level in hierarchy, like comparing main pages of web sites. The higher up the hierarchy (the site's main page, for example), the more general the categories will be (Rugg and McGeorge, 1997). In the current research, as more general and exploratory data are acquired, higher level entities are considered, by including main (home) pages of e-commerce sites. Screen shots of e-commerce home pages were therefore used as the materials for the picture sorting task.

Selecting E-Commerce Sites

Book selling e-commerce sites were chosen because books are the most purchased items by Arabs on the Internet, representing 22% of what this population spent on the web in a year (Dabbagh Information Technology Group, 1998). Eleven sites

were chosen as being representative of what was available at the time of the study to consumers in Egypt, where the number of sites matches with the range of items, between eight and twenty, recommended in sorting sessions (Upchurch et al, 2001).

The chosen sites included local (Egyptian) sites, sites from other Arabic countries and international sites. They also included sites with Arabic or English language interface. The eleven sites included different options of book categorisation, and they represented both secured and non-secured sites. Details about selected sites are listed in **table 4.1** below, while screen shots of Amazon and E-Kotob e-commerce sites are included in Appendix C.

Web Sites were located using Internet Explorer 6.0.; images of the main pages were captured in July 2002, pasted to Photo-Shop painting tool, and cropped to be of the same size, clarity and glossiness. Pictures were then printed on A4 white paper, using a high quality DeskJet 950C HP, coloured printer. Pictures were numbered for facilitating result recording; numbers were clearly written on the right bottom of each picture. Printed pictures were then covered with hard plastic covers. A large clear desk was used in the sessions to enable participants to spread pictures out wide.

Table 4.1: E-Commerce Sites Used in the Sorting Sessions			
Card #	Site Name, URL and Affiliations	Location of E-Retailer	Interface Language
1	E-Kotob: affiliated with Amazon http://www.ekotob.com/	Egypt	Arabic
2	Amazon http://www.amazon.com/	USA	English
3	Barnes and Noble http://www.barnesandnoble.com	USA	English
4	Borders http://www.borders.com/	USA	English
5	Alkitab http://alkitab.com/originalsite/	USA	English
6	Neelwafurat http://www.neelwafurat.com/	Lebanon	Arabic
7	Almaktabah http://www.almaktabah.com/BrowseSubjects.asp	Lebanon	Arabic
8	Arabooks http://www.arabooks.net/	Lebanon	English
9	Boustany http://www.boustanys.com/	Egypt	English
10	Arabic World http://www.arabicworld.com/books.htm	Lebanon	Arabic
11	Al-Basheer http://www.al-basheer.com/arabicBooks.asp	USA	Arabic

4.3.3.4 Sorting Sessions Administration

All the sessions were conducted face to face by the researcher in either the participants' or the researcher's work places around Cairo, during the month of August and September 2002. The two sorting sessions were administered according to the following steps.

Step 1: Introductory Session

In the introductory session, instructions were written to be standard and clear, as included in Appendix B of this thesis. The researcher presented the introductory letter to participant, and answered any questions concerning the purpose, the duration and the procedures of the session.

Step 2: Card Sorting Training Session

Participants were given a brief training session on card sorting, using materials from a different domain (10 pictures of cars). The researcher used written training instructions to ensure consistency throughout all sessions (script for training instructions is included in appendix B). Emphasis was given to the selection of any criteria and any groups (including "don't know", "not sure" and "not applicable"). The participant repeated the sorting until feeling comfortable with the technique, and then they were presented with the eleven e-commerce home pages cards.

Step 3: Single Criterion Card Sorting Session

Participants were asked to look at the cards and to choose a single criterion by which the e-commerce site home pages could be distinguished from one another. Having named the sorting criterion, they would then name categories for this criterion and sort the remaining cards into these categories. Participants were asked to repeatedly sort the cards according to criteria that they generated themselves, until they reach a *dry point:* this is when they could think of no more criteria (Maiden and Rugg, 1996). For example the background colour criterion might yield categories of blue, green, and other. It was up to the participant how many categories they chose for each criterion. The choice of criteria reveals the design feature variations that are

noticed by participants and those that are chosen most frequently reveal which features are most salient. This procedure was repeated until the participants could think of no more criteria. Comments made by the participant regarding the evaluation of the web site or the criterion used, were noted. If early in the session, a participant reached a drying-up point, the researcher helped through dyadic elicitation, which is to select two pictures at random and ask the participant to cite differences between them (Rugg and McGeorge, 1997).

Step 4: Forced Sort Session

As the consumer intention to buy is often used as a useful surrogate dependent measure when assessing an e-commerce site's effectiveness (Ranganathan and Ganapathy, 2002), follow-up forced choice sorting sessions were conducted one month later, where the same participants were asked to sort the same sites according to the criterion: "I would/would not buy from this site". Having sorted the cards according to this criterion, participants were asked to provide a reason for the sorting decisions made. The session took place at the same setting and location of the first one. No training session was given to the participants this time, but an introductory session was given to re-familiarize them with the technique and to introduce them to the objective of the second session. Thirteen of the original fifteen participants were available to take part in this follow-up.

Step 5: Session Recording

Session data, such as: session date, sort number, criterion name, category names, and number of pictures in each category, the drying-up point, participant comments, were paper recorded by the researcher. These data were recorded on a separate recording sheet for each participant. The recording sheets of the fifteen participants are reported in appendix B. The sorting materials and procedures were first pilot tested among one participant who was not in the final experiment, and then finalized and conducted for all of the participants. The participant grasped the idea of sorting techniques easily and quickly, and commented that the introductory session was important to get familiar with the sorting technique.

4.3.3.5 Data Analysis

During data analysis, the sample of the survey was divided, based on the participants' demographic data, into two categories, the IT and the non-IT. The IT participants represented those having an IT background and/or education or working in the IT industry, while the non-IT participants represented those who are not. The distinction between IT and Non-IT categories was done to investigate whether the Internet users' experience and background has an effect on their perception of the e-commerce. The following sections elaborate on the analysis of the two sorting sessions; the sections follow the analysis sequence recommended by Rugg and McGeorge (1997), and discuss the analysis of the current card sorting study including criteria count, textual analysis and cluster analysis.

4.3.3.5.1 Criteria Count

Card sorting results can be analysed in terms of the number of criteria and categories used. The number of criteria used by the participants in a sorting session is informative about the amount of categorization knowledge elicited (Rugg and McGeorge, 1997). In the reported study, a total of 87 criteria and 203 categories were identified across the 15 participants. The IT group did identify slightly more criteria on average but the difference between groups is not large. This may be because they simply know much and are more familiar and interested when working with web sites (Upchurch et al, 2001).

4.3.3.5.2 Content Analysis

Content Analysis of the First Sorting Session

Commonality of criteria is the main source for knowledge elicitation in card sorting. Criteria with high commonality could be suggested to be the most salient interface elements for targeted group of participants, when evaluating a site (Rugg and McGeorge, 1997). The data were analysed for agreement between the criteria chosen by different participants, following the procedure outlined by Upchurch et al (2001). Possible criteria were grouped into super-ordinate constructs. To avoid bias, an independent judge was asked to carefully group criteria names of same meaning into

a super-ordinate construct. In this study, the judge, an experienced Egyptian English Language teacher, was selected on the basis of familiarity with web sites and was given written instruction, see Appendix B, to complete the task of criteria grouping. A listing of all the criteria identified by participants and how they were grouped by the judge are included in Appendix B, with the frequency of selection of each criterion. **Table 4.2** below shows the main super-ordinate with highest selection frequency, as identified by the majority of participants.

Table 4.2: Respondents Using Constructs in Super-Ordinate Construct Groups.			
Super-Ordinate Construct	**Non-IT Specialists**	**IT-Specialists**	**Total**
Site language	4	7	11
Categorisation of content	2	4	6
Search method	2	4	6
Use of advertisements	3	2	5
General interface appearance	1	3	4

According to **table 4.2**, the most salient web site features were the site language, the categorisation of content, the search method, the use of advertisements and the general interface appearance. There was no evidence of systematic differences between the IT specialists and non-IT specialists in terms of the number or type of criteria and categorisations generated. This might suggest that the identified super-ordinates are shared within the overall population targeted by the sorting study. Therefore the results discussion in the next section considers the data from both groups together.

The "Site language" was the criterion selected by all of the participants. This suggests that language use is a highly salient feature for this group of users. In defining the "Site Language" criterion, most of the participants (8 out of 15) used two categories: Arabic and English. Five participants choosing this criterion used three categories: Arabic, English, and mixture of Arabic and English. One used single language vs. multi-language, and the final participant used Arabic vs. non-Arabic.

The next two most frequently used criteria were: the "Categorisation of Content on the Site" and the "Site Search Method" (chosen by six respondents each). According

to participants, the "Categorisation of Content" criterion refers to whether users can browse a site via categories or via item lists. Most of participants defined the "Search Method" criteria by using two similar categories: search option present/obvious vs. search option absent/not obvious. It could be argued that there is a considerable overlap between the two criteria, as they are both concerned with the ways to find products on a site.

The "Use of Advertisements" was included in the criteria chosen by five participants. Most of them used binary categorisations: the presence vs. absence of adverts, while fewer participants categorised by the relative amount and content of advertising on a site. Four participants chose criteria which referred to the "General Interface Appearance" of the site. However, participants varied in the categories they used. One distinguished between attractive and non-attractive sites; another between cheerful and flat sites, and another between professional and non-professional looking sites. The final participant ranked the sites as excellent, good, bad and very bad. The familiarity/reputation of the store was mentioned by two participants. Two participants also distinguished between real (bricks and mortar) stores and virtual-only stores.

On the other hand, there was a significant absence of some expected criteria, most notably the issue of site security which dominates much of the e-commerce literature. The absence of these criteria maybe is due to the fact that the pictures used in the sorting session, represent a screen shot from what the user will find of the site before any scrolling, and not the overall page. Security and payment issues are usually cited at the bottom of the first page of the site. Therefore, none of the used pictures includes data about either payment or site security.

It is worth noting that the frequency of *Rag Bag* categories, such as "not sure" and "don't know", was low (6 out of 203 categories), which suggests that the uncertainty of participant was relatively low (Rugg and McGeorge, 1997). On the other hand, the categories of the type "not applicable" appeared rarely, which might suggest the absence of another layer of knowledge to be elicited (Rugg and McGeorge, 1997).

Content Analysis of the Second Sorting Session

In the second session, participants were asked to sort the same eleven site cards based on a forced criterion: "Sites I am willing to buy from/ Sites I am not willing to buy from". Participants were asked to provide a reason for their sorting choices. **Table 4.3** shows the sites sorted by the participants and the percentage of responses.

Table 4.3: % of Participants' Willingness to Buy from each Site	
Site Code and Title	% of Participants' Willing to Buy From
2: Amazon	13 out of 13 – 100%
4: Borders	9 out 0f 13 – 69%
1: E-Kotob	8 out of 13 – 62%
3: Barnes & Noble	7 out of 13 – 54%
6: Neelwafurat	4 out of 13 – 31%
5: Alkitab	2 out of 13 – 15%
8: Arabooks	2 out of 13 – 15%
11: Al-Basheer	2 out of 13 – 15%
7: Almaktabah	1 out of 13 – 8%
9: Boustanys	1 out of 13 – 8%
10: ArabicWorld	1 out of 13 – 8%

According to **table 4.3**, card #2 (www.amazon.com) ranked the highest in the willingness to buy, being selected by all participants as a site they are willing to buy from. Card #4 (www.borders.com) came second in the rank, being selected by nine participants as a site they are willing to buy from, while eight participants selected card #1 (www.e-kotob.com).

Participants were free to choose more than one reason for their sorting choice of sites under the "buy" and "not buy" categories. When analyzing the reasons provided by the participants for their sorting choices, as shown in **table 4.4**, the most common reasons concerned the reputation and familiarity of the sites. Site reputation scored the highest, for ten out of thirteen of participants. 77% of participants see that site's reputation is the main factor that generates a willingness to buy from a site. Familiarity with the site comes after, as a reason mentioned by 38% of participants for the willingness to buy from a site, followed by the ease of use and the site security as cited by 23% of participants.

Table 4.4: Reasons for Willingness to Buy	
Stated Reasons for Willing to Buy from a Site	Number and % of Participants
Famous Site (reputation)	10 out of 13 – 77%
Familiar Site	5 out of 13 – 38%
Secured Site	3 out 0f 13 – 23%
Ease of Use	3 out of 13 – 23%

4.3.3.5.3 Cluster Analysis

Cluster analysis is suggested to be a powerful qualitative analysis technique for card sorting as it emphasises establishing categories within the data (Eberts, 1994). As discussed in chapter 3, cluster analysis allows a researcher to look for commonalities in the category judgements made within the study. This is done by providing a means of calculating the strength of the perceived relationship between pairs of cards based on how often members of each possible pair of cards are sorted into a common group by multiple participants (Eberts, 1994). In this study, the clusters were calculated using the EZCalc tool developed by IBM (Dong, Martin and Waldo, 2001).

EZCalc analysis provides a numerical indicator and a tree diagram of the degree of relatedness with a value between zero at the origin, meaning not related, to one at the other extreme, meaning highly related. The relationship between each pair of cards is shown graphically by the distance between the origin and the branching of the lines linking to the cards. However, there is no straightforward statistical test to interpret the significance of these figures.

Figure 4.1 shows the results of the cluster analysis conducted with the results of the forced choice sort with the criterion "willing/not willing to buy from". The names of the sites used in the sorting task are shown on the left hand side. The degree of category relatedness between items is indicated by the tree structure (Eberts, 1994). The shorter the path that can be traced between two items through the tree, the more likely the items are to belong to the same category. If a branch between items appears at the extreme left hand side of the diagram, this indicates that all participants grouped the items together. On the other hand, if a branch between

items appears at the far right hand side of the diagram this indicates that no participants grouped the items together. According to the tree diagram illustrated in **figure 4.1**, for the case of the "willingness to buy criterion", the main categorisation is as follows:

Cluster 1: Amazon, Borders and E-Kotob

Cluster 2: Boustanys, Barnes & Noble, Alkitab, Arabooks, Almaktabah, Al-basheer, Arabicworld and Neelwafurat.

Figure 4.1: Cluster Analysis Results for Forced Choice
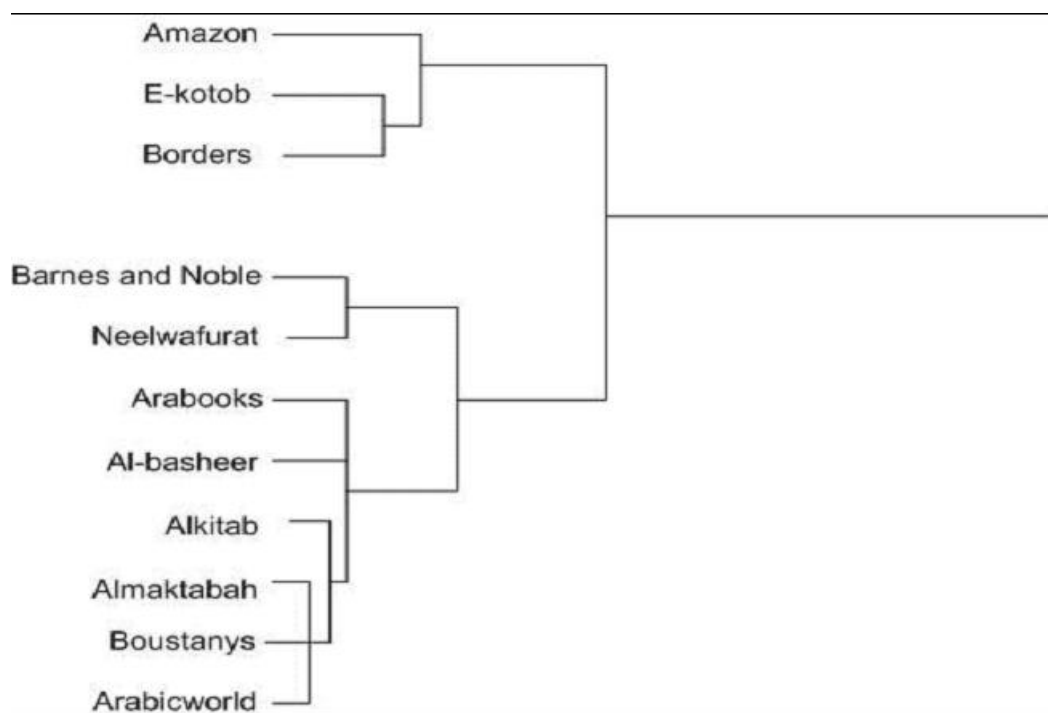
The interpretation of the main clusters in **Figure 4.1** suggests that there are three sites that these consumers are more likely to purchase from: Amazon, Borders and E-Kotob. The remaining sites are those that these consumers are less likely to purchase from. As this second sorting session involved one criterion and two given categories, the cluster analysis does not include the analysis of categories in that case.

4.3.3.5.4 Linking E-Commerce Site Features with Purchase Intention

Sorting results from both sort tasks were examined to investigate whether there were any features that distinguished the sites where consumers were more likely to buy, from those where consumers were less likely to buy. Features associated with the three sites where respondents were more likely to shop were investigated. The ivestigation aimed to check whether these three sites were categorised together according to any of the other sort criteria. **Table 4.5** links the site's interface feature with the "buy" and "not buy" options. As indicated in the table, the "buy" sites appeared to share a lot of the same salient features. These sites generally are attractive, familiar and easy to use. Features such as the site language, multiple search option and the use of colour are shared in the "buy" and "not buy" sites without any impact on the willingness to buy.

No criterion was found which wholly predicted membership of the "buy" or "not buy" category. The sort with the most communality with the buy/not buy outcome was for the criterion "familiarity". The criterion "familiarity" correctly predicted the outcome for all but one of the sites. Participants were willing to buy from all of the sites categorised as "familiar" except one site (site #5), and they were unwilling to buy from any of the sites categorised as unfamiliar. The sort with the second most commonality was the "general interface design" criterion, which correctly predicted the "buy" or "not buy" outcome for all but two of the sites. Participants were willing to buy from all of the sites categorised as "attractive", and they were unwilling to buy from any of the sites categorised as "not attractive" except for site #2 and site #5. The criterion "ease of use" correctly predicted the outcome for all but two of the sites. Participants were willing to buy from all of the sites categorised as "easy to use", and they were unwilling to buy from any of the sites categorised as "not easy to use" except two site (site #2 and #5).

Table 4.5: Linking the Site Features with the "buy" and "not buy" Outcome					
Site	Buy / Not buy	Familiarity	Interface Design	Search Method	Ease of Use
1	Buy	Familiar	Attractive	Search option	Easy to use
2	Not buy	Not familiar	Attractive	Search option	Easy to use
3	Buy	Familiar	Attractive	No search option	Easy to use
4	Buy	Familiar	Attractive	Search option	Easy to use
5	Not buy	Familiar	Attractive	Search option	Easy to use
6	Not buy	Not familiar	Not attractive	Search option	Not easy to use
7	Not buy	Not familiar	Not attractive	No search option	Not easy to use
8	Not buy	Not familiar	Not attractive	No search option	Not easy to use

9	Not buy	Not familiar	Not attractive	No search option	Not easy to use
10	Not buy	Not familiar	Not Attractive	Search option	Not easy to use
11	Not buy	Not familiar	Not attractive	No search option	Not easy to use

4.3.3.6 Sorting Study Limitations

The use of static images of e-commerce sites home page as the sorting materials could be considered as limitation of this study. The use of static images might eliminate many effects of the dynamic aspects of the web sites, such as page loading delays. On the other hand, prolonged experience with a site may lead to different evaluations, as some features may only become important to users once they interact with the site. The independent judge employed to group sorting criteria was not an HCI expert. An HCI expert might have created different super-ordinate constructs. In particular it is noted that the super-ordinate construct "categorisation of content" identified by the independent judge contains items relating to both "navigation features" and "layout density". An HCI expert might have separated these into distinct super-ordinate constructs. While this limitation does not affect the overall findings of this study, since intention to buy was linked to the sorting criteria cited by participants, an investigation of the grouping of super-ordinate constructs by an HCI expert might have revealed a wider range of aspects of e-commerce perceptions for the targeted group.

4.3.3.7 Card Sorting Results

Based on the content and cluster analysis of the two sorting sessions, together with the participants' own post hoc explanations of their "willing to buy" sorts, results suggest that web site reputation and familiarity are key criteria for Egyptians in taking a purchase decision for an e-commerce site. The role of store reputation in Internet purchase decisions was demonstrated in previous work (Jarvenpaa, Tractinsky, and Vitale, 2000) and validated across a number of cultures (Jarvenpaa et al, 1999). Previous work has also suggested that store familiarity affects purchase intentions via its effects on trust (Gefen, 2000).

The card sorting also identified a number of salient features that tend to be indirectly associated with a willingness to buy. Sites that were classified under the "buy"

category in the second sorting session were also perceived, in the first sorting session, as "attractive" and "easy to use". However, this study did not clarify whether these factors had any independent, direct effect on the willingness to buy. It may be that the better known sites also tend to have better interface designs.

While site language was the most salient feature of the sites used by all participants, there was no evidence of site language playing any role in the willingness to buy decisions. This finding may appear unexpected since one might expect that people would prefer to interact with the web using their own language. This finding matches with the participants' preference for using English sites, expressed in the survey respondents. This may be explained by the fact that English is actually used extensively in Egyptians' interactions with the Internet (Warschauer, El Said and Zohry, 2002). On the other hand, Siala, O'Keefe and Hone (2004) found some evidence that those from a collectivist cultural grouping prefer to buy from the sites within their cultural in-group rather than from those outside, while Egypt is characterised as a collectivist society (Hofstede, 2001) however, there was no evidence to support this from the current card sorting results. Site language and site nationality were not found to vary with the intention to buy. Additionally, the highest majority of participants cited in the survey that they mainly shopped from International secured sites.

4.3.4 Exploratory Studies Conclusions

The analysis of the three exploratory studies, interviews, survey and card sorting, have commonly emphasized the role of the site's familiarity in affecting the consumer behaviour. The fact that similar findings have been obtained with different methods suggests that these results are not simply an artefact of the measures used. The analysis of the card sorting sessions suggests that the site perceived familiarity and perceived reputation affect the online purchase decisions. Egypt is characterised as a high uncertainty avoidance culture (Hofstede, 2001), where members of such a culture are expected to have a low tolerance for ambiguity. It is therefore tempting to explain the influence of the store reputation and familiarity on the intention to buy, posited in the current study, in terms of uncertainty avoidance. This findings

match with previous research of El Nawawy's (2000), reporting culture as one of the main barriers to the implementation of e-commerce in Egypt. El Nawawy's study claimed that consumers and business men in Egypt are used to doing business in a certain way and do not want to change the way they work. The results also suggested that trust in an Internet store is a main salient factor affecting the perception of the targeted sample towards e-commerce.

The exploratory studies recommended that there are likely to be a number of interface factors that affect electronic consumer behaviour for the targeted sample such as the site language, content and search design, general interface appearance and ease of use. No evidence was found that these features affect the e-commerce purchase decision for the considered sample.

In summary, the results of the three exploratory studies show a unanimous agreement of some important factors that tend to be associated with e-commerce for the targeted culture. Constructs such as uncertainty avoidance, trust, store's reputation and familiarity are highlighted as salient components of the phenomenon under investigation. This led to a narrowing of the research focus to concentrate on these specific components as main scope of the current research. The rest of this chapter builds on these findings to identify the research main constructs and the inter-relationships between them, thus generating the hypothetical model for the research. The following phase of this research aims to provide empirical validation for this model.

4.4 Model Designing Process

Following the exploratory studies, the model designing process took place. In this process constructs were identified, hypotheses were spelled out, and the hypothetical model was designed, as described in the following sections.

4.4.1 Identifying Research Constructs and Hypotheses

This section displays the discussions and arguments raised by results driven from both the exploratory studies of this research, and the previous work in the same field, where some of the exploratory results of this research were supported by relevant literature. Previous studies had relied upon survey data which, while allowing quantitative assessment of relationships, was constrained by the scope of the questions asked. The fact that similar findings have been obtained in this research, using different methods such as card sorting, suggests that these results are not simply an artefact of the measures used. This provides a good justification to pursue further work in these findings. This section discusses the identification of the research constructs, and justifies relationships between them, thus formulating the research hypotheses.

Construct 1: _Perceived Reputation_

Vendor reputation is defined as the extent to which the consumer believes a vendor is honest and concerned about their customers (Doney and Cannon, 1997). By making sacrifices and showing concerns for customers, stores develop a reputation for fairness, which is likely to have a positive effect on a vendor's credibility within the industry (Ganesan, 1994). The marketing literature, and recently the e-commerce literature, argues that buyer's reputation has an effective, long-term, impact on the buyer-seller relationship (Jarvenpaa et al, 2000).

The exploratory card sorting study of this research suggests that the site's reputation is a main issue for the targeted sample when interacting with the Internet. The card sort commonality analysis, together with the participants' own post hoc explanations of their sorts, provides strong evidence that the Internet store's reputation and familiarity are key criteria for the sample in deciding which sites to purchase from. Site reputation, in particular, scored the highest (for 77% of participants) as having the most commonality (in a sorting task) with the attribute 'willing to buy from this site'. This suggests that the store's perceived reputation could have a strong impact on Internet consumer behaviour that is worth further investigation. It is therefore

logical to consider perceived reputation as one of the main constructs of the current research.

Construct 2: *Trust*

Previous research into business affiliations has identified the important characteristics of trust as a fundamental principle that underpins every business relationship (Ganesan, 1994). E-commerce highlights the importance of trust in the relationship between the consumer and the merchant due to the uncertainty that exists in the Internet environment (Grabner-Kräuter and Kaluscha, 2003). A number of studies have claimed that the reason why many people have not yet shopped on the web is due to the lack of trust in online commerce (Hoffman, Novak and Peralta, 1999). Additionally, some researchers argue that the most significant long-term barrier for realizing the potential of Internet marketing to consumers is the lack of consumer trust (Keen, 1997; Quelch and Klein, 1996). This research focuses on trust as an important precondition for e-commerce. Trust is considered as one of the main constructs of this research.

Construct 3& 4: *Attitude and Willingness to Buy*

The Theory of Reasoned Action, TRA, (Fishbein and Ajzen, 1975) and the Theory of Planned Behaviour, TPB, (Ajzen, 1985), assert that behaviour is influenced by behavioural intention, and that a major determinant of intentions is the actor's attitudes towards the behaviour. According to the two theories, beliefs affect the person's attitudes; and attitudes in turn influence behavioural intention, which is a good predictor of actual behaviour. For Jarvenpaa et al (1999), TRA and TPB can be employed to explain and predict the Internet shopping behaviour phenomena. There is a general consensus within e-commerce researchers to assume that the degree to which people express their intentions to buy is a reasonable predictor of the actual purchase behaviour from an Internet store and that a shopper's intention to buy is preceded by the shopper's attitudes toward the purchase (Jarvenpaa et al, 2000).

Many of the currently existing e-commerce consumer's behavioural models are based on the TRA and TPB theories (Pavlou, 2003; Jarvenpaa et al, 2000; Koufaris and Hampton-Sosa, 2002). These theories suggest that the attitude and the willingness to buy are two main outcomes of trust. Therefore, the attitude and willingness to buy are considered as main constructs of the current research.

Hypothesis 1, 2 & 3: Perceived Reputation -> Trust, Attitude & Willingness to Buy

In the context of traditional commerce, the reputation of a company is argued to be a significant factor for the establishment of trust between a consumer and a merchant (Quelch and Klein, 1996; Lohse and Spiller, 1998). Doney and Cannon (1997) hypothesized a high correlation between the measures of selling firm trust and supplier reputation. In the e-commerce research strand, several researchers (e.g. Grabner-Kräuter and Kaluscha, 2003; Lohse and Spiller, 1998) speculate that there would be a relationship between the reputation of the store and consumer's trust in that store. On the other hand, some of the existing online trust models have empirically assessed the significant effect of the store reputation in Internet purchase behaviour via its effect on trust (Pavlou, 2003; De Ruyter, Wetzels and Kleijnen, 2001; Jarvenpaa et al, 1999; 2000).

Grabner-Kräuter and Kaluscha (2003) highlight some draw backs in these models, namely in the sample design (Jarvenpaa et al, 1999) and task design (Pavlou, 2003), that would limit the generalisation of results of these models to other types of customers. This research is aiming to extend the generalization of these results by validating the relationship between reputation and trust for the Egyptian Internet users, a sample that was not considered by previous researchers in that domain.

On the other hand, the effect of reputation as antecedents of attitude and willingness to buy has rarely been emphasized in the e-commerce context, though widely used, by the industry. This research is exploring this relationship by hypothesizing a positive significant effect of the online store reputation in generating a positive attitude towards the store and supporting purchase decision from that store.

Based on the previous discussion, this research hypothesizes that the Internet store's perceived reputation will play a positive significant role in building trust, attitude and willingness to buy from that store, as stated in the following hypotheses:

Hypothesis 1: For the Egyptian users, the Internet store's perceived reputation will have a significant effect on the consumer's trust in that store.

Hypothesis 2: For the Egyptian users, the Internet store's perceived reputation will have a significant effect on the consumer's attitude towards that store.

Hypothesis 3: For the Egyptian users, the Internet store's perceived reputation will have a significant effect on the consumer's willingness to buy from that store.

<u>Construct 5:</u> *Perceived Familiarity*

Perceived familiarity in an Internet store is defined as the understanding of how familiar the site is to the participant, often based on previous interactions and experiences of learning of how to use the site's interface (Gefen, 2000). The importance of store's familiarity is commonly highlighted by the three exploratory studies of this research. While the highest majority of interviewees (83%) reported that they feel more comfortable using sites with a familiar interface; 93% of the survey respondents expressed that, for them, a 'familiar design' is the most important feature for a web site. Furthermore, the exploratory card sorting study of this research suggests that the site's familiarity is a main issue for the targeted sample when interacting with the Internet. According to the participants' explanations of their sorts in the card sorting study, store familiarity is suggested to be a key criterion for the sample in deciding which sites to purchase from. Store familiarity scored the second, after store reputation, as having the most commonality with the attribute 'willing to buy from this site'.

While conventional commerce literature holds some evidence for the importance of familiarity in buyer-seller relationship, familiarity is rarely addressed in the e-commerce research strand. Several researchers (e.g. Gefen, 2000 and Grabner-Kräuter and Kaluscha, 2003) argue the need for more work involving the effect of

store familiarity in the e-consumer behaviour research. They suggest that store's perceived familiarity could have a strong impact on Internet consumer behaviour that is worth further investigation. It is therefore logical to consider perceived familiarity as one of the main constructs of the current research.

Hypothesis 4, 5 & 6: _Perceived Familiarity -> Trust, Attitude & Willingness to Buy_

According to Luhmann (1988) and Gulati (1995), in traditional commerce, the store familiarity has a main effect on consumer behaviour. Luhmann argues that familiarity addresses an effective aspect of the complexity-reduction mechanisms and thus has a strong effect on trust and purchase decisions. On the other hand, this role of familiarity has rarely been emphasized in the e-commerce context. Some work (e.g. Gefen, 2000) started to assess the effect of familiarity which was found to affect purchase behaviour via its effects on trust and purchase intention. Gefen (2000) listed some of the limitations of his exploratory research that includes the analysis of a single well-known website (Amazon.com). Gefen (2000) admitted that it is unclear whether these results can be generalised to less-known sites. He requests for future work to examine this issue. The current research aims to provide support to these exploratory studies by including both well-known and less-known sites. It also aims to validate the relationship between familiarity and consumer behaviour for the Egyptian users. Thus, this research hypothesizes that the Internet store perceived familiarity will play a positive significant role in building trust, attitude and willingness to buy from that store, as stated in the following hypotheses:

Hypothesis 4: For the Egyptian users, the Internet store's perceived familiarity will have a significant effect on the consumer's trust in that store.

Hypothesis 5: For the Egyptian users, the Internet store's perceived familiarity will have a significant effect on the consumer's attitude towards that store.

Hypothesis 6: For the Egyptian users, the Internet store's perceived familiarity will have a significant effect on the consumer's willingness to buy from that store.

Construct 6: *Uncertainty Avoidance*

In the marketing literature, culture is considered as one of the underlying determinants of consumer behaviour (McNeal, 1965; Robertson, 1970). The values implicit in a culture are said to affect consumption motives which in turn set the choice criteria used by consumer (Howard, 1994). The context of conventional commerce literature holds sufficient empirical evidence to support the effect of culture on consumer behaviour (Henry, 1976; McCort and Malhotra, 1993). In the e-commerce research strand, some research is beginning to address this issue with mixed results. While some studies failed to confirm the effect of culture on the consumer's reaction towards e-commerce sites (Jarvenpaa et al, 1999; O'Keefe, Cole, Chau, Massey, Montoya-Weiss and Perry, 2000), other studies reported evidence on how culture affects consumer behaviour (Simon, 2001; Siala et al, 2004).

Most of cultural research in e-commerce used predictive culture models, such as Hofstede's (2001), in the interpretation of results from user evaluation (Dunckley and Jheita, 2004; Dunckley and Smith, 2000). Some exploratory studies argue that Hofstede's uncertainty avoidance (UA) culture variable plays an important role in the attitude forming towards information and communication technologies in developing countries (Kortemann, 2005), and namely in the Arab countries (Shoib and Jones, 2003). These studies argued that people in a developing culture and with a high score for UA may not gratuitously accept new technologies in their lives. They need certainties and explanations before they form a positive attitude towards these technologies. Consumers with high uncertainty avoidance are expected to have a low tolerance for ambiguity and uncertainty; while engaging in e-commerce can be seen as an example of an activity with an uncertain outcome (Einwiller and Will, 2001).

The exploratory study of this research suggests that uncertainty avoidance influences the sample's use of the Internet. It also suggests that familiarity with an Internet store and the reputation of that store are main features of consumer behaviour for this sample, known to be a cultural group with high uncertainty avoidance (Hofstede, 2001). Buying on the Internet presents numerous risks for consumers over and above the transaction process itself being perceived as risky (Einwiller and

Will, 2001). The outcome becomes less uncertain when the e-commerce store is one with a good reputation; also uncertainty might decrease when the consumer is familiar with that store. It is therefore tempting to explain the influence of the store reputation and familiarity on trust in terms of uncertainty avoidance. However, the effect of store reputation also appears to be important in low uncertainty avoidance cultures such as the US and Australia (Jarvenpaa et al, 1999). Nevertheless, it is possible that the effect of store reputation may prove to be relatively more important in high uncertainty avoidance cultures.

Research is also some way from providing detailed e-commerce design recommendations based on these cultural differences. Accordingly, the need for empirical assessment of the effect of uncertainty avoidance on e-commerce is essential and timely. Furthermore, most of previous work in this strand argues that there may be a relationship between trust and culture which needs to be further investigated (Gefen, 2000; Lee and Turban, 2001). While no focus is given to the effect of culture on the antecedents and outcomes of trust, there might be strong, cultural effects on the attitude and willingness to buy through their effect on trust.

Based on the previous discussion, it could be argued that the uncertainty avoidance culture variable could have a strong impact on the Internet consumer behaviour that is worth further investigation. Little empirical evidence is currently available to support this phenomenon in the e-commerce context, where more data and more theory are needed (Miles, Howes, and Davies, 2000). This research investigates the effect of uncertainty avoidance on the overall research model, through its effect on constructs relationships. The research hypothesizes that the relationship between the perceived reputation on trust, attitude and the willingness to buy will be significantly stronger in high uncertainty avoidance consumers. The same effect is hypothesized to exist for the perceived familiarity, where it is expected that the higher the uncertainty avoidance, the stronger the effect of perceived familiarity on trust, attitude and the willingness to buy. These hypotheses are stated as follows:

Hypothesis 1a, 2a, 3a, 4a, 5a & 6a: Uncertainty Avoidance -> The Effect of Reputation and Familiarity on Trust, Attitude & Willingness to Buy

Hypothesis 1a: The relationship between the Internet store's perceived reputation and the consumer's trust in that store will be stronger in Egyptian users higher on uncertainty avoidance.

Hypothesis 2a: The relationship between the Internet store's perceived reputation and the consumer's attitude towards that store will be stronger in Egyptian users higher on uncertainty avoidance.

Hypothesis 3a: The relationship between the Internet store's perceived reputation and the consumer's willingness to buy from that store will be stronger in Egyptian users higher on uncertainty avoidance.

Hypothesis 4a: The relationship between the Internet store's perceived familiarity and consumer's trust in that store will be stronger in Egyptian users higher on uncertainty avoidance.

Hypothesis 5a: The relationship between the Internet store's perceived familiarity and the consumer's attitude towards that store will be stronger in Egyptian users higher on uncertainty avoidance.

Hypothesis 6a: The relationship between the Internet store's perceived familiarity and the consumer's willingness to buy from that store will be stronger in Egyptian users higher on uncertainty avoidance.

Hypothesis 7: Trust -> Attitude

Previous work on buyer-seller relationships in conventional commerce emphasizes that high levels of trust by buyers have been found to stimulate favourable attitudes and behaviour in the conventional trading context (Schurr and Ozanne, 1985). Anderson and Narus (1990) found that a consumer's trust in a store influences the consumer's attitudes towards that store.

Additionally, previous work on Internet consumers suggests a significant effect of online trust in building positive attitude toward the Internet store (Jarvenpaa et al, 1999; 2000; Siala et al, 2004); where they posit that trust in the store would have a direct positive effect on the attitude toward that store. This research aims to investigate this relationship between trust and attitude for the Egyptian Internet

users, a sample that was not considered by previous researchers in that domain. Hence, this research hypothesizes that the following will take place:

Hypothesis 7: For the Egyptian users, the consumer's trust in an Internet store will have a significant effect on attitude towards that store.

Hypothesis 8: *Attitude -> Willingness to Buy*

The theory of reasoned action, TRA, (Fishbein and Ajzen, 1975) and the theory of planned behaviour, TPB, (Ajzen, 1985) assert that behaviour is influenced by behavioural intention, and that a major determinant of intentions is the actor's attitudes towards the behaviour. According to Jarvenpaa et al (1999), TRA and TPB can be employed to explain and predict the Internet shopping behaviour phenomenon, where a shopper's intention to buy is preceded by the shopper's attitudes toward the purchase.

In fact, some of the existing online consumer behaviour models empirically validate the significant effect of attitude on Internet willingness to buy (e.g. Jarvenpaa et al, 1999; 2000). Jarvenpaa et al (1999; 2000) provided evidence that favourable attitudes towards an Internet store will increase the consumer's willingness to purchase from that Internet store. This research aims to validate these consumer behaviour models for the Egyptian Internet users, a sample that was not considered by previous researchers in that domain. Accordingly, this research can postulate the following hypothesis:

Hypothesis 8: For the Egyptian users, the consumer's attitude towards an Internet store will have a significant effect on the willingness to by from that store.

Hypothesis 9: Trust -> Willingness to Buy

According to Luhmann's (1988), theory of *Trust and Power,* trust addresses important aspects of a complexity-reduction mechanism that facilitates people's interaction. For him, trust has a strong effect on the buyer-seller relationship in conventional commerce. On the other hand, Gefen (2000) argues that Luhmann's (1988) theory is also applicable to e-commerce, where trust addresses important

aspects of purchase decisions. According to Gefen (2000), during Internet purchase, trust would rule out behaviours such as misusing the provided credit-card data; here, trust would be essential because of the lack of a guarantee that the vendor will refrain from such undesirable behaviours, and thus, trust influences consumers' decisions to engage in e-commerce with the vendor. Researchers argue for more empirical work to investigate the extent to which purchase intention is linked to online trust (Grabner-Kräuter and Kaluscha, 2003).

On the other hand, the role of trust in supporting Internet purchase decisions was investigated by a number of existing online trust models (e.g. Gefen, 2000; Gefen and Straub, 2000; Bhattacherjee, 2002; Koufaris and Hampton-Sosa, 2002). While these models were applied in different e-commerce contexts, they all suggest a significant positive effect of trust on the Internet purchase behaviour. This research is aiming to validate these trust models for the Egyptian Internet users, thereby providing recommendation to assist designing e-commerce sites that will be more effective for this sample. Hence, this research hypothesizes that the following will take place:

Hypothesis 9: For the Egyptian users, the consumer's trust in an Internet store will have a significant effect on the willingness to buy from that store.

Based on the identification of research constructs and hypotheses, discussed in this section, the diagram illustrated in **figure 4.2** portrays the hypothetical research model (conceptual model) formulated for this research. The nodes in this diagram represent the constructs and the arrows represent the hypotheses.

The model hypothesizes that Internet store's perceived familiarity and perceived reputation have significant effect on online trust, attitude and willingness to buy. Furthermore, it is hypothesized that trust influences the willingness to buy through attitude, and that attitude has a significant effect on willingness to buy. The effect of uncertainty avoidance on the relationship between constructs is represented through bold paths. These paths are expected to be culturally sensitive, as it is hypothesized that the effect of perceived familiarity and perceived reputation on trust, attitude, and willingness to buy will be stronger in high uncertainty avoidance culture.

Figure 4.2: The Research Hypotheses

Paths in bold are hypothesized to be culturally sensitive
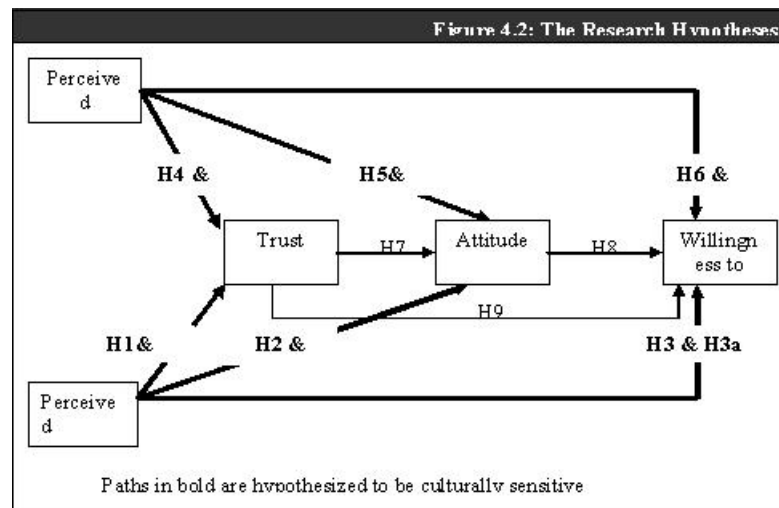
4.5 Summary

This chapter was entirely dedicated to the exploratory phase of the research, where research hypotheses were raised based on three exploratory studies. The chapter started by arguing that it is not applicable, in the current research context, to draw hypotheses just from the literature only. It also discussed the literature and the methodological needs for an exploratory phase. The chapter then reported the first exploratory study, in which a series of semi-structured interviews were conducted with 24 Egyptian Internet users around users' experiences with the Internet. Starting with interviews was argued to be a relevant technique within the oral dominant society of the Egyptian culture. The interviews reveal some interesting findings about the way Egyptians perceive the Internet; where the role of uncertainty avoidance is highlighted as having an effect on this perception. A survey was then administered electronically over three Egyptian e-groups to supplement the interviews' findings on a larger sample. The survey results provided some explanation of the target group's Internet utilisation and difficulties faced online, where most of these results supported the interviews findings. The survey suggested that the lack of online trust as a main issue in the adoption of the targeted sample for

e-commerce. Both interviews and survey results suggested some interface features that affect the target group's interaction with the Internet, such as interface language of a site as well as the perceived familiarity with the site.

The third exploratory study included two card sorting sessions to explore how the factors, suggested by the interviews and the survey, are related to the user's intentions to engage in Internet shopping. Based on the content analysis and cluster analysis of the two sorting sessions, together with the participants' own post hoc explanations of their sorts, results suggested that the store reputation and familiarity can be the deciding factors in whether to buy from an e-commerce site. There was no evidence that the site language plays any role in online purchase decision. The chapter discussed how these findings could be linked with the consumer's cultural characteristics, namely the uncertainty avoidance culture variable. The chapter also discussed how these findings fit with previous research which emphasizes the role of store reputation and familiarity with the consumer's behaviour for a number of cultures. The chapter argued that the fact that supportive findings were obtained in the current research provides some support for the generalisation of these effects. Not only have they been found in a previously unstudied culture, but they have also been found with a novel data elicitation method, such as card sorting.

Particular emphasis was then given to the model designing process of the thesis, where research constructs were identified based on the exploratory findings in line with the previous literature. Perceived familiarity and perceived reputation were hypothesized to be main antecedents of online trust, having also a hypothesized positive effect on the attitude towards, and the willingness to buy from an Internet store. The chapter argued that interacting with the Internet can be seen as an example of an activity with an uncertain outcome. The uncertainty might decrease due to site familiarity or high reputation. Accordingly, the previous relationships were hypothesized to be stronger in consumers higher on uncertainty avoidance. On the other hand, the attitude and the willingness to buy were hypothesized to be outcomes of trust, where attitude is also hypothesized to have a direct effect on the willingness to buy.

While some of these hypotheses were addressed by previous models for consumers from other cultures, some drawbacks were highlighted in these previous studies,

namely in the sample design, the task design, and the site's selection. Additionally, these previous models came with mixed results, thus limiting the generalisation of their results to other types of customers. This research is aiming to extend the generalization of these models by validating the research hypotheses for the Egyptian Internet users, a sample that was not considered by previous researchers in that domain.

The chapter ended by illustrating the hypothetical research model of the thesis, where hypotheses were portrayed. Chapter 5 will build on this hypothetical model by discussing the conceptualisation, operationalisation, and measurement scale of each of the research constructs, where the definition and application of each construct will be explained through the relevant literature. Chapter 5 will also discuss the framework of the second phase of the research, the model testing phase, where the instrument design, setting and process of the empirical assessment of the model will be proposed. The empirical testing of the research model is then reported and discussed in chapter 6.

CHAPTER 5

MODEL TESTING PHASE: THE EMPIRICAL SETTING

> *"The plan is the generator. Without a plan, you have lack of order and wilfulness. The plan holds in itself the essence of sensation."*
>
> (Le Corbusier, *Towards a New Architecture*, 1931)

5.1 Overview

The purpose of this chapter is to elaborate on the model testing phase, where it discuses the design, setting and process of the empirical assessment of the research model. The chapter will first revisit the research model developed based on the exploratory studies as reported in chapter 4. The chapter will then discuss in detail the conceptualisation, operationalisation, and measurement scale of each of the research constructs. As all constructs were drawn from the literature, the definition and application of each construct will be explained through the relevant literature. Then the chapter will proceed by presenting the steps followed towards designing the empirical assessment, including the experiential survey design, sampling design, tasks, procedures as well as the piloting of the survey. The chapter ends with the results of the piloting process.

5.2 Hypothetical Research Model

The process of designing the hypothetical model of this research is discussed in section 4.4 and the model is illustrated in figure 4.2 of the previous chapters. There is not sufficient literature linking e-commerce behaviour to cultural variables for the targeted sample. Therefore, hypotheses formulation was based on the findings of three exploratory studies, as reported in the previous chapter. This hypothetical model is revisited in **figure 5.1** below in terms of dependent and independent constructs, where the squares represent the constructs and each of the paths represents a hypothesis.

The model hypothesizes that Internet store's perceived familiarity and perceived reputation have significant effect on online trust, attitude and willingness to buy. It is also hypothesizes that trust influences the willingness to buy through attitude, and that attitude has a significant effect on willingness to buy. The hypothesized effect of uncertainty avoidance on the relationship between constructs is represented through bold paths in the figure 5.1. These paths are expected to be culturally sensitive, the higher the uncertainty avoidance, the stronger the relationships. The research constructs are listed in the following section and the psychological and behavioural concept behind each construct is explained. Subsequently, the measurement scale of each construct is discussed within the domain of statistical analysis.

Figure 5.1: The Hypothetical Research Model

Paths in bold are hypothesized to be culturally sensitive
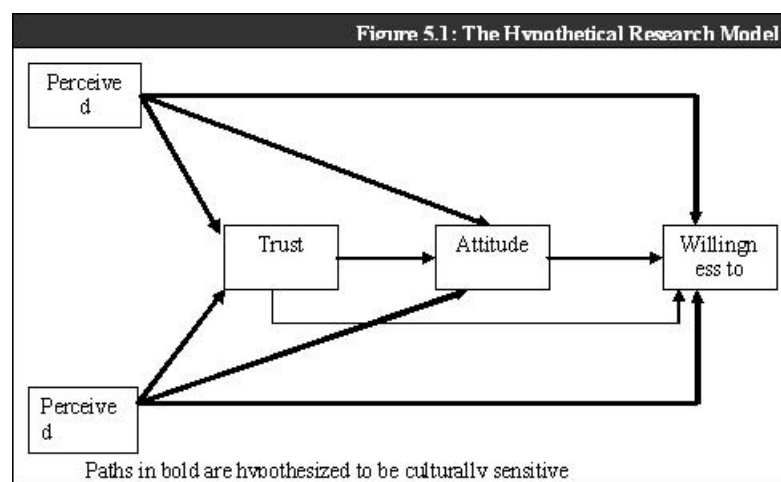
5.3 Research Constructs

According to Malhotra and Birks (2003), constructs are the foundation of the research concept. They add that constructs are non-observable, and can only be

defined in conceptual terms. Constructs are measured by a set of items where each item measures some aspects of the construct measured by the entire scale. The research model of this thesis includes six main constructs and three control constructs.

The six main constructs of the hypothetical model are used in this research as follows: The dependent constructs which include trust (TRST), attitude (ATT) and willingness to buy (WTB), are believed to be predicted or explained by other, independent constructs, which include perceived familiarity (PFAM), perceived reputation (PREP) and are believed to be a cause of the dependent constructs. TRST plays a dual role here, where it is dependent on the effect of PFAM and PREF, while it is also hypothesized to act as an independent construct, affecting both ATT and WTB. Similarly ATT is considered as a dependent construct for PFAM, PREP, and TRST, while it acts as an independent construct for WTB. On the other hand, Uncertainty Avoidance (UA) is hypothesized to affect the strength of the relation between PFAM, PREF and the three dependent constructs. It is hypothesized that the relation between (PFAM, PREP) and (TRST, ATT, WTB) is stronger for high UA participants.

Three additional constructs, technology familiarity (TECHFM), Internet shopping risk attitude (IUSE), and Internet usage (IRSK) are used in this thesis as control constructs. They are checked against their control effect on the dependent constructs, but they are not included in the structural model testing. According to cause-and-effect relationships, if we can assume that the control variables would remain constant, it could be argued that changes in the dependent variables are caused by changes in the independent variables (Winfield, 1990).

5.3.1 Origin of Research Constructs

All the items used by this research have been drawn from literature, where they were quoted to be reliable and valid to measure constructs of the phenomenon that they

intend to represent. None of these items were modified by changing the wording of the item.

It is important to note that all of the constructs' items used in this research were taken from previous research sharing a similar context to the current one. All of the items were used as part of surveys in studies investigating how cultural, national, religious or individual differences affect consumer's reaction to Internet book-selling e-commerce sites. This should add more validity to the use of the constructs' items as they are employed, in this research, in a context similar to the one they were generated for.

Items were translated from English to Arabic by a professional certified translator, and back-translated into English by a second translator. The two English versions of items were compared to make sure they match. Finally, to ensure the comprehensibility of the instrument, the Arabic version of items was piloted with 29 Egyptian Internet users. During these phases, the survey was progressively shortened and major adjustments were done to the layout to make it simpler and more appealing.

De Vellis (2003) alerts the challenges of items that account for *attitudinal* constructs, warning about the inherent problems in developing scales to measure unobserved variables such as attitude. Previous work conducted on appropriate scales that measure opinions and attitudes suggest that rating, ranking, and choice techniques are appropriate for measuring attitude, and likelihood to perform some future actions (De Vellis, 2003; Zikmund, 2002). The most widely used scale in measuring attitude is the Likert scaling (De Vellis, 2003).

The current research model consists mainly of latent constructs, most of the main items' scales use a 5 point Likert scale, where respondents indicate their extent of agreement with a statement from a scale of 1 to 5 (1 = strongly agree and 5 = strongly disagree).

5.3.2 Conceptualization and Operationalisation of Research Constructs

The detailed description of constructs in this thesis is done by describing each construct in terms of its conceptualisation, operationalisation, and source. Construct conceptualisation refers to the definition of the construct and what it represents; the operationalisation of the construct refers to the translation process from the abstract meaning of the construct to concrete and measurable items or item, while the construct source refers to published literature, from where the construct was taken.

5.3.2.1 Perceived Familiarity (PFAM)

Construct Conceptualisation:

The PFAM construct can be conceptualised, in this thesis, to reflect the understanding of how familiar a web-site is to the participant, often based on previous interactions and experiences (Gefen, 2000). The construct is designed to cover four aspects of familiarity perception: the perceived familiarity with searching, buying, and inquiring about product's rating at an Internet store, in addition to general familiarity with the store.

Construct Operationalisation:

The measurement scale for this construct is made up of 4 items designed in a Likert-style format. Items used to measure the PFAM construct and the TRST constructs, employed in this thesis, were developed by Gefen (2000) in two stages. In the first stage, the researcher conducted a monitoring of activities involved in inquiring about and then purchasing books from the Amazon.com, combined with interviews with experienced Internet buyers. The objective was to create a set of items reflecting the important aspects of familiarity with and trust in buying from the Internet and from the Amazon.com site specifically. In the second stage, the set of items was examined by two independent judges who did not take part in the previous item creating sessions. The purpose of this stage was to assess the content validity of each item. The judges evaluated whether each item represents the construct it is supposed to

reflect, and whether each construct is comprehensively represented by the items associated with it. The judges were also asked to evaluate whether each item was worded clearly (Gefen, 2000).

It is important to note that during the item creation sessions, Gefen (2000) used the book-selling site (Amazon.com), the same site used in this research, which should strengthen the applicability of these items in this research context.

The original items' scale as generated by Gefen (2000), used a 7 point scale ranging from Strongly Agree (1) to Strongly Disagree (7); the only modification done for this thesis was to use a 5 point scale with the same range, to be consistent with the majority of scales employed in other constructs in this research. The original items and scales as drawn from Gefen (2000) are listed in Appendix C.

The PFAM items were tested in a study examining the role of perceived familiarity and trust in the e-commerce context, and were reported as reliable measures for perceived familiarity with Internet store construct, with a Cronbach's alpha equals 0.91 (Gefen, 2000).

Construct Source:
Gefen (2000)

5.3.2.2 Perceived Reputation (PREP)

Construct Conceptualisation:
The PREP construct can be conceptualised, in this thesis, to reflect the consumer's perception of a store's reputation, where reputation is defined as the "extent to which buyers believe a selling organization is honest and concerned about its customers" (Jarvenpaa, Tractinsky and Vitale, 2000 p. 51). The construct is designed to investigate participants belief in the store reputation (whether it is good or bad), and to question the extent to which this store is well known for them.

Construct Operationalisation:

The items that measure PREP, ATT and WTB constructs, used in this thesis, were suggested by Jarvenpaa et al (2000) based on previous literature. These items were tested in two separate studies, conducted by the University of Melbourne in Australia, where an *experiential survey approach* was used to examine the antecedents and consequences of consumer trust in an Internet store (Jarvenpaa, Tractinsky, Saarinen, and Vitale, 1999; Jarvenpaa et al, 2000). It is important to note that both research studies used Amazon.com, the same site used in this research; this should strengthen the applicability of these items in this research context.

The measurement scale for the PREP construct is made up of 3 items designed in a Likert-style format. The original items' scale as generated by Jarvenpaa et al (2000), used a 5 point scale ranging from Strongly Disagree (1) to Strongly Agree (5), the only modification done for this thesis was that to start with the Strongly Agree range using the same point scale, to be consistent with the majority of scales employed in other constructs in this research.   The original items and scales as drawn from Jarvanpaa et al (2000) are listed in Appendix C.

The PREP items were reported as reliable measure for perceived reputation with Internet store construct, with a Cronbach's alpha above 0.78 (Jarvenpaa et al, 2000).

Construct Source:

Jarvenpaa et al (2000).

5.3.2.3 Trust (TRST)

Construct Conceptualisation:

The TRST construct can be conceptualised, in this thesis, to reflect the extent of trust that a consumer holds towards a commercial web site. The construct is designed to measure to what degree participants believe that the Internet store is trustworthy, and to what level they are willing to provide personal information to this store.

Construct Operationalisation:

The measurement scale for this construct is made up of 3 items designed in a Likert-style format. Similar to the creation process of PFAM items described earlier, items reflecting the TRST construct were created by Gefen (2000) in two stages. The first stage includes careful observation of buyer's behaviour, combined with interviews with experienced Internet buyers. In the second stage, the set of items was examined by two independent judges to assess the content validity of each item, and to evaluate whether each item was worded clearly.

Amazon.com, the same site used in this research, was considered during the creating and application of the TRST construct, this should strengthen the applicability of these items in this research context. The original items' scale as generated by Gefen (2000), employed a 7 point scale ranging from Strongly Agree (1) to Strongly Disagree (7), the only modification done for this thesis was that to use a 5 point scale with the same range, to be consistent with the majority of scales employed in other constructs in this research. The original items and scales as drawn from Gefen (2000) are listed in Appendix C.

The TRST items were tested by Gefen (2000) in a study examining the role of perceived familiarity and trust in the e-commerce context. These 3 items were reported as reliable measurements for trust toward Internet store construct, with a Cronbach's alpha equals 0.90.

Construct Source:

Gefen (2000)

5.3.2.4 Attitude (ATT)

Construct Conceptualisation:

The ATT construct can be conceptualised, in this thesis, to reflect the general attitude held by a consumer towards an e-commerce site. The ATT construct is designed in this thesis to cover three types of positive attitude: the attitude of finding that shopping from this store is appealing, the attitude of finding that shopping from this store is a good idea, and the attitude of liking the idea of using the site to shop.

Construct Operationalisation:

Like the PREP, the items that measure ATT construct, used in this thesis, were suggested by Jarvenpaa et al (2000). As previously mentioned, these items were tested in two studies investigating the antecedents and consequences of consumer trust in an Internet store (Jarvenpaa et al, 1999; Jarvenpaa et al, 2000).

The measurement scale for the ATT construct is made up of 3 items designed in a Likert-style format. The original items' scale as generated by Jarvenpaa et al (2000), employed a 5 point scale ranging from Strongly Disagree (1) to Strongly Agree (5); the only modification done for this thesis was to start with the Strongly Agree range using the same point scale, to be consistent with the majority of scales employed in other constructs in this research. The original items and scales as drawn from Jarvanpaa et al (2000) are listed in Appendix C.

The ATT items were tested in a study examining the role of perceived size and perceived reputation on consumer behaviour in the e-commerce context, and they were reported as reliable measurements for attitude towards Internet store construct, with a Cronbach's alpha above 0.7 (Jarvenpaa et al, 2000).

Construct Source:

Jarvenpaa et al (2000).

5.3.2.5 Willingness to Buy (WTB)

Construct Conceptualisation:

The WTB construct can be conceptualised, in this thesis, to reflect the extent to which a consumer is intending to buy from a commercial web site. The construct is designed to measure the likelihood that participants will return to that Internet store, the possibility that participants consider purchasing from this store in the next three months and the likelihood that they consider purchasing from this store in the next year.

Construct Operationalisation:

Like the PREP and the ATT construct, the items used in this thesis to measure the WTB construct were suggested by Jarvenpaa et al (2000). As previously mentioned, these items were tested in two studies investigating the antecedents and consequences of consumer trust in an Internet store (Jarvenpaa et al, 1999; Jarvenpaa et al, 2000).

The measurement scale for the WTB construct is made up of 3 items designed in a Likert-style format. The original items' scale as generated by Jarvenpaa et al (2000), employed a 5 point scale ranging from Strongly Disagree (1) to Strongly Agree (5), the only modification done for this thesis was to start with the Strongly Agree range using the same point scale, to be consistent with the majority of scales employed in other constructs in this research. The original items and scales as drawn from Jarvanpaa et al (2000) are listed in Appendix C.

The WTB items were tested in a study examining the role of perceived size and perceived reputation on consumer behaviour in the e-commerce context, and were reported as reliable measure for willingness to buy from an Internet store construct, with a Cronbach's alpha above 0.7 (Jarvenpaa et al, 2000).

Construct Source:

Jarvenpaa et al (2000).

5.3.2.6 Uncertainty Avoidance (UA)

Construct Conceptualisation:

The UA construct can be conceptualised, in this thesis, to reflect the extent of tolerance that an individual holds towards the ambiguity and uncertainty. Items to measure uncertainty avoidance, applied in this thesis, are taken from a multinational survey that dealt mainly with the employees' personal values related to work (Hofstede, 1994). The survey aimed to understand intercultural cooperation and its impact on the organization management. According to Hofstede (1994), the uncertainty avoidance variable could be measured by investigating how often participants feel nervous at work, the extent to which they prefer work competition, the extent to which they follow the organization's rules, and the extent to which they expect their managers to have precise answers to most work-related item.

Construct Operationalisation:

The measurement scale for this construct is made up of 4 items designed in a Likert-style format. Items used to measure the UA construct employed in this thesis, were used in the Hofstede's survey for employees working in the local branches of one large multinational corporation – IBM, as an international comparison of work-related values. Hofstede carried out the survey of 116,000 employees distributed through 72 countries using 20 languages in 1968 and in 1972. Hofstede illustrated the implications of these results in terms of organizational design.

A validation of the survey across countries was conducted in 1981 by the Institute for Research in Intercultural Cooperation (IRIC), at the University of Limburg at Maastricht, The Netherlands. On the basis of an analysis of results, a new version of the survey was issued in 1982 under the title of the Values Survey Module (VSM 92). In 1987, IRIC conducted further improvement to the instrument in order to accommodate respondents not employed in an organization, like entrepreneurs and students. These modifications suggested the current version of the survey, the IRIC Values Survey Module (VSM94), which is used in this thesis. Replication studies of Hofstede's work in the information systems field (Yamagishi and Yamagishi, 1994; Keil, Tan, Wei, Saarinen, Tuunainen, and Wassenaar, 2000; Pavlou and Chai, 2002) over a period of time have largely confirmed his results (Sondergaard, 1994).

Meanwhile, there have been several attempts to use the Hofstede's survey results in designing web site interfaces targeting users from various cultures (Gillham, 2004; Marcus et al, 2003; Marcus and Gould, 2000). The original items and scales as drawn from Hofstede (1994) are listed in Appendix C.

In this thesis, when measured on the individual level, the Uncertainty Avoidance was not found to be a measure with internal reliability. It is argued that the UA scales might produce low reliability scores at the individual level as it was originally designed for comparing country level data (Hofstede, 2002). This point is further discussed in chapter 6 of this thesis

Construct Source:

Hofstede (1994).

5.3.2.7 Technology Familiarity (TECHFM)

Construct Conceptualisation:

Previous research suggests that consumers' past experience might affect attitudes and willingness to shop in an Internet store; technology familiarity is suggested to be attributable to a consumer's general risk attitude towards the Internet (Jarvenpaa et al, 2000). Therefore, this additional construct attempts to measure participants' familiarity with Internet technology in general, by acquiring their level of acquaintance with search engines and web browser. In this thesis, TECHFM construct is employed as a control variable to describe participants' demography, and will not be included in the model testing.

Construct Operationalisation:

The original measurement scale for this construct consists of 18 items. The 18-item scale was validated by O'Keefe, Cole, Chau, Massey, Montoya-Weiss, and Perry (2000), in an empirical study investigating culture effect on user reaction to a web site. This thesis applies a reduced version of the scale, where only 2 items are used. The same 2-item reduced version of the scale was also used by Siala, O'Keefe and Hone (2004), as part of a survey in a study that aimed to investigate the effect of consumers' religious affiliation on attitude toward Internet stores. Respondents for

the measurement scale indicate their familiarity with Web search engines and Web browsers by ticking the appropriate box ("Never", "Rarely", "Occasionally", "Frequently") that reflects their frequency of using these technologies. The original 18-item version of the scale, as drawn from O'Keefe et al (2000), is listed in Appendix C with a clarification of the 2 items used in this thesis.

Construct Source:

O'Keefe et al (2000)

5.3.2.8 Internet Usage (IUSE)

Construct Conceptualisation:

Previous research suggests that the level of consumers' experience using the Internet might affect the attitudes and the willingness to shop in an Internet store (Jarvenpaa et al, 2000). Therefore, this additional construct attempts to measure the extent to which participants use the Internet and how often they buy online. In this thesis, IUSE construct is employed as a control variable to describe participants' demography; and will not be included in the model testing.

Construct Operationalisation:

These items were drawn with no modification as used by O'Keefe et al (2000), in the same empirical study that used the TECHFM constructs and that investigates the effect of consumers' culture on attitude toward an Internet store. This measurement scale includes four items. The first two items question how participants categorise themselves as Internet users; respondents for this measurement scale tick the appropriate box ("Novice", "Intermediate", "Professional") that reflect their level of using the Internet. The second two items check if participants have ever purchased anything via the Internet and the frequency of their purchase on line. Respondents indicate their frequency of purchase on line by ticking the appropriate box ("Never", "Rarely", "Occasionally", "Frequently"). The original items and scales as drawn from O'Keefe et al (2000) are listed in Appendix C.

Construct Source:

O'Keefe et al (2000)

5.3.2.9 Internet Shopping Risk Attitude (IRSK)

Construct Conceptualisation:

Previous research suggests that the perceived risk for Internet shopping, might affect the attitudes and willingness to shop in an Internet store, and that the perceived risk of a store might be attributable to a consumer's general risk attitudes towards the Internet (Jarvenpaa et al, 2000). Therefore, IRSK construct is added as a control variable, and it attempts to measure the extent to which participants perceived risk for Internet shopping. In this thesis, IRSK construct is employed to describe participants' demography, and will not be included in the model testing.

Construct Operationalisation:

The IRSK original measurement scale presented by Jarvenpaa et al (2000), is a 5 point scale starting with strongly disagree (1) and ending with strongly agree (5), the only modification done for this thesis was to start with strongly agree, to be consistent with the majority of scales employed in other constructs in this thesis. Jarvenpaa et al (2000) reported that these items were found as a reliable measurement for Internet shopping risk attitude construct, with a Cronbach's alpha equals 0.65. The original items and scales as drawn from Jarvenpaa et al (2000) are listed in Appendix C.

Construct Source:

Jarvenpaa et al (2000).

5.3.2.10 Demographic Variables

Several categorical demographic measures were used including age, gender and level of education. In addition, a number of demographic scales were used to measure variables that might be expected to be important in the interpretation of the results, namely degree of English language proficiency, language preference online, payment method and items delivery preference, as well as the experience in using the Internet.

5.4 Experiential Approach

In this phase of the thesis, the problem is formulated in terms of hypotheses which can be tested, and the aim is to check a causal relationship among constructs. A laboratory *experiential survey method* (Grabner-Kräuter and Kaluscha, 2003) was selected to test the hypothesized causal relationship. Participants are asked to navigate to a specified e-commerce site(s) and to perform several predefined tasks (e.g. to browse through the Web-Site and perform a product search) and afterwards report on their impressions by filling out a survey.

Gefen and Straub (2003) recommend the use of the experiential survey method as it provides access to a *real-world* web site, representing the use of a *live* environment, which adds to the external validity of the results. They add that this methodology allows participants to browse within the e-commerce site, ensuring that they are all familiar with the Internet, and that the interface and procedure are fresh in their minds before filling in the survey. The experiential survey method is argued to be a data collection method in which the participants are allowed to behave *naturally* while conducting a pre-assigned task (Gefen, 2000).

It is important to note that the experiential survey method was used and recommended as a suitable research methodology in several empirical research studies in online trust (Jarvenpaa et al, 2000; Gefen, 2000; Gefen and Straub, 2000b). According to Grabner-Kräuter and Kaluscha (2003), the majority of empirical research in online trust uses the experiential survey method. Being applied in similar contexts to the current study, this should strengthen the applicability of such methodology in this research context.

On the other hand, according to Siomkos and Vrechopoulos (2002), a laboratory setting can effectively explore consumer behaviour. This thesis investigates the factors affecting the consumer interactions in the context of e-commerce, and suggests that these factors are related to cultural characteristics of the target group. Therefore, it might be justified to depend on a computer-based laboratory as an environment to enable participants' interaction with e-commerce sites.

A common argument about laboratory settings is that the researcher may not be aware of all the factors affecting the behaviour of participants, such as being tested in a laboratory. In the current research, all sessions are conducted in the computer laboratories of the institution where participants are taking post graduate studies. Steps were taken to provide a more real-life situation, thereby making the participants' behaviour more natural.

Based on the above discussion, the laboratory experiential survey method is employed in this stage of the thesis, as this decision seems strongly suggested by the cause and effect nature of the hypothesized research model, and by the context and objectives of the research.

5.5. Sample Design

As one can never reach an entire population, research are based on samples. Sample design is a process that involves a number of tasks and decisions in sampling. The purpose of sampling is to build up on a subset of population, which is used to represent the population under investigation. Statistics can then be used to investigate the likelihood that a pattern observed in the population is a replication of the sample pattern. Krathwohl (1997: p.160) defines sampling procedures as follows:

> *"Sampling procedures are ways of selecting a small number of units from a population to enable researchers to make reliable inferences about the nature of that population."*

The sample design in this research, inspired by the sampling process of Malhotra and Birks (2003), includes the following steps:

 Definition of the population from which the sample is to be drawn: Egyptian Internet users comprised the population from which the sample of this thesis was drawn. The sample comprises Internet buyers and non-Internet buyers. All participants access

the Internet frequently and have at least two years of Internet usage experience. It was hoped that the familiarity with the Internet would lead to more reliable results.

☐ *Determination of the sampling frame:* The sampling frame serves as the margins that limit the population. The participants in this research were all living and working in Cairo, having a university degree in different areas, and at an age ranging from 20 to 40 years old. To access a large number of participants, the researcher targeted professionals who are working in various fields and who are studying part-time Master's or diploma degrees in various disciplines, attending afternoon classes in four post graduate Institutes located in Cairo.

☐ *Determination of the sampling techniques:* Sampling techniques are typically divided into probability and non-probability techniques. Probability sampling involves random sampling of units from the population at some stage in the sampling process *(*Krathwohl, 1997). Probability sampling enables the researcher to make inferences about the characteristics of the population. While all methods under the probability technique create a sample using a random process for the selection of elements from the entire population, the non-probability sampling does not. Non-probability sampling methods are procedures that do not include random sampling at some stage in the process; because of their convenience, they are commonly used (Krathwohl, 1997).

The convenience sampling method, also called the *grab* method, is "undoubtedly the most commonly used non-probability technique" (Krathwohl, 1997: p.171). This thesis uses a non-probability convenience sampling technique. The convenience sampling enables the researcher to select a number of cases whose size depends mainly of participants' availability and the ease of data collection. Some arguments might be raised that convenience sampling reduces the ability of the results to generalize to the entire population. The advantage of this method however, is that it enables the researcher to improvise with the resource available for the research.

This thesis targets Egyptian users of the Internet; the Internet represents a unique problem for surveying since there is no central registry of all Internet users. Completing a census, where an attempt is made to contact every user of the Internet, is neither practical nor financially feasible. Accordingly, it becomes difficult to select users of the entire population at random. As such, research targeting Internet population attempts to answer item about all users by selecting a subset of users to participate.

Meanwhile, participants of this thesis were targeted from four different institutes, as a study of participants from a particular affiliation would not be sufficient, and a cross section of the variety of participant would be needed (Malhotra and Birks, 2003). Based on the previous discussion, and considering the time and resource limits of this research, the non-probability, convenience sampling technique is adopted for this thesis as a technique for sample selection.

 Determination of the sample size: Participation in the current experiment was done on voluntary basis; no financial compensation was given for participants. The total number of participants includes **370** individuals. Generally, a large sample size is necessary as the certainty of the inferential leap from sample to population increases with sample size (Krathwohl, 1997). "A small sample might contain only cases at one extreme characteristic of the population. Only with a larger sample is the chance factor minimised (Krathwohl, 1997: p.162). In the case of surveys, large sample size is advantageous as it increases the power of statistical tests; the standard error decreases with sampe size.   On the othe hand, for the PLS analysis tool, the sample size should be at least 10 times the largest number of independent constructs affecting a dependent construct (Chin, 1998). In the current research, the overall sample size far exeeds the largest number of independent constructs (four constructs) which affect the dependent constructs.

 Execution of the sampling process: Participants were selected from each location based on self-selection, as they were given a choice to participate. However, although this might reduce the ability of the results to generalize to the entire

population, as the group that decided not to participate may differ in some manner from the group that participated (Malhotra and Birks, 2003), the relatively large number of participants, and the variety of their affiliation might decrease the effect of this point.

☐ *Sample Validations:* Since random sampling techniques are not employed consistently throughout the methodology, the ability of the collected data to generalize to the entire Internet Egyptian population is reduced, because certain members of this community may not have had an equal chance to participate. The characteristics of these users may differ from those users who did participate in the surveys. Therefore, the experiment data analysis in this thesis involves comparing demographic characteristics of the sample to those of the targeted population, to ensure that the sample represents the population. It was found that the sample characteristics satisfied the criteria for the target population as reported in previous research (e.g. Loch, Straub and Kamel, 2003)

According to Grabner-Kräuter and Kaluscha (2003), the majority of empirical research in online trust used convenience samples consisting of undergraduate and/or MBA students (Jarvenpaa et al, 2000; Gefen, 2000; Gefen and Straub, 2000b; Lee and Turban, 2001; Pavlou and Chellappa, 2001; Koufaris and Hampton-Sosa, 2002). Unlike other similar studies which mainly depended on students' participation, this study targeted young professionals, working in different disciplines and doing part-time postgraduate studies. This target group would serve as good sample for Internet buyers in general, and as an integral part of the population of online book buyers. The category of young professionals was chosen because it characterizes the first generation of Internet users in Egypt (Warschauer, El Said, and Zohry 2002). This category, of course, does not represent the overall Egyptian Internet users, but it includes early adopters of the Internet in Egypt. Furthermore, while participants of this research showed high technology familiarity and high Internet usage, they also expressed high Internet shopping risk attitude, matching by this the general reaction of Egyptians toward Internet as suggested by previous work (e.g. El Nawawy and Ismail, 1999; Loch et al, 2003). This suggests

that the research participants share many similarities with the overall targeted population.

5.6 Experiential Survey Setting

This section discusses the administration process of the experiential session. It describes the design of the session materials and procedures, explaining the selection of the two e-commerce sites, the design of the survey, and administration of location and equipment. The section then goes on to describe the experiential survey session task and procedures and ends by discussing the findings of the survey piloting.

5.6.1 E-Commerce Sites Selection:

Two sites were selected to be used in this experiment, the Amazon (www.amazon.com) site and the E-Kotob (www.e-kotob.com) site. Both sites represent e-commerce stores for selling books over the Internet. E-Kotob.com is an affiliation of Amazon.com, both sites share approximately same interface features. The book selling domain was chosen because of its extensive use in previous e-commerce research and because books represent the most purchased items by Arabs using consumer web sites (Dabbagh Information Technology Group, 1998). Both sites were included in the card sorting exploratory study, and were ranked differently according to language, familiarity, fame and willingness to buy. Screen shots of the two e-commerce sites are included in Appendix C.

Amazon is the *world's famous Internet book store* (Jarvenpaa et al, 2000), founded in 1994 in the USA in English interface. E-Kotob on the other hand, is a local Egyptian store, with Arabic interface, selling Arabic books on line, founded in 1999, and providing the option to pay cash on delivery. While all of participants in the card sorting sessions categorized Amazon as a familiar, famous site that they are willing to buy from, few of them showed familiarity and willingness to buy from E-Kotob.

According to Grabner-Kräuter and Kaluscha (2003), several studies which used only well-known online companies (e.g. Amazon.com) to test their trust models (e.g. Gefen, 2000; Bhattachajee, 2002), have limitations in their findings. They argue that these findings could be different for less well-known Internet merchants. This research, by using two different e-commerce sites, is aiming to generalise the findings to a wider range of Internet stores. As the two sites used in this study differ in their reputation, fame, nationality and interface language, an assessment will be conducted to check if the relationships between constructs are steady across stores, aiming to justify the robustness of the model.

5.6.2 Survey Design:

The main instrument used to collect data from participants in the model testing phase of this research is a self-report survey. Surveys in general are quick and economical in administration, and easy to score and summarize (Krathwohl, 1997). Therefore, surveys were used for the data collection before and after the experiential session. Most of the items used are rating scale items; the few other remaining are closed questions. The item wording and scale were not an issue in the survey, as all items, except general demographic, were taken from literature to ensure their validity, as discussed in the previous section of this chapter. All the items used were translated from English into Arabic by a professional translator, back-translated to English, for accuracy, by another translator; the two English versions are then compared for consistency (see Appendix C for the English and the Arabic version of the survey).

A pre-experiential part of the survey was designed to collect demographic data as follows: Nine items collected data about gender, age range, education, English fluency, and the general use of the Internet and e-commerce stores. Four items assessed the participants' level of Technology Familiarity (O'Keefe et al, 2000). Two items collected data about Internet Usage (O'Keefe et al, 2000) and three items assess the participants' Internet Shopping Risk Attitude (Jarvenpaa et al, 2000). The VSM 94 survey was administered to assess participants' Uncertainty Avoidance, Power Distance, Individualism, Masculinity and Long Term Orientation index

(Hofstede, 1994). Although only the UA cultural variable is included in the scope of this research, measuring the other Hofstede's variables was essential to control the effect of these other variables. Demographic data helped to develop participants' profile, and allow categorizing the sample according to the Uncertainty Avoidance variable.

A post-experiential session part of the survey was designed to collect data concerning participants' shopping experience evaluation. Two identical copies of the survey were designed with only the name of the site changing. Participants filled in each survey directly after interacting with the specific site. This part of the survey included four items to assess participants' Perceived Familiarity toward the e-commerce site, and three items to assess Trust. Perceived Reputation, Attitude and Willingness to buy were each assessed by three items.

In order to complement the quantitative data collected by the survey, qualitative data were also collected, through an open ended question, toward providing more in-depth explanation. As the open ended question was not taken from literature, special care was given to the question wording, and it was designed according to Luck and Rubin's (1987) question wording guidelines. Luck and Rubin (1987) recommend that question wording use simple language and familiar vocabulary. They also recommend that items be short, specific, and not double-barrelled.

The open ended question is added at the end of the survey to collect data around reasons why participants would be reluctant to buy from the site. As open ended items in general allow researchers to obtain unanticipated perception on an issue (Krathwohl, 1997), the analysis of the open ended question was intended to highlight some factors, other than those studied in the current thesis, that affect the online consumer behaviour of the target sample, as discussed in the next chapter.

5.6.3 Participants:

The sample size depended on the number of volunteers who were willing to participate in the experiment. The researcher targeted professionals who are taking

afternoon post graduate MBA and MSc classes in four major institutes in Cairo. These institutes are as follows: The Information Technology Institute (ITI), The Regional Information Technology Institute (RITI), RAYA Academy, and GATES Academy. All participants are Egyptians, living and working in Cairo. Although these participants have the same age range, they have different backgrounds, and come from various professional disciplines.

As the two sites share some interface similarities, participants might form a perception of familiarity while using a specific site, which will transfer to the other site. Therefore, participants were not asked to start with a specific site; both sites were open on the computer's desktop for participants to select with which they prefer to start.

5.6.4 Location and Equipment:

The same experiential session ran in the four locations similarly. All sessions took place in the computer lab of the institute where the participant is studying. The researcher ensured the consistency of computer configuration and settings in the four different computer labs. The common configuration of computers in all of the four labs was as follows: Pentium 4, 3.2 GHz, 512 MRAM, and a 15 Inch monitor. Microsoft Windows XP, and Microsoft Internet Explorer version 6.0 were the common operating systems and Internet browsers respectively. In addition, it was also ensured that the Internet speed was almost the same in the four different labs with not less than 512 Kbps.

5.6.5 Experimenter:

In all sessions, the main researcher of this thesis acted as the experimenter. The fact that she has an IT background ensured the solution of any technical problem during the test. Moreover, any misunderstanding about the tasks or the survey was cleared up or resolved. The researcher had the opportunity to document and analyse the participants' comments on the spot during the sessions.

The researcher conducted the sessions in the participants' native language; Arabic was used as the official language of the study, though some English terms were used where necessary. Furthermore, all the materials, such as the introductory statement and the surveys were provided in Arabic.

5.6.6 Experiential Session Tasks:

Tasks were selected to represent the most common actions performed by any e-commerce user on an online store; they also provided acceptable coverage of the most important parts of the site under investigation. The selection of the experiment's tasks matches Nielsen's (1993) recommendations for task selection in an experimental environment. Nielsen recommends that tasks be small enough to be completed within the test time, be realistic, accumulative and related, and be given to the participant one at a time.

During the session, the participants performed one shopping activity, as they were asked to search for a specific book "Workers on the Nile", start the process for buying the book, and stop when asked to provide the credit card number. Participants were told that they were not required to make an actual purchase, although they could do so if they wished using their own credit cards. The shopping task was meant to be simple to provide participants with confidence, and to provide a feeling of accomplishment at the end of the task, while being typical of what a consumer might routinely perform.

5.6.7 Experiential Session Procedures:

The experiential session tasks were conducted with the following sequence:

☐ An introductory session was designed to provide participants with information about the session's general purpose, duration, and stages. A written statement that clarified what the participants would be asked to do, was read by the researcher in the introduction session, to ensure the standardization and clarity of the message delivered to all participants. The statement (see Appendix C) was translated into

Arabic and handed to the participants. It was written in alliance with the *code of ethics* in the conduct of research with human participants, by "informing participants about the nature of the study, and respecting their freedom to decline to participate in or withdraw from the research in any time" (Krathwohl, 1997: p.212).

☐ Participants were provided with the pre-experiential demographic survey and asked to fill it out.

☐ Participants were introduced to both of the two e-commerce sites and asked to select either site to start with. Participants were then asked to enter the selected site and were given as much time as they liked to navigate within the site, and then they were asked to search for the book "Workers on the Nile".

☐ Participants were asked to start the process of purchasing the book, and stop when credit card data were required.

☐ Participants were provided with the post-experiential survey and asked to fill it out based on their interaction with the selected site.

☐ Participants were asked to enter the other e-commerce site, and repeat the three previous steps.

5.6.8 Piloting:

The main purpose of piloting the experiential session was to highlight any problems the participants would have with the experiential setting or in understanding the survey items. Luck and Rubin (1987) stress the importance of piloting in order to estimate the time required for the whole process, investigate any potential problems, and evaluate the reliability and consistency of survey items. They also recommend that the piloting sample include from ten to thirty individuals.

The experiential survey sessions of this research was pilot tested among 29 participants who were not in the final study. Participants in the piloting phase were encouraged to provide their feedback on the tasks, the procedures, and the survey.

The participants grasped the tasks easily and quickly and commented that the introductory session was important to provide familiarity with the setting, as most of them had never participated in an experiment before. All participants did the search task easily, even those who used the site for the first time. None of the tasks revealed any major problems, but the survey was progressively refined, simplified, and shortened.

Frequencies of all answers were calculated using SPSS 10.0.7, to check if there was tendency for any question to be unanswered, this tendency was not found. In addition, reliability analysis for the instrument was done using the scale (Alpha). Reliability, which refers to the accuracy of a measuring instrument, was assessed for the three parts of the responses separately (the demographic part, the Amazon.com part, and the E-Kotob.com part). All parts were found reliable with Cronbach's Alpha between 0.60 and 0.90. Cronbach's should be at least 0.7, although a slightly lower score might be accepted for exploratory research (Chin, 1998; Keil et al, 2000), where a value of 0.6 is considered satisfactory, whiles a value of 0.8 or higher is preferred (Chin, 1998; Keil et al, 2000).

In addition, Exploratory Factor Analysis was done for the instrument. The component Matrix was generated using the Principal Component Analysis method, while the rotated Component Matrix was generated using the Varimax with Kaiser Normalization method. The factor for Amazon part and the E-Kotob part were analysed separately. In general, the exploratory analysis confirmed that the model's constructs were clearly identified by the participants.

During piloting sessions, most of the participants complained that they were too exhausted after the experimental conditions to fill all items. Accordingly, the survey was divided into two parts, the pre-experiential survey, which assessed demographic and control constructs data, and the post- experiential survey, which assessed shopping experience evaluation and the main constructs data. The pre- experiential survey was given to participants at the start of the session, while the post-experiential survey was given to them directly after their interaction with each site to give their perception of their experience within each site.

During piloting sessions, most of the participants complained that the survey looked condensed and that its format was not consistent. Accordingly, major adjustments were done to the survey layout to make it more appealing. Items and scales were designed in a tabular format, and spaced adequately. Some items in the demographic part were grouped using borders; in addition, enough space was given to the open ended question. According to Luck and Rubin (1987), the appearance and physical characteristics of a self-reported survey is essential, as respondents are usually not motivated to complete it. For them, the physical appeal of a survey increases the chances that the respondent will complete it and provide quality answers.

Another comment was that items asking about the same concept were repeated one after the other; for example, the four familiarity items were repeated after each other; this was reported as *boring* by most of the pilot participants. Accordingly, items were randomly scattered, items measuring same variables were not placed after each other.

5.7 Summary

This chapter was dedicated to first, describe the research constructs, and second, discuss the empirical setting of the model testing phase. The chapter began by devoting sections for discussing, in detail, the various constructs used within the research model. All constructs of this research were taken from literature. A definition of each construct, its origin, its measurement scale, and the modifications done, if any, to the scales, were reported. The chapter then elaborated on the laboratory experiential survey method employed in this research. Justification for the selection of this method was given, as a recommended and commonly used setting to investigate the current research context. Furthermore, the chapter elaborated on the steps for the sample design, including the sampling techniques used in this thesis, which is the convenient non probability technique. Detailed steps for the experiment setting were described in this chapter, including the selection of web sites, the selection of the location, and the experimenter, as well as the employment of participants. Two e-commerce sites were used in the research, a well-known international and a less-known local one, aiming to generalise the

findings to a wide range of Internet stores. The chapter described the quantitative data gathering instrument used, which is mainly a scalar and closed question. The experiential tasks with the procedures of tasks within the session are also discussed. The chapter ends with reporting results of the piloting phase that took place for the experiential session and the survey. None of the tasks revealed any major problems, but the survey was progressively refined, simplified, and shortened. Exploratory factor analysis of the pilot data confirmed the reliability and comprehensibility of the instruments. It also confirmed that the model's constructs were clearly identified by the participants.

In the next chapter, chapter 6, detailed analysis of data, collected through the experiential sessions, will be provided and interpreted as research findings. These findings will be discussed against hypotheses, and linked to previous work in chapter 7.

CHAPTER 6

MODEL TESTING PHASE: DATA ANALYSIS AND RESULTS

> *"One troubling aspect of testing is the uncertainty that remains even after exhaustive testing by multiple methods."*
>
> (Ben Shneiderman, *Designing the User Interface*, 1998)

6.1 Overview

This chapter elaborates on the model testing results, where it reports and discusses the analysis of data obtained from the experiential survey sessions conducted with 370 Egyptian Internet users. Following the design of the empirical testing procedures, reported in chapter 5, this chapter provides an in-depth analysis of the hypotheses testing process. The chapter elaborates on two major aspects of model testing, data analysis and result interpretations. Following a brief reporting of the data screening process and demographic characteristics of the sample, the main part of the data analysis section discusses the model assessment through the measurement and structural models of Partial Least Square (PLS), a Structural Equation Modelling (SEM) tool. Within the measurement model, the assessment of the measure will be discussed, and measure reliability and validity will be reported while the testing of hypotheses will be investigated within the structural model. Additional analysis will be provided through the open ended question of the survey. The chapter will then discuss the results in terms of interpretation of each hypothesis, linking findings with previous work in the field. The chapter ends with an overall conclusion of the results.

6.2 Data Analysis

The statistical analysis undertaken in this research is processed according to the following sequence: first, a descriptive analysis process is executed; this includes a data screening process, an exploratory factor analysis, a demographic analysis and an F-test for the effect of control variables. Second, the Structural Equation Modelling (SEM) analysis is executed using the PLS tool. This includes the measurement model analysis and the structural model analysis. Within the measurement model analysis, the validity and reliability of the research items and constructs is assessed. Within the structural model analysis, the testing of hypotheses will be discussed through the significance of paths and the statistical comparison of path coefficients within the three cultural groups. Finally, a qualitative analysis is executed through a textual analysis of the survey open ended question. **Figure 6.1** below provides a graphical representation of the statistical processes undertaken in this research, while **figure 6.9** at the end of this chapter provides a summary of results of all these statistical processes.

6.2.1 Descriptive Analysis

The descriptive analysis in this thesis aims to detect missing data and outlier effects, as well as preliminary check the validity of research constructs through factor analysis. The analysis also describes the demographic characteristics of the sample, assess significant cultural differences in the three cultural groups and assess the effect of control variables through F-test.

6.2.1.1 Data Screening

6.2.1.1.1 Data Recoding, Missing Values and Outlier Detection

The questionnaires were coded and screened before data entry. Each questionnaire was given a unique number, and each questionnaire item was given a code to facilitate data entry. Data were then entered into SPSS 11.0.1. The frequency and range of each variable were assessed. Outliers resulting from data entry (e.g., 33 or 55 entry for the 1-5 scale items) were corrected by revisiting the original

Figure 6.1: Research Statistical Processes

Statistical Process

Descriptive Analysis

Data Screening

Exploratory Factor Analysis

Demographic Analysis

F-Test

Objectives:
- Detect missing data and outlier effect
- Prilimenary check of the construct validity
- Analyse the demographic characteristics of the sample
- Assess significance of

Exploratory Analysis

Structure Equation Modeling (PLS) Analysis

Measurement Model Analysis

Item Reliability& Discriminant Validity Tests

Construct Reliability& Validity Tests

Objectives:
- Assess the validity and reliability of items and constructs
- Test the model's hypotheses through the assessment of the significance of the paths
- Test the cultural effect on the model through the

Structural Model Analysis:

R^2 Values

Path coefficients& T-values

The Test of the Effect of UA

Final Research Model

Qualitative Analysis

Open Ended Question Textual Analysis

Objectives:
- Investigate additional reasons, not included in the research hypotheses, that affect the e-commerce

questionnaire while using the unique number assigned to the questionnaire. Cases with missing values were evaluated for elimination. The sample size was adequate, as the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was found to be higher than 0.5, while the missing data may be ignored, representing less than 5% of sample size (see Appendix D for missing entries analysis).

Outliers could be considered genuine, and there was no fear of multi-collinearity as by reviewing the bivariate correlation matrix it was found that all the variables ranged from almost no correlation to moderate correlation (see Appendix D). The resulting sample size was 370 individual records. The data were separated into three subsets for cultural analysis as discussed in the next section.

6.2.1.1.2 Data Cultural Groups

In order to test the effect of Uncertainty Avoidance (UA) on the model, the sample was categorised into three levels of UA, (High, Medium, and Low UA) based on Hofstede's UA Index. The sample was segmented into groups to avoid using the Hofstede's (2001) culture measure at the individual level. According to Hofstede's (2001) own admission, the culture measures that he suggested are mainly chosen for comparing groups, they are not reliable when studied at the individual level. It worth mention that in the current study, when assessed at the individual level, the UA measured was found not reliable with a Cronbach's Alpha less than 0.7. Therefore by segmenting the sample into groups by UA level, UA is still used at the group level and its statistical problems at the individual level are overcome.

On the other hand, Hofstede confirmed that his cultural measures should also be suitable for the comparison of sub-culture groups within a single country (Hofstede, 1994). Hofstede recommends that the minimum number of respondents per group in that case to be 20; below that number, the influence of single individuals becomes too strong (Hofstede, 1994). In this study, this recommended number is far exceeded as the number of participants in the three UA groups is 115, 112 and 122 for low, medium and high UA groups respectively.

As discussed in section 6.2.3.1.5 of this chapter, it was statistically found that the three cultural groups differ significantly in their level of uncertainty avoidance, while the effect of other cultural indexes and control variables was found non significant when assessed for the three groups. The overall sample was divided into three groups using the "categorize variables" feature of SPSS11.0. Where the creation of categories option was selected for the variable UA and the number of categories was identified as 3.The transformation function created a new variable with a score of 1, 2 or 3, which was labelled as low, medium and high UA respectively. Range and average of the UA value for each of the three created cultural groups are reported in Appendix D of this thesis.

The structural analysis was done in two stages: first, a model analysis for the overall dataset, to assess the model for the overall Egyptian users; second, a model analysis for each UA group, to test the effect of UA factor on the model.

6.2.1.2 Exploratory Factor Analysis

In this study, the exploratory factor analysis is conducted to preliminarily determine the validity of each hypothetical construct. This will complement the formal construct validity testing through PLS measurement model. Factor analysis in general addresses the problem of analyzing the structure of the interrelationships among a large number of variables by defining a set of common underlying dimensions, known as factors. The principle component method of extraction adopted in this research to simplify the factors structure was the Varimax rotation method. Factor analysis was performed using all questions in both Amazon and E-Kotob cases separately, eliminating all variables with loading less than 0.5.

The rotation matrix, listed in **table 6.1A** and **table 6.1B**, confirmed all the research constructs, furthermore it highlighted the relationship between some of the constructs, as follows:

- Reputation->Trust
- Familiarity->Trust
- Trust->Willingness to Buy
- Attitude->Willingness to buy

Table 6.1A: Factor Analysis Rotation Matrix			
Questions (Amazon Site)	Factors		
	1	2	3
Amazon has a Good Reputation	.863		
Amazon has a Bad Reputation in the Market	-.801		
I Trust Amazon	.780		
Amazon is well Known	.754		
I Believe that Amazon is Trustworthy	.735		
I Like the Idea of Using the Internet to Shop from Amazon		.839	
Using the Internet to Shop from Amazon is a Good Idea		.813	
The Idea of Using Amazon to Shop is Appealing		.791	
I am Likely to Consider Purchasing from Amazon in the Next Year		.642	
Familiar with Searching Books at Amazon			.813
I am Familiar with Amazon			.764
I am Familiar with Buying Books at Amazon			.756
I Would not Hesitate to Provide Personal Information to Amazon			.577

Table 6.1B: Factor Analysis Rotation Matrix				
Questions (E-Kotob Site)	Component			
	1	2	3	4
I am Familiar with E-Kotob	.857			
I am Familiar with Buying Books at E-Kotob	.846			
I am Familiar with Inquiring about Book Ratings at E-Kotob	.825			
Familiar with Searching Books at E-Kotob	.815			
I Trust E-Kotob		.746		
E-Kotob has a Good Reputation		.702		
I am Likely to Consider Purchasing from E-Kotob in next 3 Months			.833	
I am Likely to Consider Purchasing from E-Kotob in the Next Year			.813	
I am Likely to Return to E-Kotob Site			.700	
The Idea of Using E-Kotob to Shop is Appealing				.833
I Like the Idea of Using the Internet to Shop from E-Kotob				.831
Using the Internet to Shop from E-Kotob is a Good Idea				320

Based on the results of factor analysis, all of the research's constructs are valid; furthermore some of the hypothesized relationships were recommended. Therefore, all the constructs were retained for the next phase of analysis.

6.2.1.3 Demographic Analysis

The demographic characteristics of the sample are described in this research through the following four aspects: the general sample description, the Internet shopping attitude of the sample, sample cultural characteristics, and a sample attitude toward e-commerce sites.

6.2.1.3.1 General Sample Description

As the study targets specific sample, namely young Egyptian professionals known to be Internet users, it was not a surprise to find common characteristics within the sample. The sample's age range varies from 20 to 40 years old, they are all university graduates, and they are either with intermediate or advanced English fluency, with either an intermediate or expert level in using the Internet for more than six years. Gender representation was meant to be balanced, but due to the fact that participants joined the sessions on voluntary basis, gender balance could not be guaranteed. Males represent 64% of the sample and females represent 36%. **Table 6.2** shows the frequencies and percentage of the general demographic data.

6.2.1.3.2 Sample Internet Shopping Attitude

While the highest majority of participants showed high Technology Familiarity and high Internet Usage, they also expressed a high Internet Shopping Risk Attitude. 73% of participants never shop online, while most of the 27% who do shop online did that rarely. The majority (80%) prefer to receive items by hand and to pay cash on delivery, when buying from the Internet. Furthermore, 84% agree, or strongly agree, that they would not feel safe completing commercial transactions over the Internet. Additionally, 81% agree, or strongly agree, that there is too much uncertainty associated with shopping on the Internet, and that compared with other ways, buying from the Internet would be more risky. This comes as no surprise as the previous literature suggests that e-commerce in Egypt is still in its infancy and is beset by cultural hurdles (EIU, 2004) and lack of awareness from the Egyptian consumers side (El Nawawy and Ismail, 1999).

Table 6.2: General Demographic Sample Characteristics					
	Frequency	Percent		Frequency	Percent
Gender			Use of Web Search Engines		
Male	223	64%	Never	4	1%
Female	127	36%	Rarely	19	5%
			Occasionally	75	20%
			Frequently	269	73%
Age Range			Use of Web Browsers		
20-24	188	51%	Never	4	1%
25-29	115	31%	Rarely	12	3%
30-34	37	10%	Occasionally	48	13%
35-39	14	4%	Frequently	305	83%
40-49	15	4%			
Years of Education			Years of Using Internet		
≤ 10 years	7	2%	≤ 1 year	48	13%
11 years	15	4%	2-3 years	102	28%
12 years	6	2%	4-5 years	84	23%
13 years	6	2%	≥ 6 years	132	36%
14 years	7	2%			
15 years	64	18%			
16 years	87	24%			
17 years	82	23%			
≥ 18 years	86	24%			
English Proficiency			Purchase online		
Novice	3	1%	Yes	97	27%
Intermediate	198	54%	No	268	73%
Professional	166	45%			
Internet Proficiency			If Yes, Frequency of Purchase online		
Novice	24	7%	Rarely	48	13%-valid:48%
Intermediate	176	48%	Occasionally	33	9%-valid: 33%
Professional	167	45%	Frequently	20	5%-valid: 20%
Use of credit-cards in General			Language Preference		
Yes	124	34%	Arabic	14	4%
No	244	66%	English	174	48%
			Arabic & English	160	44%
If Yes, Use of credit-cards to buy online			Payment Method Preference		
Never	49	15%-valid:42%	Credit-cards	43	16%
Rarely	22	7%-valid: 19%	Pay on delivery	234	83%
Occasionally	26	8%-valid: 22%	Others	2	1%
Frequently	21	7%-Valid: 19%			
Delivery Method Preference when Buying online					
By Post				55	20%
By Hand				225	80%
Other				2	1%

The demographic analysis of the sample suggests that the sample characteristics satisfied the criteria of the overall population and that the sample share many similarities with the overall targeted population, as described in previous research.

On the other hand, 20% of the sample used Amazon.com before to buy books, while 50% used it for book search. Only 5% used E-Kotob.com before to buy books, and only 14% used it for book search, as shown in **table 6.3**

Table 6.3: Sample Usage of the two E-Commerce Sites						
	Frequency	Percent			Frequency	Percent
Use Amazon to Buy				Use E-Kotob To Buy		
Yes	70	20%		Yes	16	5%
No	283	80%		No	285	89%
If Yes, How Often				If Yes, How Often		
Always	12	4%-valid: 13%		Always	1	1%-valid: 4%
Sometimes	41	13%-valid:46%		Sometimes	9	3%-valid: 36%
Rarely	37	12%-valid: 1%		Rarely	15	5%-valid: 60%
Use Amazon to Search				Use E-Kotob To Search		
Yes	177	50%		Yes	45	14%
No	176	50%		No	254	79%

6.2.1.3.3 Sample Cultural Characteristics

The sample showed high uncertainty avoidance with an index of 64.05, which is very near to Hofstede's uncertainty avoidance index (68) for Arab countries, confirming by this Hofstede's categorization of Arab countries of being high in this cultural variable. This also supports that the sample characteristics satisfied the cultural criteria of the overall population.

The Uncertainty Avoidance Index (UAI) was calculated based on Hofstede Indices calculation formulas of means, provided with the Values Survey Module (VSM94), as follows, where uncertainty avoidance questions means are listed in **table 6.4**:

UAI = 25 (mean of Q1) + 20 (mean of Q2) - 50 (mean of Q3) -15 (mean of Q4) +120
UAI = 25 (3.09) + 20 (3.39) – 50 (3.30) -15 (2.4) +120 = 64.05

.

Table 6.4: Means of Hofstede's UA Questions		
Hofstede Questions measuring the Uncertainty Avoidance	N	Mean
Q1: How often do you feel nervous at work?	360	3.09
Q2: Good manager wouldn't have answers to most questions that subordinates raise	362	3.39
Q3: Competition between employees does more harm	362	3.30
Q4: Company rules should not be broken even if employees think it is in the company's interest	360	2.40

It is important to note that the other four Hofstede indexes: Power Distance, Masculinity, Individualism, and Long Term Orientation, were also included in the survey filled by the research participants. These cultural variables were treated as control variables, and their effect on dependant variables were assessed to ensure that the variations in dependent variables are mainly due to the Uncertainty Avoidance characteristic of the sample and not to other cultural variables. The calculation of the other Hoftede's indexes is presented in Appendix D.

6.2.1.3.4 Control Checks

An F-test showed that uncertainty avoidance differed among the three cultural groups (F= 223.69, p<0.05). Participants of the high uncertainty avoidance group (mean= 2.74, Std. dev. = 0.353) had higher uncertainty avoidance than participants of the low uncertainty avoidance group (mean= 3.64, std dev= 0.357), and participants of the medium uncertainty avoidance group (mean= 3.23, std dev= 0.255). As illustrated in **table 6.5**, participants from these three cultural groups appeared to vary in uncertainty avoidance based on uncertainty avoidance index suggested by Hofstede (1991).

The control variables, Technology familiarity (TECHFAM) and Internet shopping risk attitude (IRSK), were tested for their indirect effects on dependent variables. None of the indirect effects were significant. Furthermore, the other Hofstede's cultural indexes, power distance (PD), individualism (ID), mascularity (MAS), and long term orientation (LTO), were assessed for the three cultural groups. The effect of other cultural indexes was found non-significant. LEVENE statistic showed that both control variables and other cultural variables did not significantly differ across the three groups, having p>0.05 for F-test as shown in **table 6.5**. This strengthens the cause and effect relationship between independent and dependent variables, and

suggests that the cultural effect of the model is based on mainly the uncertainty avoidance index and not the other cultural variables.

Table 6.5: Statistical Control Check in the three UA Groups							
UA group	UA	TECHFAM	IRSK	PD	ID	MAS	LTO
Low (N=115) mean (std dev)	3.64 (.357)	3.64 (.617)	2.52 (.506)	2.51 (.463)	1.90 (.59)	2.27 (.466)	1.62 (.585)
Med (N=112) mean (std dev)	3.23 (.255)	3.45 (.720)	2.47 (.422)	2.50 (.438)	1.85 (.497)	2.20 (.432)	1.57 (.461)
High (N=122) mean (std dev)	2.74 (.353)	3.61 (.609)	2.45 (.476)	2.45 (.515)	1.95 (.562)	2.21 (.517)	1.65 (.535)
F(p-value)	223.69 (.000)	2.795 (.063)	.692 (.501)	.525 (.592)	1.104 (.333)	.801 (.450)	.517 (.597)

A cross-tabulation analysis was conducted for all demographic variables among the three cultural groups. No significant differences were found in any of the demographic characteristics except for the general use of credit card. The distinction of credit card use versus non credit card use (in general) by the high UA and low UA group differed from that expected by chance, $\chi^2 (1, 236) = 4.83$, $p<0.05$. This would be expected as consumers with high uncertainty avoidance are less likely to use credit cards. Cross-tabulation analysis and calculations of χ^2 are reported in Appendix D.

The Internet usage (IUSE) control variable can only be processed and interpreted qualitatively since it consists of dichotomous and ordinal items. The frequency of the construct's items in the three groups is reported in Appendix D.

6.2.1.4 Exploratory Regression and SEM Analysis

During the preliminary analysis phase of the study, several techniques were explored to support the decision of selecting an appropriate analysis tool that suits the research model. Linear regression, structural equation modelling using MxGui tool and structural equation modelling using LISREL tool, were explored. Detailed linear regression analysis and results, as well as screen shots and results of MxGui, are all reported in Appendix D. Comparison of results of linear regression versus MxGui modelling technique is also provided in Appendix D.

As a result of this investigation process, the regression approach was not pursued further in the research. Regression can analyze only one layer of linkages between

independent and dependent variables at a time. As the current research model is quite complex and it accommodate large number of constructs' relationship; it was found that, by using regression, a great number of multiple analyses would be required. This could complicate the statistical analysis of the current research. On the SEM side, after exploring MxGui tool, it was found that the tool does not have the capability to compare corresponding path coefficients in different models. As comparing the model of the three UA cultural groups is a main objective of the research, this approach was not pursued further in the research.

It worth mention that, as included in Appendix D, both regression and MxGui analysis confirmed, on a large extent, most of the relationship of the research hypothetical model. The results of these two analyses were considered as exploratory findings that increased the researcher's confidence in the model; thus, all of the model's relationships were retained for the next phase of analysis.

On the other hand, when exploring LISREL tool, the covariance matrix was reported as "not positive definite", and a non convergence error message was obtained. According to Gefen and Straub (2000), If LISREL reports that the reason for non convergence is that a matrix is not positive definite, then two rows (item measures) are probably so similar that matrix reduction cannot be carried out. "This would imply more about measurement than about the underlying theory being tested and relationships between constructs. Moving to another technique is a perfectly acceptable alternative in such a case" (Gefen and Straub, 2000. p: 33). PLS structural equation modelling technique is suggested as the best alternative in that case (Gefen and Straub, 2000). Accordingly, a decision was taken to pursue the statistical analysis of this research using the PLS-Graph, a SEM tool.

6.2.2 Structural Equation Modelling - PLS Analysis

The model analysis of this research is mainly based on Structural Equation Modelling (SEM). As discussed earlier in the thesis, SEM is a comprehensive statistical approach for testing hypotheses about relations among observed and latent variables. It models the relationships among multiple independent and dependent constructs simultaneously (Chin; 1998). SEM employs a confirmatory modelling

strategy, and it is practically useful when one dependent variable becomes an independent variable in a subsequent dependence relationship (Tabachnick and Fidell; 2000), which is the case in the current study. Not surprisingly, in the past few years, the IS field has seen a substantial increase in the number of submissions and publications using SEM techniques, using various software packages (e.g. LISREL, EQS, AMOS, and PLS). Partial least squares (PLS) software is the statistical method used in this study. PLS allows optimal empirical assessment of the measurement model and the structural model. The measurement model links each construct with the set of items measuring that construct, while the structural model includes a network of causal relationships linking multiple constructs (Keil, Tan, Wei, Saarinen, Tuunainen, and Wassenaar, 2000).

6.2.2.1 The Measurement Model Analysis

The strength of the measurement model in general is assessed through measures of validity and reliability. Validity is concerned with how well the concept is defined by the measures, where reliability relates to the consistency of the measures.

In PLS, measurement model is assessed through convergent and discriminant validity. Convergent validity refers to the degree of association of two maximally different scales that measure essentially the same concept where it looks at the reliability of items and constructs (Krathwohl, 1997), while discriminant validity refers to whether the scale is differentiated from other scales that measure a maximally different concept (Keil et al, 2000).

6.2.2.1.1 Item Reliability

Reliability refers to whether the measurement scale is consistent and stable. It reflects the extent to which the respondent can answer the same or approximately the same questions the same way every time (Cronbach, 1951). Although all items used in this study were drawn from the literature, where they are reported to be reliable, the PLS measurement scale reliability was also checked for both sites, by examining the loading of each item, and by assessing the correlation between each item and its corresponding construct. According to Chin (1998), the items' loading

and item-construct correlation should be at least 0.60; the scores of at least 0.5 might be acceptable if some other items measuring the same construct had high scores. Based on the PLS measurement analysis for item loading and item-construct correltion in **table 6.6**, all items had loading above 0.5 and most items had loading exceeding 0.7. Furthermore, all item-construct correlation exceeded 0.7. Accordingly, it could be concluded that the items measuring all constructs in both sites had adequate reliability.

Table 6.6: Item Reliability: PLS Measure for Item Loading and Item-Construct Correltion							
Amazon Site				**E-Kotob Site**			
Construct	Item	Item Loading	Item-Construct Correlation	Construct	Item	Item Loading	Item-Construct Correlation
PFAM	PFAM1	0.8289	0.867	PFAM	PFAM1	0.8250	0.868
	PFAM2	0.7128	0.729		PFAM2	0.8499	0.869
	PFAM3	0.8572	0.840		PFAM3	0.8872	0.909
	PFAM4	0.7509	0.777		PFAM4	0.8838	0.870
PREP	PREP1	0.8228	0.896	PREP	PREP1	0.7500	0.941
	PREP3	0.8931	0.931		PREP3	0.9229	0.753
TRST	TRST1	0.8439	0.899	TRST	TRST1	0.7282	0.876
	TRST2	0.8742	0.904		TRST2	0.8453	0.917
	TRST3	0.5433	0.804		TRST3	0.7377	0.817
ATT	ATT1	0.8215	0.825	ATT	PREP1	0.8662	0.904
	ATT2	0.8538	0.882		PREP2	0.8943	0.918
	ATT3	0.8541	0.867		PREP3	0.8803	0.869
WTB	WTB1	0.7124	0.666	WTB	WTB1	0.8303	0.776
	WTB2	0.7926	0.865		WTB2	0.8406	0.843
	WTB3	0.8533	0.871		WTB3	0.8459	0.871

6.2.2.1.2 Construct Reliability

Construct reliability refers to the ability of manifest variables to tap a similar underlying construct (Krathwohl, 1997). In this research, the constructs' reliability was checked for both web sites, by examining construct composite reliability, Average Variance Extracted (AVE), and Cronbach's Alpha.

Composite reliability is calculated by the square of summation of factor loadings/ [(Square of summation of factor loadings) + (summation of error variances)]. According to Fornell and Larker (1981), a value of .80 or greater suggests evidence of strong composite reliability.

AVE, on the other hand, is the amount of variance captured by the measurement model versus the amount due to measurement errors. It could be calculated by (summation of squared factor loadings)/ [(summation of squared factor loadings) +

(summation of error variances)]. It has been suggested that AVE should be greater than 0.50 to demonstrate significant variance captured by the measurement model (Fornell and Larker, 1981). Based on the correlation coefficient between all variables and their associated items, analysed by SPSS, Composite Reliability and Average Variance Extracted are calculated for all model variables.

Meanwhile, Cronbach's Alpha measures how well a set of items measures a single unidirectional latent construct; it should be at least 0.7, although a slightly lower score might be accepted for exploratory research (Keil et al, 2000). A value of 0.6 is considered satisfactory (John and Redder, 1981), while a value of 0.8 or higher is preferred (Nunnaly, 1970). Given that all constructs had composite reliability scores above 0.8 and had average variance extracted scores exceeding 0.5 and Cronbach's Alpha scores, analysed by SPSS, exceeding 0.6 (see **table 6.7**), this suggests that the construct reliability in both sites had adequate reliability.

Table 6.7: Construct Reliability: SPSS Measure for Cronbach's Alfa. Composite Reliability & Average Variance Extracted Calculation based on Factor Analysis						
Amazon Site				E-Kotob Site		
Construct	Construct Composite Reliability	Construct Average Variance Extracted	Construct Cronbach Alpha	Construct Composite Reliability	Construct Average Variance Extracted	Construct Cronbach Alpha
Perceived Familiarity (FAM)	0.881	0.648	0.840	0.931	0.772	0.902
Perceived Reputation (PREP)	0.899	0.818	0.749	0.839	0.726	0.605
Trust (TRST)	0.897	0.812	0.745	0.891	0.804	0.801
Attitude (ATT)	0.893	0.736	0.859	0.925	0.805	0.887
Willingness to Buy (WTB)	0.846	0.650	0.757	0.869	0.690	0.818

On the contrary, when measured on the individual level, the Uncertainty Avoidance was not found to be a measure with internal reliability. This comes to no surprise as the Hofstede's scales are often criticized for their poor internal consistency reliabilities (Spector and Cooper, 2002). On the other hand, Hofstede (2002) argues that the scales might produce low reliability scores at the individual level as it was originally designed for comparing country level data. Knowing that Hofstede's cultural variable has received empirical support from several replication studies of his work (Sondergaard, 1994), a decision was taken to pursue the analysis of this research using the Hofstede's Uncertainty Avoidance Index.

6.2.2.1.3 Item Correlations

Correlations between all items measuring each construct were computed. In the current study, as listed in Appendix D, each item correlates more highly with other questions measuring the same construct than with other items measuring other constructs, as evidence of discriminant validity (Keil et al, 2000). Furthermore, assessing the confirmatory factor analysis in PLS is also done by verifying each item's loading in the factor analysis is much higher on its assigned construct than on the other constructs (Gefen, 2000). Here a bootstrap technique is used to generate the T-value of item loadings. For the current study, all items were found to have much higher loading in their assigned constructs than in the other constructs (see **table 6.8A** and **table 6.8B**). This suggests the discriminant validity of all of the used items.

Table 6.8A: Item-Construct Correlations							
Amazon Site							
Construct	Item	Question Number	Loading (T-Value)				
			PFAM	PREP	TRST	ATT	WTB
PFAM	PFAM1	A42	0.8289 (42.0390**)	0.436	0.424	0.252	0.324
	PFAM2	A46	0.7128 (17.5481**)	0.237	0.350	0.290	0.339
	PFAM3	A51	0.8572 (51.1752**)	0.484	0.495	0.298	0.331
	PFAM4	A55	0.7509 (18.9136**)	0.473	0.445	0.336	0.374
PREP	PREP1	A43	0.460	0.8228 (40.5230**)	0.547	0.301	0.216
	PREP2	A47	0.370	0.6989 (8.3966**)	-0.523	-0.289	-0.252
	PREP3	A52	0.470	0.8931 (57.9925**)	0.658	0.405	0.245
TRST	TRST1	A44	0.466	0.717	0.8439 (36.6826**)	0.402	0.326
	TRST2	A49	0.458	0.655	0.8742 (41.1002**)	0.498	0.360
	TRST3	A50	0.316	0.218	0.5433 (8.0254**)	0.312	0.361
ATT	ATT1	A48	0.277	0.270	0.420	0.8215 (28.7253**)	0.467
	ATT2	A53	0.309	0.346	0.460	0.8538 (27.1163**)	0.527
	ATT3	A56	0.376	0.342	0.470	0.8541 (29.2614**)	0.510
WTB	WTB1	A45	0.401	0.314	0.469	0.418	0.7124 (15.2981**
	WTB2	A54	0.313	0.186	0.331	0.479	0.7926 (16.8573**
	WTB3	A57	0.342	0.222	0.336	0.481	0.8533 (37.3315**

Table 6.8B: Items-Construct Correlations

E-Kotob Site

Construct	Item	Question Number	Loading (T-Value)				
			PFAM	PREP	TRST	ATT	WTB
PFAM	PFAM1	B42	0.8250 (21.5969**)	0.540	0.429	0.232	0.258
	PFAM2	B46	0.8499 (29.7627**)	0.372	0.388	0.197	0.243
	PFAM3	B51	0.8872 (39.2318**)	0.410	0.441	0.304	0.276
	PFAM4	B55	0.8838 (45.7472**)	0.397	0.409	0.295	0.265
PREP	PREP1	B43	0.513	0.7500 (10.2374**)	0.408	0.161	0.139
	PREP2	B47	-0.012	0.3879 (1.6984*)	-0.070	-0.002	0.017
	PREP3	B52	0.435	0.9229 (67.6117**)	0.537	0.291	0.223
TRST	TRST1	B44	0.450	0.549	0.7282 (10.3663**)	0.415	0.387
	TRST2	B49	0.379	0.412	0.8453 (32.6284**)	0.450	0.382
	TRST3	B50	0.350	0.267	0.7377 (12.8768**)	0.438	0.460
ATT	ATT1	B48	0.232	0.200	0.462	0.8662 (31.2809**)	0.487
	ATT2	B53	0.292	0.191	0.509	0.8943 (47.4199**)	0.513
	ATT3	B56	0.260	0.214	0.479	0.8803 (46.9743**)	0.563
WTB	WTB1	B45	0.296	0.292	0.555	0.514	0.8303 (31.6028**)
	WTB2	B54	0.225	0.068	0.393	0.472	0.8406 (29.5448**)
	WTB3	B57	0.248	0.098	0.398	0.536	0.8459 (21.5590**)

**Indicates p-value<0.01

6.2.2.1.4 Construct Validity

Validity is the degree to which a set of measures correctly represents the concept of the study that they are supposed to represent. In other words, it is the degree to which the set of measurement is free from any systematic or non-random error. "While validity is the most important characteristic of measuring, construct validity provides evidence which forms the basis for intended score interpretation" (Krathwohl, 1997: p.446).

Although all of the research constructs were measured using established scales from the literature, there is still a need to validate the measures used in this study. This was measured using the correlation coefficient between each variable and its associated items (Krathwohl, 1997). Correlation was done between variables and their associated items for Amazon and E-Kotob sites separately, using Pearson Correlation Coefficient. A significant correlation was found between all variables and all their associate items in both cases. The correlation between variables is presented in Appendix D.

Correlation was also done between model variables and their associate items for both sites separately, using Pearson Correlation Coefficient (see Appendix D). Variables includes main model constructs (UA, PFAM, PREP, TRST, ATT, WTB), as well as other demographic variables (IRSK, gender, English language proficiency, Internet usage proficiency). Significant correlation was found between most model variables in both cases, relatively high correlation was found especially in the following cases:

Amazon.com Case:
- Perceived Reputation and Trust (0.555)
- Attitude and Willingness to buy (0.540)

E-Kotob.com Case:
- Trust and Willingness to buy (0.515)
- Attitude and Willingness to buy (0.557)

6.2.2.1.5 PLS Results Bias and Significance

As PLS uses a variance-based approach to structural equation modelling, in case of inadequate sample size, results of data analysis by PLS could be biased toward higher estimates for item loadings in the measurement model at the expense of lower estimates of path coefficients in the structural model (Chin, 1998). To avoid this problem of biased results, the sample size should be at least 10 times the largest number of independent constructs affecting a dependent construct (Chin, 1998). In the current research, the overall sample size (370 participants), and the sample size for each UA cultural group (122, 112 and 115) were both large enough to overcome this limitation, as the largest number of independent constructs affecting the

dependent construct is four. Furthermore, given the large sample, statistical tests can become sensitive and may detect a spurious effect; therefore, a very strict significant level (p-value <0.01) is used for statistical tests (Hair, Anderson, Tatham, and Black, 1998). Statistically significant, is a term indicating that the relationship between two measures is significantly strong to rule out the possibility that it is due to pure chance. The significance level, usually 0.05, 0.01 or 0.001, is the remaining risk that the relationship could still be accidental (Krathwohl, 1997).

6.2.2.2 The Structural Model Analysis

The explanatory power of the structural model is evaluated using PLS by looking at R^2 value, Path Coefficient, and T-Value. It should be noticed that the T-Value term, used throughout the current analysis, is a PLS-specific term that expresses the relation between the measurement variables and their corresponding latent variables, and it should not be confused with the T-Test value for comparing two conditions.

6.2.2.2.1 R^2 Value

The value of R^2 represents the percentage with which the independent variables explain the variation in the dependent variable (Keil et al, 2000). For the overall dataset and the three cultural groups, and for both sites, the value of R^2 is highest in TRST, followed by WTB, and finally by ATT. This suggests that the model mainly provides explanation of the variation of online trust on the largest degree, followed by explanation of the variation of the willingness to buy on a less degree, and finally explanation of the variation of the attitude toward the online store. Furthermore, the PFAM-> TRST and PREP -> TRST paths are particularly valid, where they explain (51% in case of Amazon and 46% in case of E-Kotob) of the variation in TRST. Followed by the paths of PFAM, PREP, TRST, and ATT with WTB where they explain (37% in Amazon and 45% in E-Kotob) of variation in WTB. This again suggests the strength of model in explaining mainly the variation of the trust construct, more than the other two dependent constructs. It also highlights the effect of perceived reputation and perceived familiarity of explaining a relatively high percentage of the trust variation. The effect of perceived reputation, perceived familiarity, and trust also explains the variation of the willingness to buy but with a

smaller percentage. Prior e-commerce models (Pavlou and Chai, 2002) reported to explain 33% (in the case of US sample) and 77% (in the case of Chinese sample) of the variance in transaction intention. Therefore, it could be argued that the structural model proposed in this research possessed an average explanation power compared with other studies in the same research strand.

Furthermore, the values of R^2 for the three dependent constructs, ATT, TRST, and WTB increased with high UA, which means that the variation of these constructs are explained in higher percentage in high UA; this suggests that the model is more valid in the case of high UA. **Table 6.9** lists the R^2 values for the overall dataset and for the three cultural groups.

Table 6.9 : R2 Values				
Dependent Variable	R^2			
	Amazon Site			
	Overall dataset	High UA	Medium UA	Low UA
TRST	0.510	0.572	0.571	0.510
ATT	0.243	0.279	0.278	0.243
WTB	0.370	0.428	0.430	0.370
	E-Kotob Site			
	Overall dataset	High UA	Medium UA	Low UA
TRST	0.461	0.5071	0.2966	0.461
ATT	0.304	0.3810	0.2773	0.304
WTB	0.456	0.4842	0.4548	0.456

6.2.2.2.2. Path Coefficient and T-Value

PLS uses a Bootstrap technique to obtain T-values for each path in the structural model, where each path represents a hypothesis and T-value expresses the relation between the measurement variables and their corresponding latent variables (Chin, 1998). Support for each hypothesis is assessed by examining the sign and statistical significance of the T-value for its corresponding path. The acceptable T-value is 2.326 with a significance level of 0.01 (Keil et al, 2000). **Figure 6.2A** and **6.2B** show the standardised PLS structural representation of the current research model with path coefficients and T-values for both sites, where each of the paths represents a hypothesis. The supported hypotheses are marked in bold for the model's path. The summary of structural parameter values is presented in **table 6.10**. Screen captures from PLS software for model item loading are illustrated in Appendix D. Note that the abbreviations used to refer to hypotheses in this chapter were defined

in chapter 4. Table 6.15 at the end of the current chapter also summarises all of these abbreviations.

Link	Amazon Site			E-Kotob site		
	Path Coefficient	T-Value	R^2	Path Coefficient	T-Value	R^2
PFAM -> TRST	0.246	5.8558**	0.510	0.262	5.4667**	0.461
PREP -> TRST	0.575	15.2666**		0.489	9.4675**	
PFAM -> ATT	0.143	2.5554**	0.243	0.094	1.8316	0.304
PREP -> ATT	0.238	1.7632		0.020	0.3167	
TRST -> ATT	0.313	4.2052**		0.508	10.032**	
PFAM -> WTB	0.256	4.9607**	0.370	0.102	1.8316	0.456
PREP -> WTB	0.156	2.1504		0.091	1.6062	
TRST -> WTB	0.238	3.0727**		0.352	8.6279**	
ATT -> WTB	0.378	7.7420**		0.407	8.7321**	

Table 6.10: Structural Parameter Values for the Overall Dataset

** Indicates acceptable T-value > 2.326 with a significance level p<0.01

The Amazon Site:

The results of the overall data set shows that perceived reputation has a significant positive effect on trust (t = 15.26, p <0.01); while it does not have any effect on either the attitude or the willingness to buy. This suggests that the Internet consumers with high perceived reputation on Amazon.com tend to trust that store, while this high perception of Amazon reputation does not seem to directly affect either the attitude, or the willingness to buy from that store. Thus H1 is supported, while H2 and H3 are not supported.

The results propose that perceived familiarity has a positive effect on trust, attitude, and the willingness to buy (t = 5.85, p <0.01; t = 2.55, p <0.01; and t = 4.96, p <0.01 respectively). This suggests that the Internet consumers with high perceived familiarity with Amazon.com tend to trust that store, have a positive attitude towards it and show willingness to buy from that store. Thus H4, H5 and H6 are supported.

The results also propose that the higher the level of trust in an Intrenet store, the greater the positive attitude and the willingness to buy (t = 4.2052, p <0.01; t = 3.0727, p <0.01 respectively). This suggests that the Internet consumers with high trust in Amazon.com tend to have a positive attitude toward it and show willingness to buy from that store. Thus H7 and H9 are supported. Furthermore, attitude has a positive direct effect on the willingness to buy (t = 7.742, p <0.01), thus H8 is supported.

The E-Kotob Site:

The results of the overall data set shows that perceived reputation has a significant positive effect on trust (t = 9.46, p <0.01). Also perceived familiarity has a positive effect on trust, (t = 4.46, p <0.01), while both constructs do not seem to have a direct effect on either the attitude or the willingness to buy. This suggests that the Internet consumers with high perceived reputation and high perceived familiarity with E-Kotob.com tend to trust that store, while this high perception of E-Kotob.com reputation and familiarity does not seem to build a positive attitude toward that store or to increase the willingness to buy from that store. Thus H1 and H4 are supported, while H2, H3, H5 and H6 are not supported.

The results propose that the higher the level of trust, the greater the positive attitude and the willingness to buy (t = 10.03, p <0.01; t = 6.55, p <0.01 respectively). This suggests that the Internet consumers with high trust on E-Kotob.com, tend to have a positive attitude towards it and show willingness to buy from that store. Thus H7 and H9 are supported. Furthermore, attitude has a positive, direct effect on willingness to buy (t = 8.62, p <0.01), thus H8 is supported.

Appropriateness to both Amazon.com and E-Kotob.com sites

In order to build a consensus about the consumers attitude towards e-commerce sites in general, the two structural models illustrated in **figure 6.2A** and **6.2B** are combined into a single model (see **figure 6.2C**). The integration of both sites' models was done based on including only paths supported in both sites, and excluding any path that was found unsupported in any of the two sites.

The combined model suggests that the Internet consumers with high perceived reputation and high perceived familiarity towards an e-commerce store tend to trust that store. Furthermore, the Internet consumers with high trust in an e-commerce store tend to have a positive attitude towards it and show willingness to buy from that store. Also, attitude has a positive direct effect on the willingness to buy.

Figure 6.2C: Structural Model for Combined Dataset for both Sites
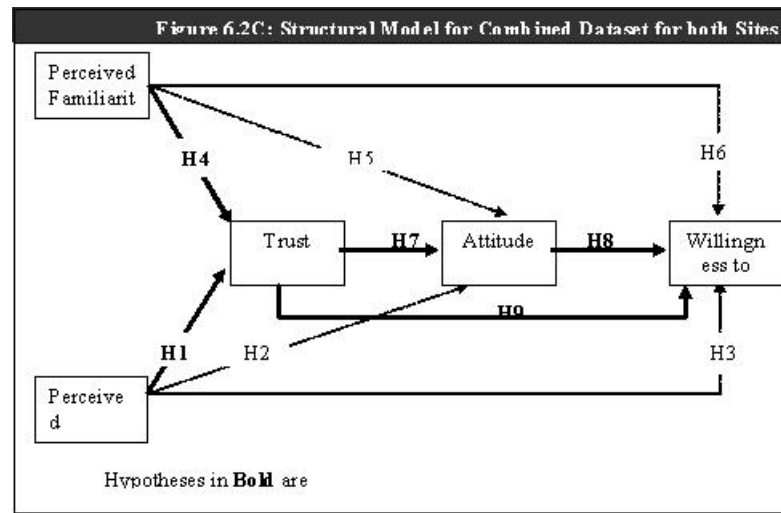
6.2.2.2.3. The Effect of Uncertainty Avoidance:

The effect of uncertainty avoidance is investigated for each site separately by assessing the structural model for each of the three uncertainty avoidance groups.

The Amazon Site:

Figures 6.3A, 6.3B and **6.3C** show the standardised PLS structural model with path coefficients and T-values for the three cultural groups for the Amazon.com site. Hypotheses are supported or rejected in the models based on the required T-value (t at least 2.326 at p<0.01). A summary of structural parameter values is presented in **table 6. 11**, where the supported hypotheses are marked in bold.

Figure 6.3A: Structural Model for High Uncertainty Avoidance Group (Amazon)

Figure 6.3B: Structural Model for Medium Uncertainty Avoidance Group

Figure 6.3C: Structural Model for Low Uncertainty Avoidance Group (Amazon
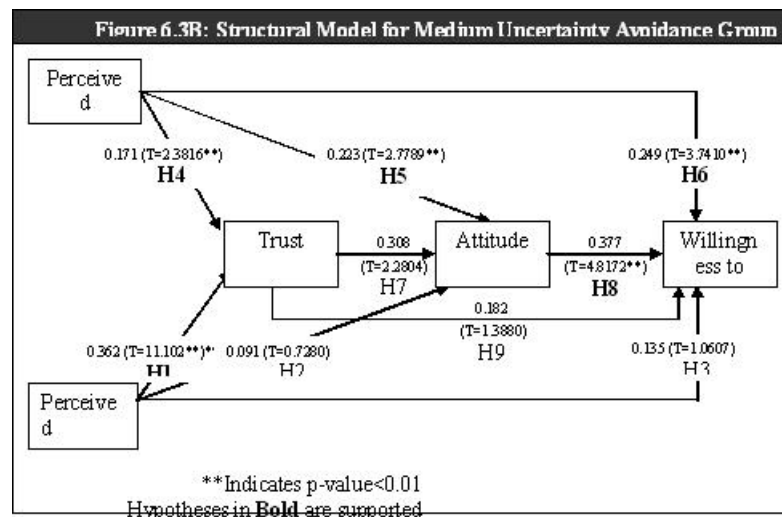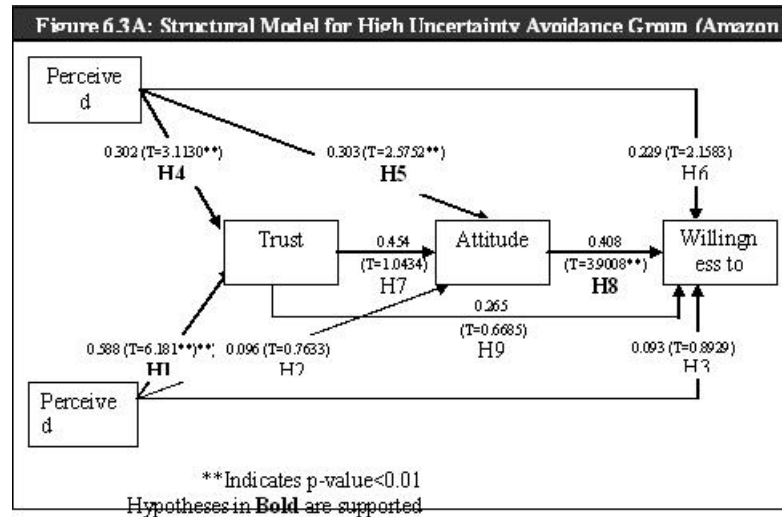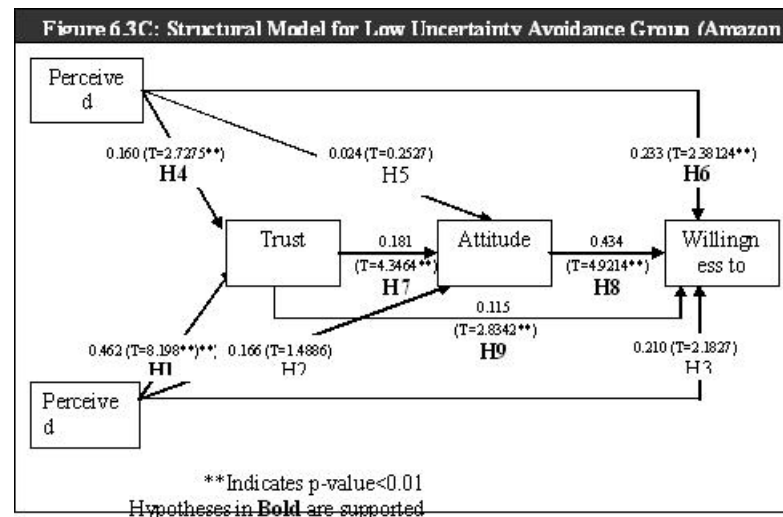
Table 6.11: Structural Parameter Values for the three UA Groups (Amazon site)					
Link	High UA Group (sample=122)		Medium UA Group (sample=112)		Low UA Group (sample=115)
	Path Coefficient	T-Value	Path Coefficient	T-Value	Path Coefficient	T-Value
PFAM -> TRST	0.302	3.1130**	0.171	2.3816**	0.160	2.7275**
PREP -> TRST	0.588	6.1816**	0.362	11.1025**	0.462	8.1980**
PFAM -> ATT	0.303	2.5752**	0.223	2.7789**	0.024	0.2527
PREP -> ATT	0.096	0.7633	0.091	0.7280	0.166	1.4886
TRST -> ATT	0.454	1.0434	0.308	2.2804	0.181	4.3464**
PFAM -> WTB	0.229	2.1583	0.249	3.7410**	0.233	2.3812**
PREP -> WTB	0.093	0.8929	0.135	1.0607	0.210	2.1827
TRST -> WTB	0.265	0.6685	0.182	1.3880	0.115	2.8342**
ATT -> WTB	0.408	3.9008**	0.377	4.8172**	0.434	4.9214**

** Indicates acceptable T-value > 2.326 with a significance level p<0.01

Hypotheses on cultural differences is suggested to be tested by comparing corresponding path coefficients in the three cultural cases (high, low and medium UA), using the following procedure, as reported by Keil et al (2000).

$S_{pooled} = \sqrt{\{[(N_1 - 1) / (N_1 + N_2 - 2)] \times SE_1^2 + [(N_2 - 1) / (N_1 + N_2 - 2)] \times SE_2^2\}}$

$t = (PC_1 - PC_2) / [S_{pooled} \times \sqrt{(1/N_1 + 1/N_2)}]$

Where S_{pooled} = pooled estimator for the variance

t = t-statistic with $N_1 + N_2 - 2$ degrees of freedom

N_i = sample size of dataset for culture i

SE_i = standard error of path in structural model of culture i

PC_i = path coefficient in structural model of culture i

Only the supported hypotheses in the three cultural groups are included in the cultural analysis. Therefore, as H2 and H3 are not supported, having a t-value < 2.326, the cultural sensitivity for paths was done for only H1, H4, H5, H6, H7, H8, and H9. **Table 6.12** shows the results of the statistical comparison for the three UA groups.

Table 6.12: Statistical Comparison of the three UA Groups (Amazon site)						
Link	High vs. Low UA		High vs. Medium UA		Medium vs. Low UA	
	S $_{pooled}$	T-value	S $_{pooled}$	T-value	S $_{pooled}$	T-value
PFAM -> TRST	0.079615	13.72299**	0.0849	11.863**	0.0652	2.457**
PREP -> TRST	0.073171	13.24915**	0.0673	8.453**	0.0661	23.090**
PFAM -> ATT	0.106617	20.13406**	0.1024	6.00**	0.0906	16.779**
TRST -> ATT	0.142217	1.76954	0.1523	1.371	0.1170	1.289
PFAM -> WTB	0.10196	0.30184	0.0985	1.561	0.0946	1.292
TRST -> WTB	0.137305	1.405411	0.1523	2.192	0.1130	1.528
ATT -> WTB	0.096504	2.07291	0.5900	0.404	0.5680	0.766

** Indicates acceptable T-value > 2.326 with a significance level p<0.01

Results shows that the path coefficient from perceived familiarity to trust in the structural model for high uncertainty avoidance group is significantly stronger than the corresponding path coefficients in the structural model for the low uncertainty avoidance group (t=13.72, p<0.01) and significantly stronger than the corresponding path coefficients in the structural model for the medium uncertainty avoidance group (t=11.863, p<0.01). The path coefficient from the perceived reputation to trust in the structural model for high uncertainty avoidance group is significantly stronger than the corresponding path coefficients in the structural model for the low uncertainty avoidance group (t=13.24, p<0.01) and significantly stronger than the corresponding path coefficients in the structural model for the medium uncertainty avoidance group (t=8.453, p<0.01). The path coefficient from perceived familiarity to attitude in the structural model for high uncertainty avoidance group is significantly stronger than the corresponding path coefficients in the structural model for the low uncertainty avoidance group (t=20.13, p<0.01) and significantly stronger than the corresponding path coefficients in the structural model for the medium uncertainty avoidance group (t=6, p<0.01).

Based on the previous findings, it could be concluded that, for Amazon.com, the effect of the Egyptian Internet consumers' perceived familiarity and perceived

reputation on trust is stronger in the case of consumers with high uncertainty avoidance. Also, the effect of perceived familiarity on attitude is stronger in high uncertainty avoidance. Thus, H1a, H4a, and H5a are supported. These results are summarized in **figure 6.4**.

Figure 6.4: Summary of Results (Amazon site)
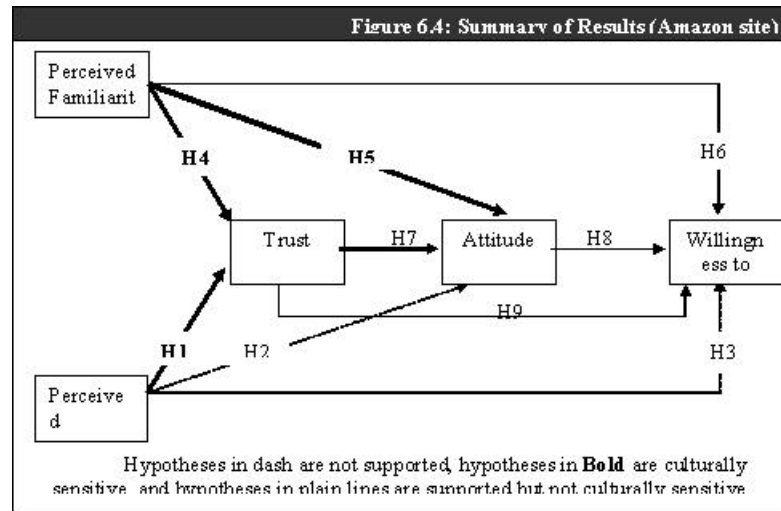
The E-Kotob Site:

Figure 6.5A, 6.5B and **6.5C** show the standardised PLS structural model with path coefficients and T-values for the three cultural groups for the E-Kotob.com site. Hypotheses are supported or rejected on the models based on the required T-value (t at least 2.326 at p<0.01). A summary of structural parameter values is presented in **table 6.13**, where the supported hypotheses are marked in bold. Screen captures from PLS for model item loading are illustrated in Appendix D.

Figure 6.5A: Structural Model for High Uncertainty Avoidance Group (E-Kotob

Figure 6.5B: Structural Model for Medium Uncertainty Avoidance Group (E-

Figure 6.5C: Structural Model for Low Uncertainty Avoidance Group (E-Kotob
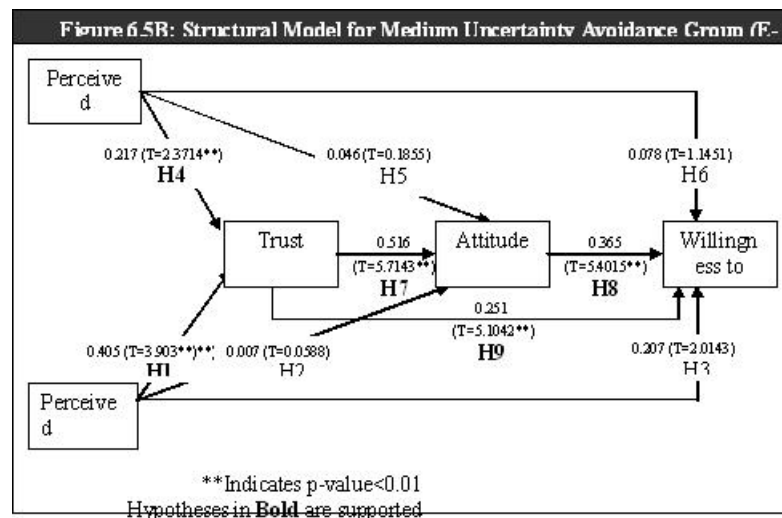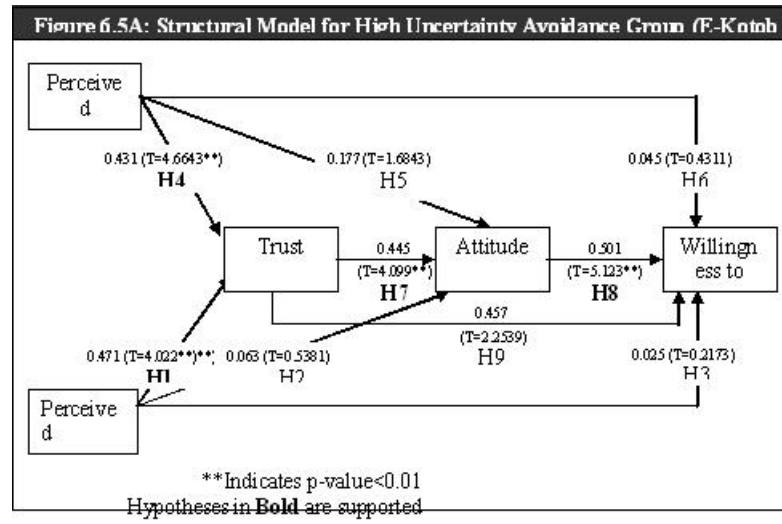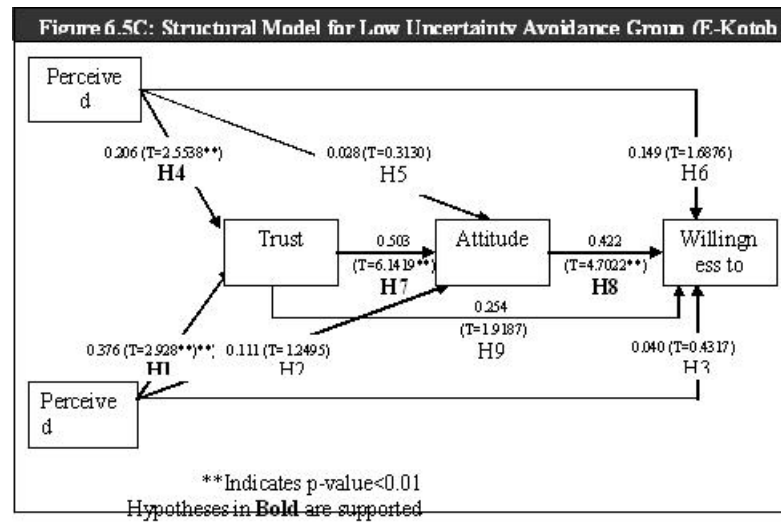
Table 6.13: Structural Parameter Values for the three Cultural Groups (E-Kotob site)						
Link	High UA Group (sample=122)		Medium UA Group (sample=112)		Low UA Group (sample=115)	
	Path Coefficient	T-Value	Path Coefficient	T-Value	Path Coefficient	T-Value
PFAM -> TRST	0.431	4.6643**	0.217	2.3714**	0.206	2.5538**
PREP -> TRST	0.471	4.0220**	0.405	3.9038**	0.376	2.9286**
PFAM -> ATT	0.177	1.6843	0.046	0.1855	0.028	0.3130
PREP -> ATT	0.063	0.5381	0.007	0.0588	0.111	1.2495
TRST -> ATT	0.445	4.0998**	0.516	5.7143**	0.503	6.1419**
PFAM -> WTB	0.045	0.4311	0.078	1.1451	0.149	1.6876
PREP -> WTB	0.025	0.2173	0.207	2.0143	0.040	0.4317
TRST -> WTB	0.457	2.2539	0.251	5.1042**	0.254	1.9187
ATT -> WTB	0.501	5.1234**	0.365	5.4015**	0.422	4.7022**

** Indicates acceptable T-value > 2.326 with a significance level $p < 0.01$

Hypotheses on cultural differences are tested using the same procedure, as reported by Keil et al (2000). Only the supported paths in the three cultural groups are included in the cultural analysis. Therefore, as H2, H3, H5 and H6 are not supported, having a t-value <2.326, cultural sensitivity for paths was done for only H1, H4, H7, H8, and H9. **Table 6.14** shows the results of the statistical comparison for the three UA groups.

Table 6.14: Statistical Comparison of the Three UA Groups (E-Kotob site)

Link	High vs. Low UA		High vs. Medium UA		Medium vs. Low UA	
	S_{pooled}	T-value	S_{pooled}	T-value	S_{pooled}	T-value
PFAM -> TRST	0.086573	19.99643**	0.0989	17.490**	0.0930	2.793**
PREP -> TRST	0.132493	5.51678**	0.0988	5.1354**	0.1364	3.694**
TRST -> ATT	0.100202	1.06065	0.0995	1.487	0.0910	1.945
TRST -> WTB	0.122663	0.18818	0.10072	1.736	0.1228	0.186
ATT -> WTB	0.096504	1.48580	0.0836	1.513	0.0798	1.451

** Indicates acceptable T-value > 2.326 with a significance level $p < 0.01$

Results shows that the path coefficient from perceived familiarity to trust in the structural model for high uncertainty avoidance group is significantly stronger than the corresponding path coefficients in the structural model for the low uncertainty avoidance group (t=19.99, p<0.01) and significantly stronger than the corresponding path coefficients in the structural model for the medium uncertainty avoidance group (t=17.49, p<0.01). The path coefficient from perceived reputation to trust in the structural model for high uncertainty avoidance group is significantly stronger than the corresponding path coefficients in the structural model for the low uncertainty avoidance group (t=5.51, p<0.01) and significantly stronger than the corresponding path coefficients in the structural model for the medium uncertainty avoidance group (t=5.13, p<0.01). Therefore, it could be concluded that, for E-Kotob.com, the effect of the Egyptian Internet consumers' perceived familiarity and perceived reputation on trust is stronger in the case of consumers' with high uncertainty avoidance. Thus, H1a, and H4a are supported. Results could be summarized in **figure 6.6**.

Figure 6.6: Summary of Results (E-Kotob.com site)

Hypotheses in dash are not supported; hypotheses in **Bold** are culturally sensitive, and hypotheses in regular lines are supported but not culturally
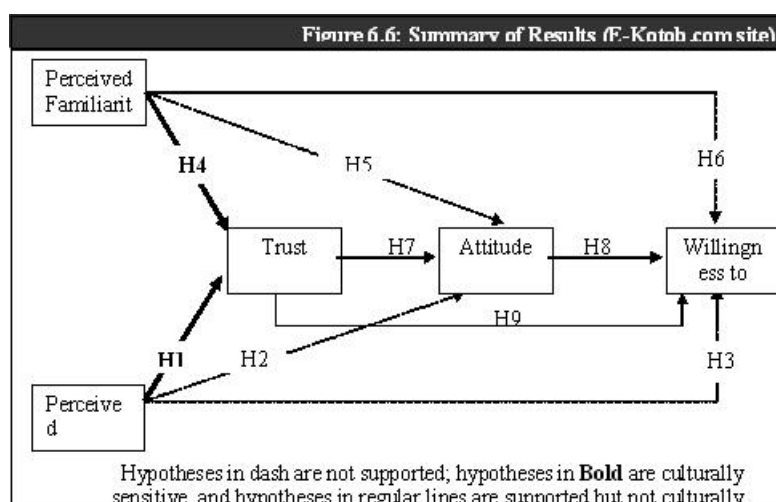
Appropriateness to both Amazon.com and E-Kotob.com sites

In order to build a general consensus about consumers' attitude towards e-commerce sites in general, the two structural models illustrated in **figure 6.4** and **6.6** are combined into a single model (see **figure 6.7**). The integration of both sites' models was done based on only including paths supported in both sites, and excluding any path that was found unsupported in any of the two sites.

The combined model suggests that, in general, Internet consumers with high perceived reputation and high perceived familiarity towards an e-commerce store tend to trust that store. The model also suggests that trust in an Internet store has a significant effect in generating positive attitude towards and willingness to buy from that store. Attitude is also suggested to, directly, affect the willingness to buy. The relation between perceived familiarity and trust, and perceived reputation and trust are much stronger in the case of consumers with high uncertainty avoidance. The high uncertainty avoidance is associated with a stronger effect of perceived familiarity on trust, and a stronger effect of perceived reputation on trust.

Figure 6.7: Final Research Model

Hypotheses in dash are not supported. Hypotheses in plain lines are supported but not culturally sensitive. Hypotheses in **Bold** are culturally sensitive, relationships are much stronger in the case of consumers with **high Uncertainty Avoidance.**
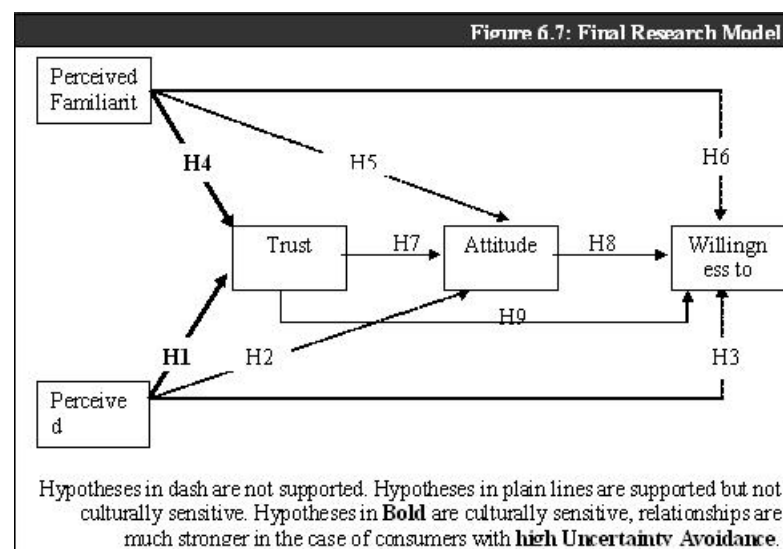
6.2.2.3 Results and Discussion of PLS Analysis

The hypothetical model of this research was evaluated using structural equation modelling tool PLS Graph 3.0 (Chin, 2001). Most of the research hypotheses were supported, while few others were not. The summary of the PLS results are illustrated by the final research model in **figure 6.7.** By looking at the three main dependent constructs of the model, the following sections elaborate on the results and discuss the PLS findings in the light of previous work investigating the same phenomenon.

TRUST

The Effect of Reputation and Familiarity on Trust

Hypothesis 1: For the Egyptian users, the Internet store's perceived reputation will have a significant effect on the consumer's trust in that store.

Hypothesis 4: For the Egyptian users, the Internet store's perceived familiarity will have a significant effect on the consumer's trust in that store.

According to the PLS results, perceived reputation was found to be significantly related to trust (t>9.4, p<0.01); thus providing support to H1. As predicted, the Internet store's perceived reputation will have a significant effect on the consumer's trust in that store; the higher the level of perceived reputation, the greater the trust. Meanwhile, the perceived familiarity was found to be significantly related to trust (t>5.4, p<0.01); thus providing support to H4. As predicted, the Internet store's perceived familiarity will have a significant effect on the consumer's trust in that store; the higher the level of perceived familiarity, the greater the trust. As hypothesized, the results indicate that the Internet store perceived reputation and the Internet store perceived familiarity both play a positive significant role in building trust in that store. These two factors explain at least 46% of the variance associated with online trust.

The effect of the store reputation on trust suggested by this research provides support to the previous work on the buyer-seller relationship in conventional commerce, emphasizing the role of the manufacturer's reputation in building a trustworthy long-term relationship with customers (Doney and Cannon, 1997;

Ganesan, 1994 Anderson and Weitz, 1989). The result also supports previous work on online trust (Grabner-Kräuter and Kaluscha, 2003; Lohse and Spiller, 1998; Quelch and Klein, 1996), speculating that the reputation of the store will influence the perceptions of the Internet site. The result mainly agrees with existing online trust models which empirically confirm the significant effect of the store reputation on the Internet purchase behaviour via its effect on trust (Pavlou, 2003; de Ruyter, Wetzels and Kleijnen, 2001; Pavlou and Chellappa, 2001; Jarvenpaa, Tractinsky and Vitale, 2000; Jarvenpaa, Tractinsky, Saarinen and Vitale, 1999). This research contributes by validating these previous trust models for the Egyptian Internet users, a sample that was not considered by previous researchers in that domain.

The effect of store familiarity on trust, supported by this research, matches with previous work in which the role of familiarity in the conventional business context is emphasized. The result matches with Luhmann's (1988) theory of *Trust and Power,* suggesting that familiarity is a precondition for trust. It also complements the previous work of Gulati (1995) suggesting that familiarity breeds trust. The importance of site's familiarity is especially interesting in the case of Egyptian Internet users. The three exploratory studies of this research, discussed in chapter 4, have commonly emphasized that site's familiarity is a key preference for Egyptians' when interacting with the Internet in general, and with e-commerce specifically.

This important role of familiarity as an additional antecedent of trust has rarely been emphasized in the e-commerce context, though widely used, by the industry. The result of this research, highlighting the effect of Internet store familiarity on trust, provides further support to the little work considering familiarity in the e-commerce context. The result of this research supports the Gefen's (2000) model and Bhattacherjee's (2002) model, both postulating that familiarity with the electronic store or company is a predictor for the consumer's online trust. This research contributes by validating these previous trust models for the Egyptian Internet users, a sample that was not considered by previous researchers in that domain.

The Effect of Uncertainty Avoidance on Trust

Hypothesis 1a: The relationship between the Internet store's perceived reputation and the consumer's trust in that store will be stronger in Egyptian users higher on uncertainty avoidance.

Hypothesis 4a: The relationship between the Internet store's perceived familiarity and consumer's trust in that store will be stronger in Egyptian users higher on uncertainty avoidance.

The relationship between perceived reputation and trust in the high uncertainty avoidance group was found to be significantly stronger than the same relationship in low uncertainty avoidance group ($t>5.5$, $p<0.01$), and significantly stronger than the same relationship in the medium uncertainty avoidance group ($t>5.1$, $p<0.01$). As predicted, the relationship between the Internet store perceived reputation and consumer's trust in that store will be stronger in consumer high on uncertainty avoidance; the high uncertainty avoidance is associated with a stronger effect of perceived reputation on trust, thus the results provide support to H1a.

Meanwhile, the relationship between perceived familiarity and trust in the high uncertainty avoidance group was found to be significantly stronger than the same relationship in the low uncertainty avoidance group ($t>13.7$, $p<0.01$) and significantly stronger than the same relationship in the medium uncertainty avoidance group ($t>11.8$, $p<0.01$). As predicted, the relationship between the Internet store perceived familiarity and the consumer's trust in the store will be stronger in consumers higher on uncertainty avoidance; the high uncertainty avoidance is associated with a stronger effect of perceived familiarity on trust; thus, the results provide support to H4a.

While the relationship between Internet store perceived reputation and the consumer's trust is confirmed for the overall sample, this relationship seems stronger in participants higher on uncertainty avoidance. The same for the effect of perceived familiarity on trust; this effect exists for the overall sample, but becomes stronger with the increase of uncertainty avoidance. In the case of high uncertainty avoidance, reputation and familiarity explain at least 51% of the variance associated with online trust.

This result provides support to the previous work on the cultural effect on consumer behaviour in the conventional commerce context, which holds sufficient empirical evidence that culture can determine specific consumer behaviour (Henry, 1976; McCort and Malhotra, 1993). Less empirical evidence is currently available to support this phenomenon in the e-commerce context (Miles, Howes, and Davies, 2000), where more data and more theory are needed.

The result of this research complements the work of Jarvenpaa et al (1999), in which cultural effects were hypothesized to affect the role of reputation on trust, but this effect could not be proved by Jarvenpaa et al's research. The result, on the other hand provides additional support to the work of Yamagishi and Yamagishi (1994), where findings suggest that the role of reputation in generating trust is stressed in some cultures more than others. Though the two studies mentioned above looked at the individualist-collectivist cultural dimension of Hofstede (2001), this research looks at the uncertainty avoidance cultural dimension. This research contributes by providing empirical evidence on how uncertainty avoidance affects the relationship between perceived reputation and online trust, a relationship that was not empirically verified by previous researchers in that domain. This research also contributes by providing empirical evidence on how uncertainty avoidance affects the relationship between perceived familiarity and online trust, a relationship that was not empirically verified by previous researchers in that domain.

In general, the result of this research offers empirical support to the effect of culture in building online trust hence providing evidence to many researchers who investigate trust models and argue that there may be a relationship between trust and culture which needs to be further investigated (Gefen, 2000; Lee and Turban, 2001; Shankar, Urban and Sultan, 2002). This research provides an additional starting point for future research in this area.

ATTITUDE

The Effect of Trust on Attitude

Hypothesis 7: For the Egyptian users, the consumer's trust in an Internet store will have a significant effect on attitude towards that store.

Matching with what was hypothesized, trust was found to be significantly related to attitude (t>4.2, p<0.01. As predicted, the trust in an Internet store will have a significant effect on the consumer's attitude towards that store; the higher the level of trust, the greater the positive attitude; thus the results provide support to H7.

This result provides support to the previous work on buyer-seller relationship in conventional commerce, emphasizing that high levels of trust by buyers have been found to stimulate favourable attitudes and behaviour in the conventional trading context (Schurr and Ozanne, 1985; Anderson and Narus, 1990). This result mainly matches with previous work on Internet consumer behaviour which empirically confirms the significant effect of online trust in building a positive attitude towards the Internet store (Jarvenpaa, Tractinsky, Vitale, 2000; Jarvenpaa, Tractinsky, Saarinen, Vitale, 1999; Siala et al, 2004). These models posit that trust in the store would have a direct, positive effect on the attitude toward that store. This research contributes by validating these previous models for the Egyptian Internet users, a sample that was not considered by previous researchers in that domain.

The Effect of Reputation and Familiarity on Attitude

Hypothesis 2: For the Egyptian users, the Internet store's perceived reputation will have a significant effect on the consumer's attitude towards that store.

Hypothesis 5: For the Egyptian users, the Internet store's perceived familiarity will have a significant effect on the consumer's attitude towards that store.

Contradictory of what was expected, the perceived reputation was not found to be significantly related to attitude. This result suggests that, contradicting with what was hypothesized, the Internet store's perceived reputation does not have a direct

significant effect on consumer's attitude towards that store; thus, the result provides no support to H2.

The effect of familiarity is a special case here, as the perceived familiarity, only for the Amazon site, was found to be significantly related to attitude ($t=2.5$, $p<0.01$). As predicted, in the case of Amazon store, the Internet store's perceived familiarity will have a significant effect on the consumer's attitude towards that store; the higher the level of perceive`d familiarity, the greater the attitude. On the other hand, this does not seem to apply to the E-Kotob site, where perceived familiarity was not found to be significantly related to attitude. Contradicting with what was expected, for the E-Kotob store, the Internet store's perceived familiarity does not have a significant effect on the consumer's attitude towards that store. Aiming for a model that could be verified in different stores, the two models were integrated based on including only paths supported in both models, and excluding any path that was found unsupported in any of the two models. Accordingly, the relationship between perceived familiarity and attitude was omitted from the combined model; thus, the result provides no support to H5.

The effect of both familiarity and reputation, as antecedents of attitude has rarely been emphasized in the e-commerce context, though widely used by the industry. The result of this research, although it fails to significantly prove the effect of these two variables on attitude, may lead further investigation on how these two factors affect online attitude.

The Effect of Uncertainty Avoidance on Attitude

Hypothesis 2a: The relationship between the Internet store's perceived reputation and the consumer's attitude towards that store will be stronger in Egyptian users higher on uncertainty avoidance.

Hypothesis 5a: The relationship between the Internet store's perceived familiarity and the consumer's attitude towards that store will be stronger in Egyptian users higher on uncertainty avoidance.

Contradictory to what was hypothesised no significant effect of uncertainty avoidance was found on the attitude through reputation. The relationship between perceived reputation and the attitude does not seem to vary with the degree of uncertainty avoidance; thus the results provides no support to H2a.

Only in the case of the Amazon site, the relationship between perceived familiarity and attitude in the high uncertainty avoidance group was found to be significantly stronger than the same relationship in low uncertainty avoidance group (t=20.1, p<0.01) and significantly stronger than the same relationship in the medium uncertainty avoidance group (t=6, p<0.01). For the Amazon.com site, the high uncertainty avoidance is associated with a stronger effect of familiarity on attitude. On the other hand, this effect of UA does not seem to be applicable in the case of E-Kotob site. As the integration of both stores' models was done based on excluding any path that was found unsupported in any of the two models; the cultural effect on the relationship between perceived familiarity and attitude was omitted from the combined model; thus the results provides no support to H5a.

The effect of culture on attitude has rarely been emphasized in the e-commerce context. The results of the current research, although it fails to significantly prove culture's influence on attitude, lead further investigation in this area. One of the little work addressing this point is Siala et al (2004), in which they show that attitude in a web-based retailer can vary with culture, at least as represented by affiliation to a religion.

WILLINGNESS TO BUY

The Effect of Trust on Willingness to Buy

Hypothesis 9: For the Egyptian users, the consumer's trust in an Internet store will have a significant effect on the willingness to buy from that store.

As hypothesized, trust was found to be significantly related to the willingness to buy (t>3, p<0.01). As predicted, trust in an Internet store will have a significant effect on the consumer's purchase decision from that store; the higher the level of trust, the greater the willingness to buy; thus the results provide support to H9.

This result provides support to the previous work on buyer-seller relationship in conventional commerce, emphasizing the role of trust in supporting purchase decisions in the conventional trading literature. In conventional commerce, Luhmann (1988) argues that trust addresses important aspects of the complexity-reduction mechanisms, by ruling out possible, but undesirable, future actions of other people or organizations and thus has a strong effect on purchase decisions. The result also matches with previous suggestions on the online purchase intention, (e.g. Grabner-Kräuter and Kaluscha, 2003) assuming that the willingness to buy online depends on the consumer's trust in the web merchant.

The result mainly agrees with existing online consumer behaviour models, empirically confirming the significant effect of trust on Internet purchase behaviour (Jarvenpaa et al, 1999, 2000; Gefen, 2000; Gefen and Straub, 2000; Bhattacherjee, 2002; Koufaris and Hampton-Sosa, 2002). This research contributes by validating these previous trust models for the Egyptian Internet users, a sample that was not considered by previous researchers in that domain.

The Effect of Attitude on the Willingness to Buy

Hypothesis 8: For the Egyptian users, the consumer's attitude towards an Internet store will have a significant effect on the willingness to by from that store.

As hypothesized, attitude was found to be significantly related to willingness to buy (t>7.7, p<0.01). As predicted, the attitude toward an Internet store will have a significant effect on the consumer's purchase decision from that store; the higher the level of positive attitude, the greater the willingness to buy; thus, the results provide support to H8.

This result provides support to the previous work on buyer-seller relationship in conventional commerce, emphasizing the role of the consumer's positive attitude toward vendor in supporting purchase decisions. Most of these previous works were built on the theory of planned behaviour (Ajzen, 1985) which postulates that a major determinant of intentions is the actor's attitudes towards the behaviour. The result mainly agrees with some of the existing online consumer behaviour models (e.g. Jarvenpaa et al, 1999; 2000), suggesting that favourable attitudes towards an Internet store will increase the consumer's willingness to purchase from that Internet store. This research contributes by validating these models for the Egyptian Internet users.

The Effect of Reputation and Familiarity on the Willingness to Buy

Hypothesis 3: For the Egyptian users, the Internet store's perceived reputation will have a significant effect on the consumer's willingness to buy from that store.

Hypothesis 6: For the Egyptian users, the Internet store's perceived familiarity will have a significant effect on the consumer's willingness to buy from that store.

Contradictory to what was expected; the perceived reputation was not found to be significantly related to the willingness to buy. This result suggests that the Internet store's perceived reputation does not have a direct effect on the purchase decision from that store; thus the results provide no support to H3. However, it could be

assumed that the relationship between these two variables seems to be mediated by trust. Still this assumption needs empirical validation.

The effect of familiarity is a special case here, as the perceived familiarity, only in the Amazon site, was found to be significantly related to willingness to buy (t=4.9, p<0.01). As predicted, in the case of Amazon store, the Internet store's perceived familiarity will have a significant effect on consumer's purchase decision; the higher the level of perceived familiarity, the greater the willingness to buy. This result matches with Gefen's (2000) finding, in which he significantly verified the relationship between familiarity and the willingness to buy in the case of the same bookstore site, Amazon.com. It worth note that one of the limitation of Gefen's (2000) research is that the study used a single well-known Internet store (Amazon.com). It is unclear whether the result can be generalized to lesser-known web sites. According to the findings of the current research, this result did not seem to apply to the E-Kotob case, a less-known site, where perceived familiarity was not found to be significantly related to the willingness to buy. Aiming for a model that could be verified in different stores, the two models were integrated. The integration of both store's models was done based on including paths supported in both models, and excluding any path that was found unsupported in any of the two models. Accordingly, the relationship between perceived familiarity and the willingness to buy was omitted from the combined model, thus the results provide no support to H6.

This result contradicts with previous theories of purchase intention in conventional commerce, where familiarity plays an important role in generating purchase intention. Luhmann (1988) argues that familiarity addresses an effective aspect of the complexity-reduction mechanisms and thus has a strong effect on purchase decisions. The result of this research, although it fails to significantly prove the effect of familiarity and reputation on willingness to buy, highlights the need for further investigation on how these two factors affect online attitude.

The Effect of Uncertainty Avoidance on the Willingness to Buy

Hypothesis 3a: The relationship between the Internet store's perceived reputation and the consumer's willingness to buy from that store will be stronger in Egyptian users higher on uncertainty avoidance.

Hypothesis 6a: The relationship between the Internet store's perceived familiarity and the consumer's willingness to buy from that store will be stronger in Egyptian users higher on uncertainty avoidance.

Contradictory to what was hypothesised no significant effect of uncertainty avoidance was found on the willingness to buy through familiarity and reputation. The relationship between perceived familiarity and the willingness to buy does not seem to vary with the degree of uncertainty avoidance, the same for the relationship between perceived reputation and the willingness to buy; thus, the result provides no support to either H3a, or H6a.

This result contradicts with the previous work of Siala et al (2004), suggesting that willingness to buy in a web-based retailer can vary with culture, at least as represented by affiliation to a religion. They found that a specific cultural group (Muslims) would be more likely to buy from the Muslim site rather than from other sites. It worth note that Siala et al's study looked at the individualist-collectivist cultural dimension of Hofstede's model. It also employed a different statistical technique, a first generation statistical analysis technique. The result of the current research, although it fails to significantly verify the effect of culture, from the uncertainty avoidance dimension, on willingness to buy highlights the need for further investigation on how consumer's culture might affect online purchase.

Table 6.15 lists all research results in terms of supported/ not supported hypotheses.

6.2.3 Qualitative Analysis

The following open ended question was included in the survey that the participants were asked to fill: ***If you have indicated that you are unlikely to shop from this store in the future, what is your main reason?***

This qualitative question is aiming to investigate additional reasons affecting participants' willingness to shop online. A relatively low percentage of participants (28%, 102 out of 370) answered the open ended question. This might be due to the fact that participants were exhausted after the one hour experiential session. The analysis of the qualitative question was done through textual analysis technique. In order to eliminate bias, the responses to the open ended question were examined by an *Independent Judge* to identify common patterns in the data and to establish codes that describe these patterns (Hurd, 2001). The judge, a qualified and experienced Egyptian English Language teacher, was selected on the basis of familiarity with Internet and ability to professionally analyse and translate responses. After coding all answers given by participants, words are classified under main groups. The result of the textual analysis reveals the following findings:

30% of respondents (31 out of 102 respondents) mentioned that (in the case of E-Kotob), they would not buy from this site as it is a new one. For them, it is unknown, unfamiliar and never used before. *"I do not know this site; I did not hear about it before, and I do not know anyone who used it"*.

25% of respondents (25 out of 102 respondents) mentioned that they would not buy from any site on the Internet as they do not trust using credit-cards online. They added that there is a high risk of putting credit-cards data over the Internet, as it might be misused. *"I do not trust putting my credit-card data on any site, as there is a very high probability that it will be stolen by hackers"*. Some of the respondents stated that buying by credit-cards online is not secured, even if the Internet store is a secured one.

24% of respondents (24 out of 102 respondents) cited that they would not buy from the Internet as they do not own a credit-card. Some of them mentioned that they do not need credit-cards in general, while others added that having a credit-card is difficult in Egypt, as it requires having large savings in a bank.

10% of respondents (10 out of 102 respondents) claimed that they would not buy from the Internet as they do not trust that they will receive the books they ordered from the site at all, or books might be very late, as the site is in the States (the case of Amazon). 2% (2 out of 102 respondents) mentioned that there is a high probability that the item could be delayed in the local post office and/or it could be taken by the supervision authority. *Note: In Egypt, a governmental supervision authority checks imported products, such as books, video tapes, CDs.*

7% of respondents (7 out of 102 respondents) stated that they have a limited income, and that they cannot afford the high prices of Internet items, plus shipping fees and taxes. *Note: Currently in Egypt there are very high taxes on items received from abroad.*

6% of respondents mentioned that they prefer checking items by hand first before buying it, which is not applicable on the Internet, while 3% of respondents claimed that they only use the Internet in their workplace for downloading business-related articles and never thought of using the Internet for shopping. While, 5% of respondents (5 out of 102 respondents) mentioned that they do not trust American sites (Amazon), 2% of respondents mentioned that they do not trust the Internet in general and they may only buys items from the Internet in case these items are not available in the Egyptian market.

In summary, the responses to the open ended questions confirm the importance of an e-commerce site's perceived familiarity and reputation in building online trust. The main reasons given by the participants for not shopping from an Internet site, as illustrated in **figure 6.8**, were their unfamiliarity with that site and the unknown reputation of a site, which matches with the results obtained form the structural equation modelling analysis.

Figure 6.8: Frequency of Responses to the Open Ended Question
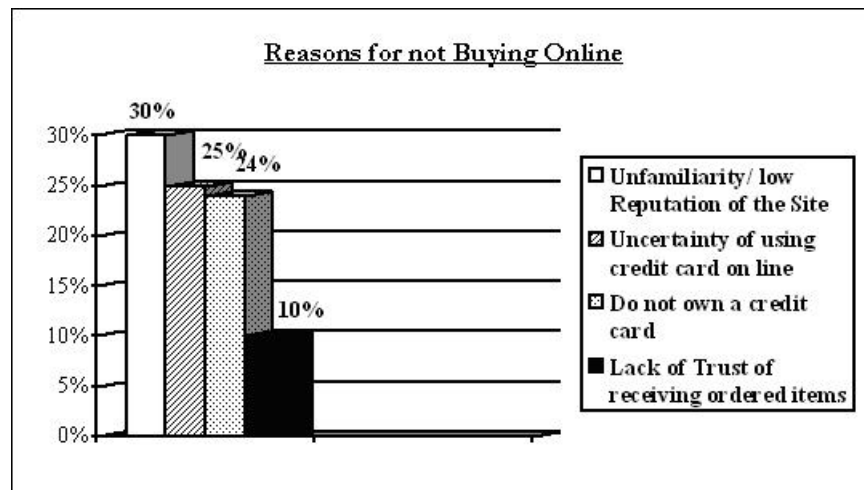
The second reason given by participants for not purchasing online was the high uncertainty they perceive towards Internet shopping in general. Participants linked their lack of trust in online shopping with the high shopping risk associated with e-commerce in terms of misuse of credit card data. The uncertainty of Internet purchase was also expressed by participants through their doubts over receiving the purchased item. Other reasons were given such as the limited ownership and use of credit-cards, and the low income compared with Internet prices and the high taxes imposed by Egyptian authorities on imported goods. While supporting some of the research hypotheses, the analysis of the qualitative question also reveals some interesting logistics and administration issues, though they are outside of the scope of this thesis, but still play a role in the perception of the Egyptians towards e-commerce.

The following section will interpret the overall conclusion of the statistical findings discussed in this chapter. The section will discuss the results of the statistical process in the light of previous studies in the field, leading then to state the research's main implications. The summary of results of the statistical processes conducted in this chapter is illustrated in **figure 6.9.**

Figure 6.9: Summary of Results of Statistical Processes
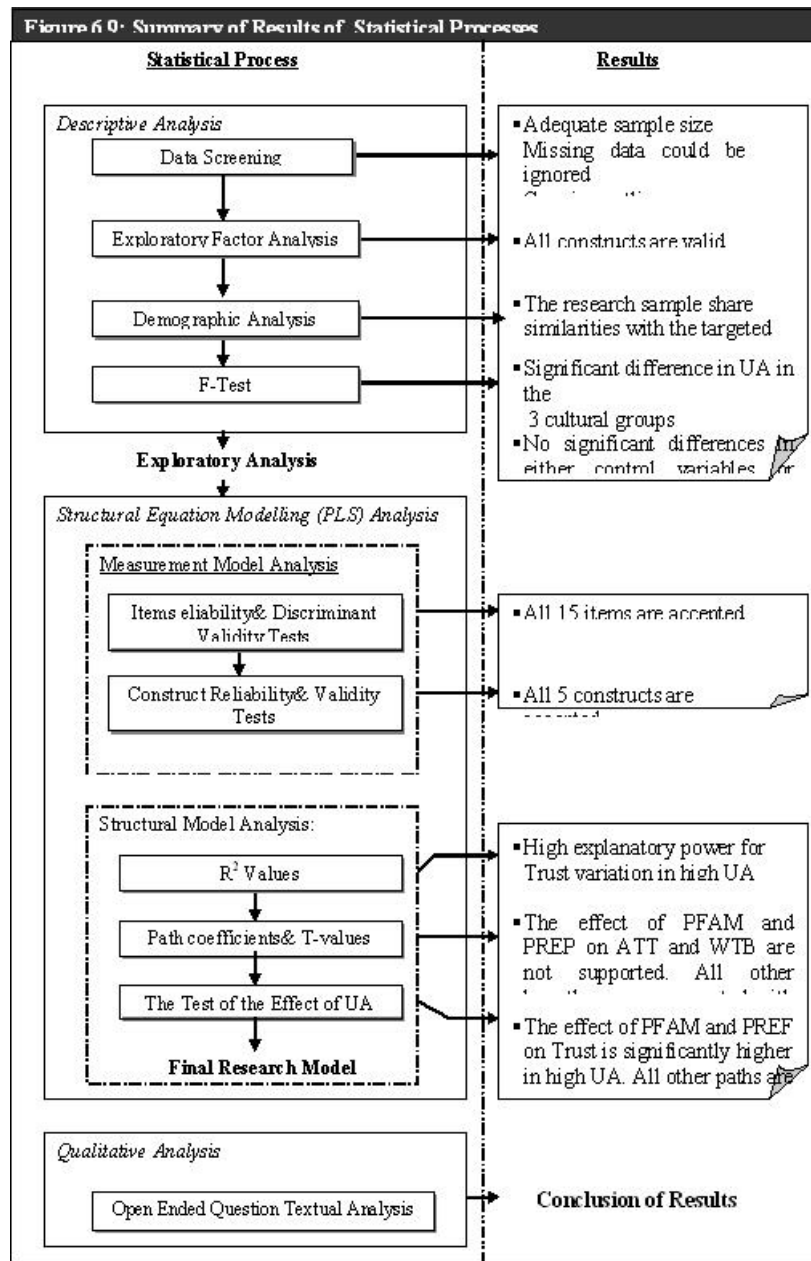
6.3 Conclusion

Within the global nature of e-commerce, it is important to understand how aspects of Internet stores may help to engender positive consumer's behaviour within members of various cultural groups. This research aims to identify both the antecedents and outcomes of online trust, while exploring the role that the consumer's cultural affiliation, in terms of uncertainty avoidance, plays in the initial formation of electronic consumer behaviour.

The results of the research provide support for the model presented in **figure 6.7** and for the hypotheses presented by the paths among the model constructs. The model holds for both sites used in the study, this supports the robustness of the model. Hence, the suggested model may be a step toward developing a theory of cultural effect on consumer trust in Internet stores. In summary, the current research contributes four findings to the literature.

Perceived Reputation and Familiarity as Antecedents of Trust

First, the results provide empirical evidence on the significant role of the store's perceived reputation and perceived familiarity in building online trust. These two trust antecedents explain a relatively large portion of the variation of trust in the model. The results of the three exploratory studies, as well as the quantitative and qualitative results of the experiential survey, all show a unanimous agreement of this finding. Drawing from exploratory studies and well-established model of human behaviour, this research has succeeded in offering specification, justification, and empirical validation of a set of interrelationships between important factors that tend to be associated with trust in e-commerce.

However, the effect of store reputation was highlighted by previous work as important antecedents of trust (Pavlou, 2003; de Ruyter, Wetzels and Kleijnen, 2001; Jarvenpaa et al, 1999). This research contributes by adding more support to these models, and most notably, by validating these previous trust models for the Egyptian Internet users, a sample that was not considered by previous researchers in that domain. On the other hand, traditional commerce holds enough evidences on

the effect of store familiarity on consumer trust (Luhmann, 1988; Gulati, 1995). This important role of familiarity as an additional antecedent of trust has rarely been emphasized in the e-commerce context, though widely used, by the industry. This research, highlighting the effect of Internet store familiarity on trust, provides further support to the little work considering familiarity in the e-commerce context (Gefen, 2000; Bhattacherjee, 2002) model.

Uncertainty Avoidance Affecting the Relationships between Trust and its Antecedents

Second, the results empirically verified that the relationship between trust and its two antecedents are culturally sensitive; the high uncertainty avoidance is found to be associated with a stronger effect of perceived reputation on trust, and a stronger effect of perceived familiarity on trust. The research, by this, empirically corroborates previous non-empirical suggestions about the implied effects of culture on consumer behaviour. These results could be justified as members of high uncertainty avoidance culture are expected to have a low tolerance for ambiguity and uncertainty (Hofstede, 2001). Engaging in e-commerce can be seen as an example of an activity with an uncertain outcome. Buying on the Internet presents numerous risks for consumers (Einwiller and Will, 2001). The outcome becomes less uncertain when the e-commerce store is one with a good reputation; also uncertainty might decrease when consumer is familiar with that store. However, the effect of store reputation also appears to be important in low uncertainty avoidance cultures such as the US and Australia (Jarvenpaa and Tractinsky, 1999). In the current research, the effect of reputation on trust was found significant for the overall data set, while it was provided to be stronger in the case of high uncertainty avoidance group.

While the Internet's eligibility is a suitable venue for testing the effect of level of consumer's uncertainty avoidance toward trust, little research investigated the effect of this cultural variable in building online trust (Lee and Turban, 2001). The influence of culture on trust, verified by the findings of this research, is a potentially important extension to existing trust models (Gefen, 2000; Jarvenpaa, 1999; Pavlou, 2003). The additional role of culture to these models suggests a possible new strategy that Internet vendors can use to increase trust in their stores across cultures.

Perceived Reputation and Familiarity as Antecedents of Attitude and Willingness to Buy

Third, contrary to what was hypothesized; no significant effects of store's reputation or familiarity were found regarding the outcomes of trust. The research fails to empirically validate that the store's perceived reputation or familiarity are antecedents of online attitude and willingness to buy. A plausible explanation may be the fact that this study examines intentions, not actual behaviour. The expectation that store's reputation and familiarity play a role as antecedents of online attitude and willingness to buy may be evident when examining actual behaviour. As this research significantly verifies the relationships between online trust, attitude and willingness to buy for the overall sample, it could be assumed that reputation and familiarity influence trust's outcomes through their effect on trust. Still, this argument needs empirical validation. Conventional commerce literature holds evidence for the role that store's reputation and familiarity play in shaping attitude and motivation to purchase from that store, nevertheless, this role is rarely addressed in the e-commerce research strand (Grabner-Kräuter and Kaluscha, 2003). This study emphasizes for the need of more studies investigating attitude and willingness to buy antecedents in e-commerce.

Descriptive Highlights of the Perception and Use of E-Commerce for the Egyptians

Finally, this research provides descriptive findings on how the Egyptians perceive and use the e-commerce. According to the demographic analysis of the sample, while the highest majority of participants showed high technology familiarity and high Internet usage, they also expressed a high Internet shopping risk attitude. The majority of participants (66%) do not use credit cards in general. Compared with participants from the low uncertainty avoidance group, participants from the high uncertainty avoidance group are less likely to have a general use of credit cards.

Although the majority of participants used the Internet for more than 6 years, 73% of them never shop online, while most of those who do shop online did that rarely. This high Internet shopping risk attitude is also expressed by the fact that the majority (80%) prefer to receive items by hand and to pay cash on delivery, when buying from the Internet. Furthermore, 84% agree, or strongly agree, that they would not feel safe completing commercial transactions over the Internet. While,

81% agree, or strongly agree, that there is too much uncertainty associated with shopping on the Internet, and that compared with other ways, buying from the Internet would be more risky. It could be assumed that this high e-commerce risk attitude among participants is due to the high uncertainty avoidance characterising the Egyptians (Hofstede, 2001). Still, these assumptions need more justification. The role of uncertainty avoidance, in particular, has been highlighted in most of the limited studies that considered the Arab users, as having a significant effect on the perception and attitude of Arabs towards technology in general (Shoib and Jones, 2003). Uncertainty avoidance is also claimed to be a main cultural obstacle for information and communication technologies adoption in other developing countries, such as south India (Kortemann, 2005).

The results of the card sorting and the other two exploratory studies, as well as the quantitative and qualitative results of the experiential survey, all show a unanimous agreement that the store's perceived reputation and perceived familiarity are salient factors affecting the online trust and behaviour for the Egyptian users. The fact that similar findings have been obtained with different methods suggests that these results are not simply an artefact of the measures used.

On the other hand there are likely to be a number of other factors that affect electronic consumer behaviour for the targeted sample such as the site language, content and search design, general interface appearance and ease of use. Beside the interface aspects of the web site mediating trust between the consumer and the Internet store, other factors are likely to play a role in the use of e-commerce in Egypt, such as, difficulties and limited use of credit-cards, low income compared with Internet prices and high taxes put by Egyptian authorities on exported goods. While all these speculations need empirical validation; still, the findings of this research highlight some of the e-commerce impediments that worth considering by decision makers and stake holders aiming to expand the adoption of e-commerce in Egypt.

In conclusion, strong arguments suggest that the lack of trust is stopping large numbers of people from engaging in Internet commercial transaction (Jarvenpaa et al, 2000). Trust, on the other hand, is argued to be culture-dependent (Grabner-

Kräuter and Kaluscha, 2003). This research reports on the development of an integrated e-commerce trust model. Furthermore, the research provides empirical validation of cultural effect, in terms of uncertainty avoidance, on that model. These results could be a robust starting point for further related theoretical and empirical work in this area.

6.4 Summary

This chapter discussed the data analysis processes for the model testing phase of the research, where the sequence of the analysis processes and the summary of results are illustrated in **figure 6.9**. The analysis of this research included a descriptive analysis process, followed by a structure equation modelling (SEM) process and finally a qualitative analysis process. The chapter started with the descriptive analysis process, where data screening and an exploratory factor analysis that validated all of the research constructs are conducted. The F-test of variables confirmed that the effects of control variables and cultural variables, other than uncertainty avoidance, on the dependent constructs were proved to be controlled. The demographic analysis of the sample verified that the sample share many similarities with the targeted population.

The chapter then discussed the selection of the PLS-Graph as a SEM convenient tool to the context of this research, after several exploratory analyses that included linear regression and two SEM tools (MxGui and LISREL). The PLS-Graph measurement model confirmed the validity and reliability of the research measures through the assessment of the item reliability and discriminant validity, as well as construct composite reliability, average variance extracted and validity check.

The chapter discussed in detail the PLS structural model analysis which supports most of the research hypotheses, as they hold for both bookstore sites used in the study. **Table 6.15** below summarizes the research results in terms of hypotheses support. As hypothesized, the results indicate that, for the Egyptian consumers, the Internet store's perceived reputation and the Internet store's perceived familiarity both play a positive, significant role in building trust in that store. The statistical

comparison for the three cultural groups (high, medium and low UA) provides support for the effect of uncertainty avoidance on the relationships between perceived reputation and trust on one side and the relationship between perceived familiarity and trust on the other side; these relationships were found stronger in the case of high UA group. The chapter then elaborated on the qualitative analysis that reemphasized on the role of store's familiarity and reputation in supporting purchase decisions for the targeted sample. It also reveals some logistics and administration Impediments to the adoption of e-commerce in Egypt.

The chapter ended with a discussion of the interpretation of statistical results in the light of the research hypotheses and previous work in that field; thus leading to statement of the overall conclusion. **Table 6.15** lists all research results in terms of supported/ not supported hypotheses.

In general, the results offers better insight to the perception and use of the Egyptians towards e-commerce. It also provides empirical evidence on how uncertainty avoidance affects electronic consumer behaviour. In the next chapter, the overall research findings will be interpreted in forms of contribution to theory, research and practice to the field. The following chapter will also suggest further related theoretical and empirical work in the same area.

Table 6.15: Summary of Results	
Research Hypotheses	**Results**
Hypothesis 1: *For the Egyptian users, the Internet store's perceived reputation will have a significant effect on the consumer's trust in that store.*	**Supported**
Hypothesis 1a: *The relationship between the Internet store's perceived reputation and the consumer's trust in that store will be stronger in Egyptian users higher on uncertainty avoidance.*	**Supported**
Hypothesis 2: *For the Egyptian users, the Internet store's perceived reputation will have a significant effect on the consumer's attitude towards that store.*	Not Supported
Hypothesis 2a: *The relationship between the Internet store's perceived reputation and the consumer's attitude towards that store will be stronger in Egyptian users higher on uncertainty avoidance.*	Not Supported
Hypothesis 3: *For the Egyptian users, the Internet store's perceived reputation will have a significant effect on the consumer's willingness to buy from that store.*	Not Supported
Hypothesis 3a: *The relationship between the Internet store's perceived reputation and the consumer's willingness to buy from that store will be stronger in Egyptian users higher on uncertainty avoidance.*	Not Supported
Hypothesis 4: *For the Egyptian users, the Internet store's perceived familiarity will have a significant effect on the consumer's trust in that store.*	**Supported**
Hypothesis 4a: *The relationship between the Internet store's perceived familiarity and consumer's trust in that store will be stronger in Egyptian users higher on uncertainty avoidance.*	**Supported**

Table 6.15: Summary of Results (Cont.)	
Research Hypotheses	**Results**
Hypothesis 5: *For the Egyptian users, the Internet store's perceived familiarity will have a significant effect on the consumer's attitude towards that store.*	Not Supported
Hypothesis 5a: *The relationship between the Internet store's perceived familiarity and the consumer's attitude towards that store will be stronger in Egyptian users higher on uncertainty avoidance.*	Not Supported
Hypothesis 6: *For the Egyptian users, the Internet store's perceived familiarity will have a significant effect on the consumer's willingness to buy from that store.*	Not Supported
Hypothesis 6a: *The relationship between the Internet store's perceived familiarity and the consumer's willingness to buy from that store will be stronger in Egyptian users higher on uncertainty avoidance.*	Not Supported
Hypothesis 7: *For the Egyptian users, the consumer's trust in an Internet store will have a significant effect on attitude towards that store.*	**Supported**
Hypothesis 8: *For the Egyptian users, the consumer's attitude towards an Internet store will have a significant effect on the willingness to by from that store.*	**Supported**
Hypothesis 9: *For the Egyptian users, the consumer's trust in an Internet store will have a significant effect on the willingness to buy from that store.*	**Supported**

CHAPTER 7

FINDINGS AND FURTHER RESEARCH

"Unobstructed access to facts can produce unlimited good only if it is matched by the desire and ability to find out what they mean and where they lead."

(Norman Cousins, *Human Options: An Autobiographical Notebook*, 1981)

7.1 Overview

This chapter draws together the research findings to present an understanding of how culture affects the e-commerce consumer behaviour. The chapter will start with an overall summary of the research. It will then consider the research findings in the light of the research objectives. The recommendations and the contributions to knowledge arising from the research findings will then be discussed. Finally, the chapter will identify the thesis limitations and suggests potential future research directions.

7.2 Research Summary

To summarise the conduct and application of this research this section reviews the building blocks upon which this research has been laid out. These main research steps included setting the research aim and position, selecting the research philosophy and data gathering technique adopted in this research, designing the research framework and finally, conducting the exploratory and the empirical studies. Decisions about these research steps were taken on the basis of the gaps and

critiques of the various literature strands, as well as the objectives and scope of this thesis. While this section elaborates on the research steps, section 7.2 of this chapter discusses the research main findings along these steps.

☐ *Setting the Research Aim and Position*

This thesis started with an overview of the motivation for the research and its scope in **chapter 1**. It has been identified in the literature that people from different cultures perceive and understand things differently, and this extends to the domain of e-commerce. Although e-commerce can provide new development opportunities for many developing countries, consumers from some of these countries, like the Arab countries, seem to hesitate to make use of e-commerce with the most frequently reported barriers being issues such as culture, lack of trust and concerns about security. Therefore, an understanding of the effect of culture on online purchase can influence the implementation of e-commerce development strategy in these cultures. Chapter 1 thus stated the aim of the research which is to investigate how a consumer's culture affects online behaviour to contribute to the understanding of the e-commerce drivers for the targeted group, and to contribute to building a theory of consumer's cultural trust in e-commerce context.

In order to position this research in relation to existing work, **Chapter 2** offered an analytical overview of the existing literature in the three research areas where this research is based, Culture, Human Computer Interaction and Electronic Consumer Behaviour. The previous studies linking Internet uncertainty and online consumer trust, as a fundamental determinant of online purchase, were also highlighted. Egypt was presented as an interesting case to study in this research, representing a cultural group that has not been adequately investigated by previous studies. It has been suggested that Egypt would witness an e-commerce boom; however, little is currently known about the factors that affect online purchasing within this culture.

The literature review done in chapter 2 helped to identify methodological and technical limitations in the research area under investigation. Reported results are inconsistent regionally and are predominantly based on non-empirical data. A severe shortage was also identified in considering the behaviour of consumers from some

cultures that are newly introduced to the Internet, leaving the field with research gaps that this thesis aimed to bridge. Gaps in the field were highlighted in section 2.8.

□ *Selecting the Research Philosophy and Data Gathering Technique*

Chapter 3 discussed the ontological, epistemological and theoretical foundations of the post-positivist paradigm which forms the basis of this research. The chapter justified the appropriateness of the particular research philosophy as inspired by Giddens' (1984) levels for understanding social phenomena. Gidden's approach stresses on the importance to start with an initial understanding of the phenomenon under study through elicitation of the perception of human participants understanding of this phenomenon; thus leading to the specification of the different components of the phenomenon. This is followed by an assessment of the effects of these components and their perceived interaction. Gidden's approach seems plausible for investigating a complex area such as cultural issues in e-commerce since there are not yet sufficient findings linking e-commerce behaviours to cultural variables, especially for the culture considered in this research. The chapter also put emphasis on the selection of a hybrid data gathering technique that incorporates qualitative and quantitative approaches.

□ *Designing the Research Framework*

In moving from the conceptual to the empirical, the Gidden's levels of understanding were translated in the research framework as two main research phases. First, an exploratory phase targets an interpretive understanding of research constructs and thus raises research hypotheses. Second, a model testing phase which empirically assesses the research hypothetical model. Major emphasis was given in section 3.9 to discussing the phases and process of the research framework with a clarification of the methods of inquiry utilised in each process.

☐ *Conducting the Exploratory Research*

At the exploratory phase of the research, research hypotheses were raised based on three exploratory studies reported in **chapter 4**. First, semi-structured interviews, investigating the effect of culture on using the Internet in general, were conducted and reported. This was followed by reporting the electronic survey which was used to supplement the interviews' findings on a larger sample. Interview and survey results suggested some interface features that affect the target group's interaction with the Internet, such as language, uncertainty avoidance and trust. Two card sorting sessions were then conducted to explore how these factors are related to the user's intentions to engage in Internet shopping. Results highlighted the effect of the e-commerce site reputation and the site familiarity on consumer behaviour. In general, the results of the exploratory studies provided an understanding of the different components of the phenomenon and the perceived interaction within these components within the context of the targeted culture. This led to a narrowing of the research focus to concentrate on the issues of uncertainty avoidance and its effect on trust. Research constructs and hypotheses were then identified, as discussed in section 4.4.1 and the hypothetical model of the research was accordingly designed and illustrated in **figure 4.2.**

☐ *Conducting the Empirical Research*

A framework for the model testing phase was reported in **chapter 5**. All research constructs were drawn from the literature, where the conceptualisation, operationalisation and measurement of each construct were discussed. The chapter justified the use of the laboratory experiential survey method, as a recommended and commonly used setting to investigate the current research context. Detailed steps for the experiential setting were described in this chapter, including the selection of web sites, the location, the sample as well as the procedures of tasks within the session and the survey piloting results. Two e-commerce sites were used in the research, a well-known international, English language, book-selling site (www.amazon.com) and a less-known local, Arabic language, one (www.e-kotob.com), aiming to generalise the findings to a wide range of Internet stores.

The data analysis process for the model testing phase was discussed in detail in **chapter 6**. The analysis included a descriptive analysis process, followed by Structural Equation Modelling (SEM) process and finally a qualitative analysis process. Within the descriptive analysis process, data screening was conducted followed by an exploratory factor analysis that validated the research constructs. An F-test of variables confirmed that the effects of control variables on the dependent constructs were proved to be controlled. The demographic analysis of the overall sample verified that the sample share many similarities with the targeted population.

The sample was categorised into three levels of UA, (High, Medium, and Low UA) based on Hofstede's UA Index. Within the SEM analysis process, the Partial Least Square (PLS-Graph) measurement model reconfirmed the validity and reliability of measures, while the PLS structural model supports most of the research hypotheses. The research model was supported across stores, verifying the robustness of the model. The statistical comparison for the three cultural groups provides support for the effect of uncertainty avoidance on the model. The qualitative analysis of the open question provided further support to the research model and revealed some logistics and administration Impediments to the adoption of e-commerce in Egypt.

7.3 From Research Objectives to Research Findings

This research set out to meet a number of objectives described in chapter 1, which were accomplished as follows:

Objective 1: *Design an Appropriate Research Framework to Study the Effect of Culture on Electronic Consumer Behaviour, Making an Informed Decision about the Appropriate Research Methods and Analytic Tools Adopted.*

This objective was achieved through revising a variety of research approaches, methods and techniques. Thus, an informed selection of the research philosophical and the data gathering techniques was made. Epistemological and methodological reasons were realized for the selection of a *post-positivism* paradigm, as the theoretical foundation for the current research. Based on literature and

methodological needs, the research starts with an exploratory phase for raising research hypotheses, followed by a hypothesis testing phase where the research hypothetical model was empirically tested. Due to the socio-cultural context of the research and based on the *methodological pluralism* concept, rooted in post-positivism ontology, a hybrid methodology that combines both quantitative and qualitative approaches of data enquiry and analysis was realized as the most appropriate methodology within the two phases of the research framework.

<u>Finding 1:</u>   An Appropriate Integrated Research Framework

The integrated research framework, suggested by this research, was found to be appropriate for cultural studies in Internet consumer behaviour. As the research considered the Egyptian users, a cultural group that has been rarely investigated by empirical research in an e-commerce context, it was premature to begin testing specific hypotheses within this population. Starting with interviews was found to be a relevant technique to elicit general data about Internet perception and preference within the oral dominant society of the Egyptian culture (Zaharna, 1995). The electronic survey was then useful to supplement the interviews' findings on a larger sample. A card sorting technique was then used and it was found to combine flexibility of use with the formality and consistency of the experiential setting. Being culturally neutral as it does not implicitly impose the researcher's view of the world upon the participants, card sorting was found to be exceptionally useful to elicit cultural perception of web site quality. In general, the exploratory results allowed the researchers to understand the different components of the phenomenon and to express the perceived interaction within these components.

Within the model testing phase, the use of an experiential survey method was found to be capable of hypothesis testing by providing credible evidence of causal relationship among the research constructs. The setting of the experiential setting provided access to a real-world web site, representing the participants with a *live* environment and ensuring that the e-commerce site's interface and procedure are fresh in the participants' minds before filling in the survey

Cluster analysis was found to be a powerful qualitative analysis technique for card sorting results. It facilitated the establishment of categories within the data based on commonalities between the category judgements made by multiple participants. Furthermore, Structural Equation Modelling technique (SEM) was found to be valuable statistical tool for incorporating latent variables into the analysis which was particularly valuable when investigating consumer behaviours.

The appropriateness of the suggested research framework is supported by the fact that the three exploratory studies had a number of common results which were empirically confirmed through the experiential survey, in addition to the fact that supportive findings from literature were obtained in the current study. The research framework with the methodological process and the data collection as well as the analysis techniques used in this thesis is illustrated in **figure 3.1** of chapter 3.

Objective 2: *Undertake Studies Within the Suggested Framework to Propose a Model that Relates Salient E-Commerce Features to Consumer Behaviour and Purchase Decisions, while Linking these Features with the Consumer Cultural Characteristics.*

This objective was achieved through three exploratory studies that involved the use of interviews, electronic survey and two card sorting sessions. The studies' results suggested salient interface features that affect the interaction of the targeted group with the Internet. The results also suggest how these features are related to the user's intentions to engage in Internet shopping. Based on the exploratory findings in line with the previous literature, these features were hypothesized to be linked to the consumer's cultural characteristics. Accordingly, the research scope was narrowed, the research constructs and hypotheses were identified and the research model was proposed.

Finding 2:   Hypothetical E-Commerce Model for the Egyptian Consumers

Exploratory results suggested that factors such as the site language, the general interface appearance, trust, uncertainty avoidance and the ease of use are salient factors that affect the Egyptian sample's perception of the Internet in general. The results led to the hypothesis that trust and uncertainty avoidance play major role in e-commerce use for the targeted sample. The store reputation and the store familiarity with the site were found to be the deciding factors in whether to buy from an e-commerce site for the targeted sample. Based on the Theory of Reasoned Action (Fishbein and Ajzen, 1975) and the Theory of Planned Behaviour (Ajzen, 1985), attitude and the willingness to buy were hypothesized to be outcomes of trust, and they are expected to be affected by the store's familiarity and reputation.   It was also argued that since interacting with the Internet can be seen as an example of an activity with an uncertain outcome, the uncertainty might decrease due to site familiarity or high reputation. Accordingly, it was hypothesized that the high uncertainty avoidance, characterising the Egyptian culture, affects the relationships between Internet store's perceived reputation and perceived familiarity and consumer trust on that store.

While some of these hypotheses were addressed by previous models for consumers from other cultures, some drawbacks were highlighted in these previous studies, thus limiting the generalisation of the results of these models to other types of consumers. This research aimed to extend the generalization of these results by validating these hypotheses through an empirical testing of the hypothesized model.

Objective 3:   *Empirically Assess the Significance of the Effect of Culture on the Proposed Model*

This objective was achieved through an empirical experiential survey with 370 Egyptian participants. The PLS structural model verified the research model for the overall sample, through values of R^2, path coefficients and T-values. It also assessed the significant effect of UA through statistical comparison of the difference in the model's relationships within three different uncertainty avoidance (UA) cultural groups.

Finding 3A: Empirical Support for the Hypothetical E-Commerce Model

The SEM results provided empirical evidence on the significant role of the store's perceived reputation and perceived familiarity in building online trust. The higher the level of Internet store perceived reputation, the greater the consumer's trust in that store. Meanwhile, the higher the level of the store perceived familiarity, the greater the consumer's trust becomes. These two trust antecedents explain a relatively large portion (46%) of the variation of trust in the proposed model. The results of the three exploratory studies, as well as the quantitative and qualitative results of the experiential survey, all show a unanimous agreement of this finding.

Contrary to what was hypothesized; no significant effects of store's reputation or familiarity were found regarding the outcomes of trust. The research fails to empirically validate the store's perceived reputation or familiarity as antecedents of online attitude and willingness to buy. A plausible explanation may be the fact that this study examines intentions, not actual behaviour; the hypothesized relationships may be evident when examining actual behaviour. As this research significantly verifies the relationships between online trust, attitude and willingness to buy for the overall sample, it could be argued that reputation and familiarity influence attitude and willingness to buy through their effect on trust. Still, this argument needs empirical validation.

Finding 3B: Empirical Support for the Effect of UA on the Role of the Store's Reputation and Familiarity as main Antecedents of Online Trust

The SEM results empirically verified that the relationships between these two trust antecedents and trust were found to be significantly stronger in the high uncertainty avoidance group than the same relationship in low uncertainty avoidance group, and significantly stronger than the same relationship in the medium uncertainty avoidance group. This suggests that the relationship between trust and its two antecedents (familiarity and reputation) are culturally sensitive; the high uncertainty avoidance was associated with a stronger effect of perceived reputation on trust, and a stronger effect of perceived familiarity on trust.

These results could be justified as members of high uncertainty avoidance culture are expected to have a low tolerance for ambiguity and uncertainty (Hofstede, 2001). Engaging in e-commerce can be seen as an example of an activity with an uncertain outcome. The outcome becomes less uncertain when the e-commerce store is one with a good reputation; also uncertainty might decrease when consumer is familiar with that store. Consequently, the results of this study support the influence of store reputation and familiarity on trust in terms of uncertainty avoidance.

Objective 4: *Describe Implications that Emerge from the Research for Future E-Commerce Design and Building a Theory for Cultural E-Commerce Consumer Behaviour*

The results of the exploratory studies as well as the empirical study provided a unanimous agreement for supporting the e-commerce consumer behaviour model introduced by this research. The model holds for both sites used in the study, this supports the robustness of the model. Hence, the introduced model may be a step toward developing a theory of cultural effect on consumer trust in Internet stores.

The findings of this research are claimed to provide a basis for scientific generalization. This research has drawn a variety of theories from diverse disciplines such as cultural studies, consumer behaviour, and human computer interaction. A combination of qualitative and quantitative instruments was used for data collection and analysis. Therefore, it is argued that data, theory, methodological and multidisciplinary triangulation were achieved consistently throughout the different phases of the research.

Finding 4: **Research Contributions to E-Commerce and Consumer Behaviour Theories, Methods and Practices**

The accomplishment of the research objectives, discussed in this section, was made possible after developing an integrated research framework to examine the effect of culture on online consumer behaviour. The suggested systematic framework to explore unfamiliar cultures is particularly important as it represents the main novelty

of this research. This approach can guide future studies in the same research strand and can facilitate in bridging the gaps identified in the literature. The research also contributed to the literature of electronic commerce and consumer behaviour theories and practices, based on the gaps identified in this research strand. Furthermore, the model supported by this research may be a step toward developing a theory of cultural effect on consumer trust in Internet stores. The research also provided descriptive highlights of the perception and use of e-commerce for the Egyptians, a cultural group that has not been sufficiently investigated by previous study in that field. The following section discusses the current research contributions.

7.4 Research Contributions

7.4.1 Contributions to Theory

☐ *A Suggested Cultural E-Commerce Trust Model*

This research contributes to the understanding of the drivers of e-commerce. The research has succeeded in developing a model that enriches current research by offering specification, justification, and empirical validation of a set of interrelationships between important factors that tend to be associated with trust in e-commerce. This research stresses on the role of trust in e-commerce as the core of the online consumer behaviour theory, empirically validating the study's hypotheses that trust influences the willingness to buy through attitude towards the Internet store. The research provides empirical evidence on the significant role of the store's perceived reputation and perceived familiarity in building online trust. The research highlights important variables such as reputation, familiarity, trust and attitude as determinants of e-commerce adoption.

Most importantly, this research integrates a cultural effect that significantly influences key relationships in the introduced model. The results empirically verified that the relationship between trust and its two antecedents (reputation and familiarity) are culturally sensitive. The research, by this, empirically corroborates suggestions about the implied effects of culture on consumer behaviour.

In terms of theory building, this research integrates and extends well-accepted models and then applies the revised model in a cultural context. This research explicates the role of familiarity and reputation in building online trust, integrates these variables with the consumer behaviour concepts of the Ajzen's (1985) Theory of Planned Behaviour and then shows how the integrated model is affected by uncertainty avoidance differences among consumers. The cultural e-commerce trust model introduced by this research is illustrated in **figure 7.1**.

Figure 7.1: Cultural E-Commerce Trust Model Suggested by this Research
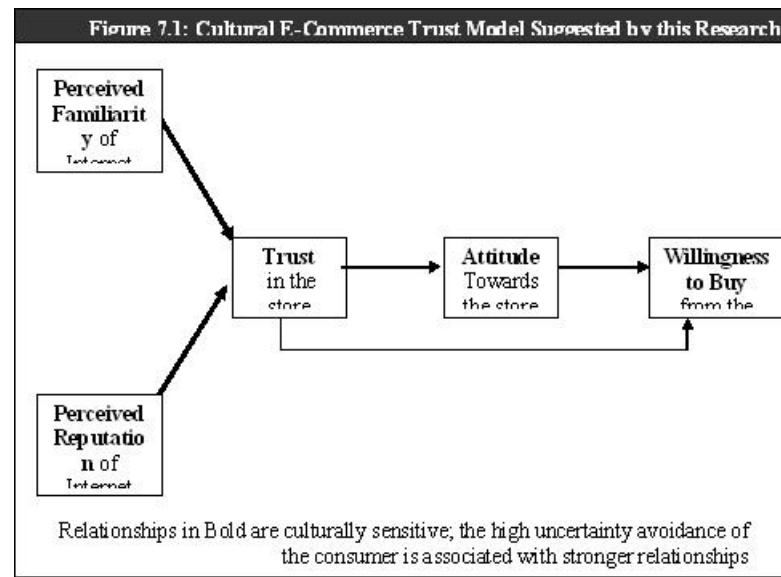
Even though store reputation and familiarity constructs were discussed and included in some earlier online trust models (e.g. Gefen, 2000; Pavlou, 2003; Jarvenpaa et al, 1999), none of these models explicitly confirmed the effect of culture on these constructs. This research corroborates previous non-empirical suggestions about the implied effects of culture on consumer behaviour. The empirical results of this research validate the cultural differences between consumers and show that those differences extend to the e-commerce. The result of this research complements the exploratory work on cross-cultural trust models in an Internet store (Jarvenpaa et al,

1999), in which culture was hypothesized to affect the role of reputation on trust, but no significant differences were proved across different cultures.

However, the effect of store reputation and familiarity were highlighted by previous work as important antecedents of trust also in low uncertainty avoidance cultures such as the US and Australia (Jarvenpaa et al, 1999; Gefen, 2000). Nevertheless, in this research, the effect of store reputation and familiarity were found to be important for the overall sample, and significantly stronger in the case of high uncertainty avoidance group.

□ A Validation of Existing E-Commerce and Human Behaviour Models

This research validates previous models that highlighted the role of store reputation and store familiarity as important antecedents of trust (Pavlou, 2003; de Ruyter, Wetzels and Kleijnen, 2001; Jarvenpaa et al, 1999; Gefen, 2000; Bhattacherjee, 2002). The research also validates consumer behaviour theories (Fishbein and Ajzen, 1975; Ajzen, 1985) and supports their applicability in the context of e-commerce. The research mainly contributes by adding more support to these models, and most notably, by validating these previous trust models for Egyptian Internet users, a sample that was not considered by previous researchers in that domain. Furthermore, the influence of culture on consumer behaviour, verified by the findings of this research, is a potentially important extension to these previous models.

□ A Validation of Hofstede' Cultural Model for the Egyptians

The thesis assessed Hofstede's cultural index for the participants through the Values Survey Module (VSM94). The VSM94 is a modified version of the original VSM used by Hofstede's in the IBM international study. In the Hofstede's study, seven Arabic-speaking countries were included, including Egypt. Hofstede (2001) admits that, as the raw data of these countries were lost, he was forced to treat these seven Arabic speakers' countries as one region. *Whereas I might have wanted to keep Egypt and Lebanon separate: Now the region is culturally less homogeneous than*

would be desirable (Hofstede, 2001: p.52). This research didn't take the Hofstede's cultural index values for the Arabic speaker's for granted. The explicit measures for Hofstede's variables aimed to check whether the Egyptian sample conforms to prior expectations about the culture from which they are drawn. Additionally, knowing the dynamic nature of culture over time, it was also aimed to validate Hofstede's index values for the Egyptians after years when they were first assessed between the years 1968 and 1972. The Data collected from the 370 Egyptian participants confirmed the Hofstede's classification of Egyptian culture as high uncertainty avoidance, with an index of 64.05, which is very close to Hofstede's uncertainty avoidance index (68) for the Arab countries. Thus, the research contributes by validating the Hofstede's cultural model for the Egyptian culture.

7.4.2 Contributions to Research Methodology

☐ *An Integrated E-Commerce Research Framework for Un-Explored Cultures*

Investigating cultural issues in e-commerce is extremely challenging as it is a social communication phenomenon where multiple perspectives and interpretations must be taken into account. This situation becomes more complex when considering cultures which were not previously explored by relevant literature in the studied context. Therefore, a clear picture of the interplay between consumer's cultural characteristics and Internet store features is unlikely to demonstrate itself through a single method of enquiry; instead the use of multiple research methods is essential.

Given this complex situation, a variety of methods were deployed and integrated into the research framework of this thesis. This framework includes three methodological steps. First, an understanding of the different constructs of the phenomenon and the interaction within these constructs is aimed at. Here, a knowledge acquisition method that helps to model the cognitive processes of participants, such as card sorting, is suggested. Second, hypotheses are generated based on the interpretation of the participants' understanding and the identification of the phenomenon constructs. Third, empirical testing of the research hypotheses is conducted. Here, an empirical method that helps to collect data around consumer's

interaction with Internet stores, such as experiential survey method, is suggested for similar work. Mathematical modelling of data collected is then recommended through a model analysis tool, such as SEM.

This research demonstrates that qualitative methods were found to be valuable to explore new insights as well as to develop potential relationships between constructs. The research also illustrates the power of quantitative methods in verifying and confirming models. It is argued that this integrated framework not only compensates for the flaws of one method with the strengths of another but also provides complementary evidence that can reinforce the confidence in the results and offers different perspectives and details.

Research into cultural issues in Internet consumer behaviour often takes a survey-based approach, collecting and analysing the attitudes of large samples of users. However, it is not always appropriate to begin with this method. Surveys are most effective when they are designed to test specific hypotheses or models. For some un-explored cultures that are newly introduced to the e-commerce, it may be premature to begin testing specific hypotheses. It would of course be possible to test the validity of existing e-commerce models in this new cultural setting; however, the issues, which are potentially most important for this culture, may fail to be discovered using this approach since the range of questions will be constrained by what has been found elsewhere. This could limit the practical significance of any findings. This thesis developed a methodological framework for understanding e-commerce perception of a specific cultural group that has been neglected in previous research in this field. The appropriateness of the introduced framework for similar studies considering users from other cultures is argued.

☐ *The Use of PLS-Graph in Sub-Cultural Comparison*

This research is one of the first studies to use the Partial Least Square Graph (PLS-Graph) tool, a Structural Equation Modelling (SEM) tool, to compare three sub-culture groups in the e-commerce context. This thesis provides researchers with a clear example of how PLS-Graph and SEM can be used in cultural research.

☐ *Validating Research Constructs, Items and Scales*

All research constructs used by this study were drawn from literature, where they were designed and validated for American or European participants. This research contributed by validating these constructs and their associated items and scale for the Egyptian participants, where validity and reliability of the constructs and measurement scales were supported.

7.4.3 Contributions to Practice

This research has practical implications for the ways in which Internet retailers might increase consumer trust and thereby increase their willingness to shop online. E-commerce is steadily achieving international presence; cultures that are newly introduced to the Internet are gradually entering the e-commerce environment. Managers of Internet stores are actively interested in determining the most favourable techniques of marketing their products and ways to tailor their services to different cultures. Retailers attempting to target new markets or consumers from un-explored cultures could use the insights offered by this research for adapting their approaches to encourage online transactions.

☐ *Practical E-Commerce Design Implications for High UA Cultures*

This research empirically supports the premise that for high uncertainty avoidance consumers, perceived familiarity and perceived reputation of an Internet store are main antecedents of online trust; they are thus salient factors for purchase decisions. The results of this research provides insights into how companies engaging in e-commerce for high uncertainty avoidance consumers can build potential customers' trust through increased familiarity with the Internet store and its e-commerce procedures. This could be achieved through the "about us" section that should be placed in a noticeable part of the presentation and not just as a hyperlink to an adjacent secondary page. While familiarity is created through education, exposure and repeated favourable interactions, it could be also generated through the recognition of the store (Gefen, 2000). Developing familiarity through regular online and offline advertising in order to increase the recognition of websites could be an option the industry may wish to consider especially in societies known to be of high uncertainty avoidance.

Another important implication of this study is the importance of the Internet store's perceived reputation for consumers from a high uncertainty avoidance cultures. Sites might be able to build and promote their reputations by describing their history and by quoting their policies for customer satisfaction, returns, and refunds. These e-commerce sites can also collect and disseminate consumer testimonials regarding the quality, value, and efficiency of their service. The main page of the site could include positive feedback from consumers who had good shopping experience with that particular site. While this reputation and familiarity building steps are also needed when targeting low uncertainty avoidance cultures (Jarvenpaa et al, 1999), this study emphasizes the importance of these steps to support purchase decision for consumers from high uncertainty avoidance culture. These suggestions are worth considering by designers of Egyptian sites as the majority of those sites tend not to highlight attributes that may hep to build consumer perception of reputation.

□ *Highlights of the Use of the Egyptians for the E-Commerce*

This research is the first in-depth empirical study that provides descriptive findings on how the Egyptians perceive and use the e-commerce. The majority of participants do not use credit cards in general. Compared with participants from the low uncertainty avoidance group, participants from the high uncertainty avoidance group are less likely to have a general use of credit cards. While the highest majority of the sample showed high technology familiarity and high Internet usage, they also expressed a high Internet shopping risk attitude. This high risk attitude is expressed by the lack of trust in Internet in general and by the perception that there is too much uncertainty associated with electronic shopping. Preferences to receive items by hand and to pay cash on delivery when buying from the Internet is also expressed as the highest majority of Egyptian participants believe that it is not safe to complete commercial transactions over the Internet.

This high e-commerce risk attitude among participants could be explained by the high uncertainty avoidance characterising the Egyptians (Hofstede, 2001). The role of uncertainty avoidance, in particular, has been highlighted in some of the studies as playing an important role in the attitude forming towards information and communication technologies in the Arab countries (Shoib and Jones, 2003) as well

as in other developing countries (Kortemann, 2005). Still, these assumptions need more justification.

The results of the various studies conducted within this research show a unanimous agreement that the store's perceived reputation and perceived familiarity are salient factors affecting the online trust and behaviour for the Egyptian users. It was also empirically supported that the importance of these two factors increases significantly with the increase of the consumer's uncertainty avoidance.

There are a number of other interface aspects of the web site that was found to affect electronic consumer behaviour for the targeted culture such as the site language, content and search design, general interface appearance and ease of use. Furthermore, other factors was reported to play a role in the use of e-commerce in Egypt, such as, difficulties and limited use of credit-cards, low income compared with Internet prices and high taxes put by Egyptian authorities on exported goods. While all these speculations need empirical validation for their effect on online purchase decision; still, the findings of this research highlight some of the e-commerce impediments that worth considering by decision makers and stake holders aiming to expand the adoption of e-commerce in Egypt.

Egyptian lawmakers might consider increasing consumer protection in Egypt, this may decrease the consumers' high Internet shopping risk attitude. Strengthening the payment infrastructure and implementing strong, credible product return policies may also positively impact Egyptian consumers' perceptions of Internet shopping risk. In Internet shopping, consumers are not able to physically assess the quality of a product; this puts consumers at risk, especially in the absence of reliable return policies. Implementing return policies that mitigate this risk may lead to more favourable consumer perception of Internet shopping, especially for high uncertainty avoidance consumers such as the Egyptians. Another implication of the findings is that, Egyptian banks should facilitate easier issuing processes for credit cards. As Egyptian consumers are generally risk averse, banks could also provide secure payment services by offering credit/debit cards linked to consumer accounts to provide consumers with more control over their expenses. E-commerce sites can

also adopt pre-paid cards for payment, an approach that has been successful in many developing countries such as India (Kortemann, 2005).

These findings could provide an understanding of the characteristics and behaviour of the Egyptian users and can thus provide the foundation for future work to specify design guidelines for retailers attempting to target Egypt with its 72-million strong domestic market. As the Arab countries share many cultural characteristics (Hofstede, 2001), it is also believed that this picture can be used to describe the behaviour towards e-commerce for other Arab consumers.

7.5 Research Limitations

Random sampling was not employed consistently throughout the research. This thesis uses a non-probability convenience sampling technique. Some arguments are raised that a convenience sample does not represent the characteristics inherent in the general population. Despite the relatively large sample size of this research, and although it was statistically found that the sample characteristics satisfied the criteria for the target population, the generalisation of the results should be treated with caution beyond the scope of this sample. Future empirical work is needed to demonstrate that these findings are not unique to this particular sample.

This research dealt with intentions, not actual e-commerce behaviour. On one hand, there is a general consensus within researchers to assume that the degree to which people express their intentions to buy from an Internet site is a reasonable predictor of the actual purchase behaviour (Ajzen, 1985). On the other hand, uncertainty avoidance, which is posited in this research as an important element of e-commerce adoption, may have a different effect on the actual purchase behaviour. Therefore, by not examining actual e-commerce use, this potentially substantial effect remains unclear (Pavlou and Chai, 2002).

This research focused only on the website category of online bookstores. The role of uncertainty avoidance variable might have been different for higher-involvement categories of products and services where the investment is larger and more risky,

such as online vendors selling cars and houses. The examination of cultural trust versus consumers' high-involvement e-commerce purchase decisions may reveal various aspects of e-commerce acceptance for high uncertainty avoidance cultures.

In this research, the Uncertainty Avoidance was not found to be a measure with internal reliability. This comes to no surprise as the Hofstede's scales are often criticized for their poor internal consistency reliabilities (Spector and Cooper, 2002). For Hofstede (2002), the scales might produce low reliability scores at the individual level as it was originally designed for comparing country level data. The sample of this research represents a single country and it was divided into three cultural groups based on UA scores for participants. The probability that the UA scale does not assess a single homogeneous construct leads to the suggestion to use the classification of the three groups with caution. Future work, that compares the consumer behaviour of users from various countries known to be of different UA characteristics, is needed to validate the effect of culture reported in this research.

7.6 Further Research Directions

☐ *Enhance the Predictive Power of the Proposed Model*

Future research would aim to retain and enhance the predictive power of the model proposed in this research. One direction for further research would be to replicate this study across a broader range of countries. This research looked at three uncertainty avoidance groups (low, medium and high) within one country, Egypt. An obvious extension would be to replicate this study in multiple countries with different degrees of uncertainty avoidance variation across Hofstede's dimensions to determine whether the results observed for the Egyptians would still hold. During this process, the theoretical model proposed by this research could be refined. The paths that were not supported by the current research's results may be revisited; other constructs that may contribute to online trust may be added. Furthermore, future research could also take into consideration the interaction effects of additional cultural dimensions. For example, Individualism-collectivism, which refers to the basic level of behaviour regulation, whether by individuals or groups (Hofstede 1994), could be added to the model as another cultural variable.

It is argued that trust evolves over time based on a series of observations and interactions (Grabner-Kräuter and Kaluscha, 2003). In order to study this dynamic nature of trust for the suggested model, longitudinal studies could be conducted to investigate the model over time.

❑ *Providing E-Commerce Interface Design Guidelines for High UA Cultures*

Additional research could empirically validate the recommendations of this research in terms of interface design guidelines within the e-commerce context. Recently, some of HCI researchers have employed Hofstede's model in providing web site interface design guidelines (e.g. Marcus et al, 2003; Marcus and Gould, 2000). However, these researchers do not state, beyond some broad suggestions, empirical evidence on how Hofstede's cultural variables may be used to drive e-commerce interface design. Further investigation into how cultural characteristics could be translated into e-commerce interface design guidelines would be beneficial to future developers of e-commerce targeting various cultures.

❑ *In-Depth Study of the E-Commerce Adoption in the Arab Market*

Little empirical work has investigated how the Arabs in general interact with e-commerce. Such investigations could lead to more informed decisions being made about e-commerce adoption within this culture and similar cultures. This research advocates considering the preferences of consumers from unexplored cultures that had been typically neglected by researchers. The results of this research can lead further studies in this area. Still, there would seem to be a need for both cross-cultural and intra-cultural studies in order to qualify the broad generalizations currently made about e-commerce adoption in the Arab countries.

In today's increasingly complex and interconnected world, it would seem important to recognize diversity both in and between cultures, no matter what labels, such as "developed" or "developing", are applied to them. If IS research is to pay more than lip service to the increasingly global character of e-commerce, then its current neglect of its practice in areas of the world outside the "West" will seem to need to be remedied. This study takes a step in that direction.

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APPENDIX A

LITERATURE REVIEW APPENDIX

A.1 Examples of Cultural Variables

Cultural Variable	Researcher	Interpretation
Power Distance (high vs. low power distance)	Hofstede	The extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally. High Power Distance / Low Power Distance - centralised power / - decentralised power - tall hierarchies / - flat hierarchies - superior/subordinates unequal / - equal
Uncertainty Avoidance (high vs. low uncertainty avoidance)	Hofstede	The extent to which the members of a culture feel threatened by uncertain or unknown situations. High Uncertainty Avoidance / Low Uncertainty Avoidance - emotions to be shown / - emotions not to be shown - expressive people / - quiet/ controlled people -what is different is dangerous / - what is different is curious
Individualism vs. collectivism	Hofstede	The extent to which individuals are integrated within groups. Individualism / Collectivism - right to privacy / - group invade private life - individual decisions / - group decisions - laws and rights same for all / - laws and rights per group - everyone looks after himself / - group protect individual
Masculinity vs. femininity	Hofstede	The extent to which roles of women versus men are different in the society. Masculinity / Femininity - focus on work goals / - focus on personal goals - assertiveness/ competitive / - modesty - concern for material success / - concern for quality of life
Confucian Dynamism (long-term vs. short-term)	Hofstede	The extent to which long-term and short-terms gratification of needs is traded-off. Short Term / Long Term - traditions respected / - traditions modernised - unlimited social obligations / - limited social obligations -quick results expected / - persistence for slow results - concern with 'face' / - concern with purpose

Cultural Variable	Researcher	Interpretation
Universalism vs. Particularism	Trompenaars	The extent to which, in a problem, people base their solution on rules versus relationship with others. **Particularist** **Universalist** - relationship based - rules based - break rules if necessary - strictly apply rules
Specific vs. Diffuse	Trompenaars	The extent to which public and private life and public and private personal spaces are compartmentalised. **Diffuse** **Specific** -public/ private life diffused - public/ private life separated -personal nature for business - business/ friendship separate - sympathy reactions - judgementally reactions
Achievement vs. Ascription	Trompenaars	The extent to which achieving versus being values are stressed. **Being culture** **Doing culture** - emphasis social relations - emphasis accomplishments - emotional oriented - activity oriented - words for social effect - words match actions
Low-context vs. High-context	Hall	The extent to which meaning is found in the context versus in the code. **High Context** **Low Context** - meaning in context - meaning in message - implicit - explicit - direct and obvious - indirect and non-obvious
Time Perception (Polychronic vs. Monochronic time perception)	Hall	The extent to which time variable is perceived. **Polychronic** **Monochronic** - many things at once - one thing at a time - simultaneous/ concurrent - sequential/ linear - interruption accepted - interruption refused - time duty objective - time duty critical - committed human relations - committed to the job - change plans easily - strict to plans - life time relationship - short term relationship
Procedural vs. Declarative	Nakakoji	The extent to which people tend to prefer descriptions writing style. **Procedural culture** **Declarative culture** - description written in - description written in procedural manner declarative manner - summary comes at the end - summary comes at the start of paragraph followed by of paragraph followed by step-by-step reasoning auxiliary reasoning
Internal Control vs. External Control	Nakakoji	The extent to which people tend to perceive possessing control. **External Control** **Internal Control** - preference to harmonise - preference to control with environment with environment - passive control - active control
Communication Overlaps	Nakakoji	During communication between parties, interaction depends on their culture. *In many western languages, the parties take turn, alternating back and forth. In Asian cultures, the parties also alternate, but each alternation is followed by a brief pause. In Latin languages, the parties overlap, interfering with others.* (Nakakoji, 1994).

Cultural Variable	Researcher	Interpretation
Linear vs. Nonlinear	Kluckhohn & Strodtbeck	The extent to which linear versus non linear communication is valued. Non linear culture / Linear culture - message has multi themes / - message has one theme - no organisation of events / - stress beginning and end - people and event oriented / - object oriented - non verbal communication / - verbal communication
Indirect/Univocal vs. Direct/Ambiguous	Zaharna	The extent to which direct versus indirect communication style is valued. Indirect culture / Direct culture - ambiguous / - clear - circular / - to the point - embellishments valued / - simplicity valued - subjective / - objective - omit technical aspect / - include technical aspect - emotional resonance / - precision
Oral vs. Literate	Zaharna	The extent to which oral versus literate communication is valued. Oral culture / Literate culture - oral message valued / - written message valued - emotional resonance / - logic and coherence - intuitive reasoning / - analytical reasoning - Speaker/ audience linked / - Speaker/ audience detached - Imagery/ sound stressed / - accuracy stressed - repetition stressed / - repetition not valued - listener association stressed / - not stressed
Message Design	Zaharna	The extent to which message design are preferable. Arabic culture / American culture - repetition / - simplicity - affect / - accuracy - style valued / - content valued - emphasis on form / - emphasis on function - emphasis on image / - emphasis on meaning - exaggeration / - understatement - symbols / - action - vague / - specific

A.2 Examples Maintained by Localisation (Del Galdo, 1990)

System Element	Examples
Character sets	Latin alphabet, Arabic character systems
Collating sequences: the value and position of each character with respect to other characters	Different languages have different sequences for sorting characters
Numeric formats	Use of periods or commas as decimal fractions
Date formats	Month, day and year representations, as well as month names
Currency formats	Currency symbol placement
Time formats	24 vs12 hour clock representation
Telephone numbers	Length and separators
Text	Text length, as well as use of abbreviations, acronyms, jargon, or culturally specific examples

A.3 Sample of Cultural Studies in HCI

Study	Research Scope	Research Question(s)	Participants	Methodology & Data collection techniques	Treatment	Interpretation	Conclusion	Limitations
Duncker (2000)	**Cultural differences in colour preferences**	-Whether students from same culture would choose similar colour for their prototype. -Whether these colours are distinctly different from those chosen by students with different culture.	20 students with various cultural backgrounds (British English, Scandinavian, Jamaican, African, and Asian), attending same education technology class at Middlesex university, UK.	Qualitative techniques: -Direct observation -Individual/group interviews -Prototype analysis -Relevant material collection Questionnaire survey for colour preferences	Participants were asked to develop a prototype of a computer aided learning system	Students from same culture have typical similarities in their colour preferences, which are different from the choices made by students with other culture.	Cultural background of systems designers influences their choice of colour palettes of applications, which may not necessarily be shared by end users of other cultures.	All participant were living and studying in UK, no justification was given concerning whether they would be representatives of their cultures
Duncker (2000)	**Cultural differences in metaphors comprehensibility**	-Whether cultural contexts of the use of real world objects differ from Maori to European culture. -If yes, whether this would distinctly affect the comprehensibility of computing metaphor for these objects for students from these 2 cultures.	8 Maori (New Zealand) students, 9 students with European background, and 1 Asian, all studying at the university of Waikalio, NZ.	Qualitative techniques: -Participants life observation in and around campus -Interviews with a control group from Maori culture Quantitative measures: -Questionnaire for demographic data. -Video taped laboratory experiment, including Performance Measurement and Thinking Aloud Protocol techniques -Questionnaire for usability perception.	Participants were given set of tasks that required searching and browsing three different digital libraries, and were asked to complete task sheets.	Unlike Europeans, Maori students faced many usability problems with the digital library metaphors: -Maori is an Oral Culture, it doesn't reply much on written texts as a form of knowledge transfer -Digital libraries emphasise Individualism in contrast to the Collectivist Maori culture.	-Usage of metaphors are deeply rooted in the cultural context -A direct connection is suggested between the cultural relevance of the library metaphor in one side, and certain culturally specific attitude, culturally specific knowledge production, and the use of the real world libraries on the other side.	As Maori culture tends to not give any form of negative feedback, researcher had to rely on observation.

Study	Research Scope	Research Question(s)	Participants	Methodology & Data collection techniques	Treatment	Interpretation	Conclusion	Limitations
Evers (99)	**Cultural differences in interpreting the meaning of graphical and textual elements of web sites**	How users from different cultural backgrounds interpret the meaning of graphical and textual elements of a campus metaphor.	4 British and 5 Dutch secondary students, with age range of 14 to 20, evaluated in their home country.	Combined observation and structure interview individual sessions: -A task/question list -The researcher asks the questions as participant work through the site -The participants are encourage to use think aloud protocol, which was audio taped and analysed to categories by colour coding.	-Participants think-aloud and reply to questions while working throughout the site. Questions investigate what the participants think each icon represent, what they expect to find after clicking it, and their reactions to the information behind each icon.	-Participants understanding for labels (eg. "Faculty" label), and metaphors (eg. Campus" metaphor) appears to be strongly influenced by their real world concept. -This understanding influenced their expectations about information provided by the site. (eg. Some participants expected to find menu of food when clicking on the "Café" icon, while the site was for online courses and not a real university)	-Understanding and expectation of interface design aspects varies among users and that in many instances it is directly related to the user's everyday knowledge and experience, which suggests cultural influences. -Metaphors are likely to have different cultural meanings, labels as well, can have different connotations for different cultures, causing disappointment and frustration to users.	

Study	Research Scope	Research Question(s)	Participants	Methodology & Data collection techniques	Treatment	Interpretation	Conclusion	Limitations
Evers (2000)	**Cultural differences in understanding Web site graphical elements**	How users from different cultural backgrounds interpret the meaning of graphical, textual, metaphoric elements, as well as general content, and cultural context of interface of a campus metaphor.	14 Dutch, 16 Japanese, 15 North American, and 14 British secondary school students around the age of 16. Gender equally distributed	-Instrument was translated to participants native language, audio-taped, and data collection was carried out in their native language. -5 minutes icon recognition exercise. -Participants were asked to classify the metaphor presented by the site as: Public vs. Private place (to test effect of individualism vs. collectivism), Rules based vs. no rules environment (to test effect of internal vs. external control), and association with future vs. past (to test effect of time perception). -15 minutes hands-on observation session.	-Icons pointed out by researcher, participants were asked to write down 2 comments about what the icon remind them of, and what information they expect to get when clicking on it. -Participants were asked to work through the site and decide if they can use it as a learning tool.	-British and Americans associated the site with a private space, while Japanese and Dutch associated it with a public space. (individualism vs. collectivism culture) -Americans associated the site with a No-rules based environment, while others associated it with a rules-based. (internal control/ short term vs. external control/ long term culture)	-Culturally influenced misunderstandings potentially arise when the users real world does not match the virtual world as displayed on the screen.	

Study	Research Scope	Research Question(s)	Participants	Methodology & Data collection techniques	Treatment	Interpretation	Conclusion	Limitations
Smith French, Chang, & McNeil (2001)	**Culture differences in perception and preferences for e-Finance web sites**	-What are the preferences of Chinese and British concerning the following factors of e-finance web sites: -Information (detailed vs. minimal) -Focus (user vs. product focussed) -Style (text vs. mixture of text and graphics)	2 users groups, British and Chinese of 'young male experts'. Both user groups similar in terms of age, gender and Internet expertise. Chinese participants are all students at Luton university in UK.	-Imperial quantitative study based on Taguchi's orthogonal simplest array. -Satisfaction questionnaire.	Participants were asked to explore four e-Finance web sites with the aim of locating specific mortgage data, and fill a satisfaction questionnaire.	-Chinese users showed less preferences and lower performance for detailed information compared with British. -Both Chinese and British prefer user focused, and graphical style.	-Chinese users may tend to adopt a more holistic approach to viewing web content. -The difference between English (alphabetic text) and Chines (graphical unit), may influence the preferences of Chinese towards graphical presentation, rather than text-based.	-The number of participants from each group was not cited. -No data given concerning the context and procedures of the usability test, to enable replication.
Honold (1999)	**Culture differences in usability of mobile phones**	-What are the differences in the way cultural groups use mobile phones. -What kinds of product adjustments are necessary to ensure culturally suitable design.	13 German, 10 Indian, and 6 Chinese participants, located respectively in Munich, New Delhi, and Shanghai. They all have no prior experience in using mobile phones. Focus group discussions were conducted with 24 German, 30 Indian and 26 Chinese mobile phone users.	-Video taped experiment, including *Thinking Aloud Protocol* techniques -Five point scale satisfaction questionnaire for usability perception. -Usability test videos were analysed quantitatively by observing tasks and evaluate their difficulty on a 4-point scale. And qualitatively transcribing and grouping participants comments. -Tests were conducted in parallel in the three countries, by native speakers. Questionnaires are translated to participants' languages.	Participants were asked to perform nine task scenarios with the mobiles. After each task, participants were asked to rate on scales how easy/ difficult the task was.	-Participants of all cultural groups had similar problems -Chinese participants had more difficulties. -For Germans, the user manual was the important source of information, for Chines the advice of the salesman, and for Indians the advice of a family member was most important. -70% of Germans had read the manual, while 30% of Indians and Chines did.	The researcher found that lot of existing differences between culturally different user groups was not captured because of the artificial similarity of the usability testing situation. It was suggested that the test context and tasks scenarios would be tailored to the normal culture context.	-The research didn't show the type of difficulties faced by each cultural group and didn't argue that these difficulties are related directly to culture. -No distinction was made between Chinese and Indian culture and how this was reflected to usability

Study	Research Scope	Research Question(s)	Participants	Methodology & Data collection techniques	Treatment	Interpretation	Conclusion	Limitations
El Said (2001)	**Culture differences in usage and language preferences on the web**	-What is the main usage of the web for Egyptians. -What is the language preferences of Egyptian web users, and if it differs from one context to another.	57 Egyptian Internet users. All participants were living and working in Egypt, 33 of them have IT background. Gender was equally distributed.	Closed questions survey, designed in English language, was piloted and distributed electronically over number of Egyptians e-groups.	Participants were asked to complete the questionnaire and send it to researcher electronically.	-Social context was suggested as the most popular usage followed by, Business, and finally education context. -English is the preferred language for computing and business context, Arabic for religion context, and Romanized-Arabic* for social context.	The extensive mix of English with Romanized Arabic in non-formal communication may be an adaptation of the Egyptian oral culture over the literature nature of the web.	The voluntarily participation of survey returnees may be biased, and do not reflect the real preferences of Egyptian users.
El Said & Hone (2001)	**Culture differences in Web general usability issues**	-Do Arab (especially Egyptian) users experience usability problems with existing interfaces, which can be related to culture. -If they do, what design measures are culturally sensitive for these users.	24 Egyptians IT professional users, living and working in Egypt.	Semi-Structured interviews conducted by researchers in Arabic language, at participants' work place.	Questions were designed around users' Web experiences, preferences, and problems, if any, users experienced.	The main difficulty faced by majority of participants with the web, is working successfully with search engines, and expressing themselves with text in non-formal context.	-The web search engines emphasise low context in contrast to the high context Egyptian culture. -The text-based nature of the web may conflict with the Oral Egyptian culture.	-Participants are all IT professionals and do not reflect average users. -No control group with different culture was used.

* Here Latin characters, signs and symbols are used to approximate Arabic words.

Study	Research Scope	Research Question(s)	Participants	Methodology & Data collection techniques	Treatment	Interpretation	Conclusion	Limitations
Bourges-Waldegg (1998)	**Culture differences in system design elements**	-Whether or not culturally determined usability problems are due to failure of representations to mediated actions, in Netscape browser. -In what element in system design (user-user, user-task, user-environment, user-tool), majority of culturally determined usability problems occurs:	6 participants located at Derby, UK, the group includes students and staff between the age of 24 and 35, of different cultures (British, German, Spanish, Chinese and Japanese), who were familiar with computer use but not with Internet use. Each two participants were separated by distance and linked by computer. Dispersed participant pairs worked as a team.	-5 video recorded sessions of performance measurements, with Think aloud protocol. -Breakdown analysis of user to user communication log-files -Video recorded interviews -Usability questionnaire including closed and open ended questions -Observation	Each participant pairs team is asked to complete 5 quizzes in 5 sessions using the information provided in the site and by using the browser within 30 minutes.	-32 culturally determined usability problems were uncovered, and they are all related to understanding representations -All usability problems occurred within user-task and user-tool interaction, while no problems occurred in user-user interaction.	-The main usability issues in HCI cross-cultural design converge in the understanding of a representation's meaning in a given context. It occurs mainly within user-task and user-tool elements of design - User-user intercultural communication is less problematic as users develop jointly a communication space to accomplish the task, despite differences in cultures and languages.	-No data given concerning the selection criteria of the small sample used (1 participant from each culture). -No justification given on how representative for his/her culture this single participant is.
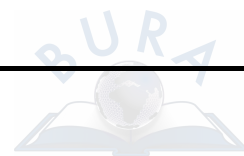
APPENDIX B

EXPLORATORY   PHASE APPENDIX

B.1 Semi-Structured Interview Items

General Usability Issues

1. What's your major use of the net? E-mails, chatting, e-commerce, information seeking. Please specify others.

2. What kind of difficulties you generally faced with on the net? {Icons, text, buttons' function} understanding; searching with right keywords; filter search output for a desired site; forms filling? Please specify others.

3. What's the common mistake you perform while working on the net?

4. What's the task that takes the longest time from you on the net?

5. Do you prefer to work on an easy site rather than working on a less easy but more useful site? Please give example

6. Do you find Arabic language sites easier to use?

7. Do you find local designed site, even if it is in English, are easier to use?

8. What annoy you the most on the web?

Culture Variable1: Uncertainty Avoidance

1. When you want to send a greeting E-card for the EID (Egyptian Feast), do you use an E-Card site you used before and book marked or you search the web for new sites?

2. Would you prefer to read your daily journal from the Internet with the same format you are used to on the paper format, or do you prefer to have a different layout facilitating searching for news?

3. Do you feel more conformable to use a useful site you used before no matter how difficult is the site. Or do you prefer to search the web for a new site with a better interface?

Culture Variable2: Individual versus Collectivism

1. If you need to purchase a book from the net for the first time and you don't know a site providing such service. How can you get the URL of such a site? Searching the web, or asking a friend for a recommended site?

2. When you find a difficulty using the web, do you prefer the online help of the net or do you feel more comfortable to ask a friend?

3. If you have to use the on line help, do you prefer it to be a step by step instructions or a summary with examples?

4. Do you prefer an all text based site or text mixed with symbolic and graph

Culture Variable3: High versus Low context

1. Do you easily find key words for search, matching exactly with the type of sites you are searching for?

2. In a chat or e-mail, can you easily express your self by words? Or do you feel the need of additional tool to express your real meaning, like icons with happy or sad faces to be inserted within text? Any other ideas?

Culture Variable4: Time perception

1. Given that you access the net with high speed, do you usually work on 2 or more tasks on the same time? Give me examples.

2. If yes, are these tasks within the same site, or you could be working on several sites at the same time?

3. If you usually work on several sites on the same time, are you then performing related tasks, or they could be totally separates tasks (work related versus personal interests)? Give me examples.

B.2 Electronic Survey Items

Dear colleagues:

I am currently conducting a study on Web usability for Egyptian users. I am questioning how Egyptian users perceive and use the net. I will be surveying technology professionals, and other professionals regarding their uses of computers and the Internet. Through this process, I hope to learn more about how we, the Egyptians, are beginning to use the computer for communication, and how this intersects with other issues like usefulness perception and language use.

I have a short survey that I would very much like you to fill out. And I will be happy to make available to you the results of the study when it is completed.

Will you be so kind as to take a few minutes to complete the attached survey, and to return it to me by e-mail (to grefaat@aedegypt.org) by [March, 30ᵗʰ 2001].

Please Note

To select a choice, please underline the answer, example:

☐ High school   ☐University degree   ☐Master or higher Education

Is your background related to IT or computing in general?   ☐ Yes   ☐ No

Thank you very much. If you have any questions, please don't hesitate to contact me by e-mail

Personal Information

1. Age ☐ Years   Gender ☐ Female   ☐ Male

2. Education   ☐ High school   ☐ University degree   ☐ Master or higher education

3. Is your background related to IT / Computing? ☐ Yes   ☐ No

4. Is your profession related to IT or computing? ☐ Yes   ☐ No

5. How do you rate your English language? ☐ Expert   ☐ Intermediate ☐ Novice

....

Internet Usage

1. How long have you been using the net?   ☐ Years OR ☐ Months

2. How do you rate your familiarity with the web?
                              ☐ Expert   ☐ Intermediate ☐ Novice

3. How many hours do you spend on line per week? ☐   Hours

4. Please specify the duration with which you perform the following activities on the net:

Activities	Duration per Day **00:00** Hrs:Mns
Checking and sending e-mail	00:00
Browsing and seeking information	00:00
Real time chatting	00:00
Reading materials	00:00

5. Please specify the duration with which you seek the following area of interest on the net:

Activities	Duration per Day **00:00** Hrs:Mns
Social communication	00:00
Business communication	00:00
Business information and news	00:00
Profession and education	00:00
Shopping	00:00
Entertainment	00:00

6. How important is it to you for a site to be:

Easy to use
☐ very important ☐ important ☐ neither important nor unimportant ☐ unimportant ☐ very unimportant

Useful content
☐ very important ☐ important ☐ neither important nor unimportant ☐ unimportant ☐ very unimportant

Pleasant interface
☐ very important ☐ important ☐ neither important nor unimportant ☐ unimportant ☐ very unimportant

Familiar design
☐ very important ☐ important ☐ neither important nor unimportant ☐ unimportant ☐ very unimportant

7. Internet would play a major role in the development of our country:
☐ strongly agree ☐ agree ☐ neither agree nor disagree ☐ disagree ☐ strongly disagree

8. Internet's harm exceeds its benefits for young people:
☐ strongly agree ☐ agree ☐ neither agree nor disagree ☐ disagree ☐ strongly disagree

....

Language Usage

1. In what language you prefer to get information from the Internet concerning the following topics?

Information Technology and computing	☐ Arabic	☐ English	☐ No preference
Business information	☐ Arabic	☐ English	☐ No preference
Politics news	☐ Arabic	☐ English	☐ No preference
Religion articles	☐ Arabic	☐ English	☐ No preference
Entertainment	☐ Arabic	☐ English	☐ No preference
Social Information	☐ Arabic	☐ English	☐ No preference

2. Do you find that the web usefulness to you is reduced by the dominance of English over the net?

☐ Yes ☐ No

3. What languages do you usually use in the following activities (choose all that apply)

Formal e-mails with Egyptians ☐ English ☐ Arabic in Arabic script ☐ Arabic in Roman letters

Informal e-mails with Egyptians ☐ English ☐ Arabic in Arabic script ☐ Arabic in Roman letters

Chatting with Egyptians ☐ English ☐ Arabic in Arabic script ☐ Arabic in Roman letters

4. Do you use more than one language at a time in your

Formal e-mails   ☐ Always   ☐ Usually   ☐ Sometimes   ☐Never

Informal e-mails   ☐ Always   ☐Usually   ☐ Sometimes   ☐Never

Real time chatting☐ Always   ☐Usually   ☐ Sometimes   ☐Never

....

Context

1. Are you joining a non-Arabic speaker's e-group, for mailing or chatting?
☐Yes   ☐ No
If yes, what type of difficulties you faced when you first joined the group? (choose all that apply)

☐   Expressing meaning with short messages

☐   Understanding of abbreviations, acronyms and jargon

☐   Understanding of jokes and humour

☐   Understanding of culturally specific examples

☐   Didn't face any difficulties

☐   Others, please specify

Did you overcome these difficulties with time, while interacting with the group?
☐Yes   ☐ No

Did you think that you would not face same difficulties in an Arabic speakers group?
☐Yes   ☐ No

2. Did you ever face a conflict in an e-mail or chatting context due to difficulties you find in expressing your meaning in writing?

      ☐ Always   ☐ Usually   ☐ Sometimes   ☐ Never

If yes, do you think that an oral communication would prevent such conflict?   ☐Yes   ☐ No

3. Do you face difficulties using relevant key words in search engines?   ☐Yes ☐No
If yes, do you think that this is due to (choose all that apply)

☐   Lack of experience in search techniques

☐   Lack of fluency in English language

☐   Lack of capability of expressing required information in few words

☐   Others, please specify   ....

....

Web Familiarity

1. In general, do you press buttons or links in web sites, which you are not sure what they are for?

     ☐ Always   ☐ Usually   ☐ Sometimes   ☐ Never

2. Usually, do you explore the web for undecided destination rather than going to specific sites?

     ☐ Always   ☐ Usually   ☐ Sometimes   ☐ Never

3. What will be your first impression when you find that the interface/ design of a site you use to use, have been changed?

☐ very annoyed ☐ annoyed ☐ neither annoyed nor pleased ☐ pleased ☐ very pleased

4. How do you find the option given by some sites, for users to personalize the interface according to user preferences?

     ☐ essential   ☐ useful   ☐ neither essential nor useful

....

E-Commerce Usage

1. Do you have any objections to using the Internet as means for shopping?

     ☐ Yes   ☐ No

3. Did you buy any product online, through a Web site, during the past year?

     ☐ Yes   ☐ No

4. If the answer to the previous is NO, what are the basic elements that discourage you to buy through Web sites? (Choose all that applies)

☐ Lack of Trust in e-commerce sites   ☐ Difficulty of payment   ☐ Difficulty of delivery

☐ Credit Cards Security   ☐ Disability to negotiate prices

....   Others, please specify

5. If the answer question 3 was YES, how many times did you buy, via Web sites, during the past year?

     ☐ Times

13. From your own experience, do you encourage others to use Web sites for buying and selling activities?

     ☐ Yes   ☐ No

....

Please return by email to grefaat@aedegypt.org by [March, 30th, 2001]

B.3 Descriptive Analysis of Selected Survey Items

Demographic

	Frequency	Percent
Gender		
Male	26	46%
Female	31	54%
Age Range		
20-24	29	51%
25-29	18	32%
30-34	8	14%
35-39	2	3%
40-49	0	0%
Education		
High School	1	2%
Master or higher	25	44%
University degree	31	55%
IT Profession		
Yes	31	54%
No	24	46%
IT Education		
Yes	33	585
No	24	42%

Years of using the net

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	6	10.5	10.5	10.5
	3	16	28.1	28.1	38.6
	4	9	15.8	15.8	54.4
	5	12	21.1	21.1	75.4
	6	5	8.8	8.8	84.2
	7	9	15.8	15.8	100.0
	Total	57	100.0	100.0	

Internet Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Expert	28	49.1	49.1	49.1
	Intermediate	29	50.9	50.9	100.0
	Total	57	100.0	100.0	

Duration per minutes spend on different online activities daily

	N	Minimum	Maximum	Mean	Std. Deviation
E-Mail minutes Spend Daily	57	15	720	118.60	145.44
Net Browse minutes spend daily	57	0	480	96.67	106.89
Chatting minutes spend daily	57	0	300	27.35	53.83
Read material minutes spend daily	57	0	300	51.28	59.90
Valid N (listwise)	57				

Duration per minutes spend on different online contexts daily

	N	Minimum	Maximum	Mean	Std. Deviation
Social communication minutes spend daily	57	0	600	49.18	94.24
Business communication minutes spend daily	57	0	180	31.46	47.38
Businessinformation seek minutes spend daily	57	0	600	46.61	88.76
Education context minutes spend daily	57	0	300	52.40	62.02
Shoping context minutes spend daily	55	0	240	8.73	37.27
Entertainment context minutes spend daily	56	0	600	41.96	86.37
Valid N (listwise)	55				

Duration per minutes spent on different context daily (Intermediate users)

	N	Minimum	Maximum	Mean	Std. Deviation
Social communication minutes spend daily	23	0	180	39.70	55.70
Education context minutes spend daily	23	0	180	35.74	46.82
Shoping context minutes spend daily	23	0	240	15.65	54.92
Entertainment context minutes spend daily	23	0	180	42.61	52.85
Businessinformation seek minutes spend daily	23	0	90	24.43	27.03
Valid N (listwise)	23				

Duration per minutes spent on different context daily (ITs' users)

	N	Minimum	Maximum	Mean	Std. Deviation
Social communication minutes spend daily	33	0	300	36.67	61.83
Businessinformation seek minutes spend daily	33	0	240	41.36	57.03
Education context minutes spend daily	33	0	300	77.42	67.96
Shoping context minutes spend daily	31	0	60	3.87	14.98
Entertainment context minutes spend daily	32	0	120	27.81	28.59
Valid N (listwise)	31				

Duration per minutes spent on different context daily (Non-ITs' users)

	N	Minimum	Maximum	Mean	Std. Deviation
Social communication minutes spend daily	24	0	600	66.38	125.59
Businessinformation seek minutes spend daily	24	0	600	53.83	120.68
Education context minutes spend daily	24	0	90	18.00	28.38
Shoping context minutes spend daily	24	0	240	15.00	53.81
Entertainment context minutes spend daily	24	0	600	60.83	126.83
Valid N (listwise)	24				

How important is it for a site to be Easy to Use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Important	21	36.8	36.8	36.8
	Neither important nor unimportant	4	7.0	7.0	43.9
	Very important	32	56.1	56.1	100.0
	Total	57	100.0	100.0	

How important for a site to be Usefull Content

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Important	12	21.1	21.1	21.1
	Very important	45	78.9	78.9	100.0
	Total	57	100.0	100.0	

How important for a site to be Pleasant Interface

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Important	37	64.9	64.9	64.9
	Neither important nor unimportant	7	12.3	12.3	77.2
	Unimportant	4	7.0	7.0	84.2
	Very important	9	15.8	15.8	100.0
	Total	57	100.0	100.0	

How important for a site to be Familiar Design

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Important	24	42.1	42.1	42.1
	Neither important nor unimportant	14	24.6	24.6	66.7
	Unimportant	11	19.3	19.3	86.0
	Very important	8	14.0	14.0	100.0
	Total	57	100.0	100.0	

Cross-tabulation between site preferences and Internet profession level

		IT_Profession		Total
		No	Yes	
How important for a site to be Easy_to_Use	Important	6	15	21
	Neither important nor unimportant		4	4
	Very important	18	14	32
Total		24	33	57

How important for a site to be Useful Content * IT Profession Cross-tabulation

		IT_Profession		Total
		No	Yes	
How important for a site to be Usefull_Content	Important	6	6	12
	Very important	18	27	45
Total		24	33	57

How important for a site to be Pleasant Interface * IT Profession Cross-tabulation

		IT_Profession		Total
		No	Yes	
How important for a site to be Pleasant_Interface	Important	18	19	37
	Neither important nor unimportant	3	4	7
	Unimportant	1	3	4
	Very important	2	7	9
Total		24	33	57

Do you Press Unknown Buttons

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	4	7.0	7.0	7.0
	Never	6	10.5	10.5	17.5
	Sometimes	44	77.2	77.2	94.7
	Usually	3	5.3	5.3	100.0
	Total	57	100.0	100.0	

Do you explore the Web for undecided destination

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	7	12.3	12.3	12.3
	Sometimes	45	78.9	78.9	91.2
	Usually	5	8.8	8.8	100.0
	Total	57	100.0	100.0	

Impression when Interface Change

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Annoyed	18	31.6	31.6	31.6
	Neither annoyed nor pleased	31	54.4	54.4	86.0
	Pleased	6	10.5	10.5	96.5
	Very annoyed	1	1.8	1.8	98.2
	Very pleased	1	1.8	1.8	100.0
	Total	57	100.0	100.0	

Personalize Interface preference

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Essential	5	8.8	8.8	8.8
	Neither useful nor essential	26	45.6	45.6	54.4
	Useful	26	45.6	45.6	100.0
	Total	57	100.0	100.0	

English dominance reduce your Internet use

	Frequency	Percent	Valid Percent	Cumulative Percent
No	47	82.5	82.5	82.5
Yes	10	17.5	17.5	100.0
Total	57	100.0	100.0	

Formal_Email_Many_Language

	Frequency	Percent	Valid Percent	Cumulative Percent
Never	48	84.2	84.2	84.2
Sometimes	8	14.0	14.0	98.2
Usually	1	1.8	1.8	100.0
Total	57	100.0	100.0	

Informal_Email_Many_Language

	Frequency	Percent	Valid Percent	Cumulative Percent
Always	6	10.5	10.5	10.5
Never	11	19.3	19.3	29.8
Sometimes	31	54.4	54.4	84.2
Usually	9	15.8	15.8	100.0
Total	57	100.0	100.0	

Chat_Many_Language

	Frequency	Percent	Valid Percent	Cumulative Percent
Always	11	19.3	19.3	19.3
N/A	12	21.1	21.1	40.4
Never	7	12.3	12.3	52.6
Sometimes	16	28.1	28.1	80.7
Usually	11	19.3	19.3	100.0
Total	57	100.0	100.0	

Search problem due to lack of experience

	Frequency	Percent	Valid Percent	Cumulative Percent
No	2	15.4	15.4	15.4
Yes	11	84.6	84.6	100.0
Total	13	100.0	100.0	

Search problem due to lack of english

	Frequency	Percent	Valid Percent	Cumulative Percent
No	9	69.2	69.2	69.2
Yes	4	30.8	30.8	100.0
Total	13	100.0	100.0	

Search problem due to context problem

	Frequency	Percent	Valid Percent	Cumulative Percent
No	7	53.8	53.8	53.8
Yes	6	46.2	46.2	100.0
Total	13	100.0	100.0	

B.4 Introductory Letter for Participants to Read before the Sorting Session

<u>Sort Session on Internet Usage</u>

<u>Please read this letter before completing working on the session.</u>

As you probably know, over the past few years, Internet became a global phenomenon! Allowing an ever growing number of populations from all over the world to communicate, it also changed the way people use to Work, Interact, and Shop. Internet users' preferences for shopping on line, is one of the areas that is currently being researched by the department of information systems and computing at Brunel University. As part of this research we are investigating the factors that encourage and discourage people to use web-sites for purchasing things electronically. We would like to find out more about these factors.

*We would be grateful if you could spare approximately <u>**20 minutes**</u> of your time to complete this session. The session includes completing the pictures sorting, and filling Internet Usage Questionnaire. Please note that you have the right to stop the session in any time if you do not like to continue. We would like to point out that there is no right or wrong answers to sorting the cards and to evaluate the sites, what we interested in are your personal views. Final results of this study will be shared with those who are interested.*

Thank you for your time and co-operation. If you have any questions, please let me know.

Ghada Refaat El Said, Ph.D. Candidate
Brunel University, Department of Information Systems, Computing and Mathematics
Grefaat@equipegypt.org

Main supervisor: Dr. Kate Hone, Brunel University, UK.
Local supervisor: Dr. Galal H. Galal, Faculty of Computing and Information, Cairo University.
July 2002

B.5 Experimenter's Script for Sorting Technique Training Session

For the practice of sorting technique we will use these ten pictures of cars: I will give you some examples of topics or criteria for cars and then I will sort them into groups or categories. After that you can do the same.

Let's say that the first topic or criterion is "What is the type of car's sealing?"
We can say for these pictures, two or maybe three groups, " Moving sealing", "Non-Moving Sealing" and "Not Sure", what do you think?

The next topic could be, for example, "Cars I would like to Own."
We probably have different opinions about this: I am interested in your opinion, so how would you sort them?

Now, can you suggest another topic for sorting?

Do you need help?

Do you feel comfortable with this now or would you like to practice a bit more?

Then we'll continue with the main experiment.

B.6 Experimenter's Script for Introduction of Main Web Sites Sort

I am now going to show you eleven pictures. Each has a screen-shot of the opening or start page of a web-site – that means that it shows exactly what you will see on the computer screen when you open the web-site and look at it for the first time. All the web-sites are about selling books on line and they are all different sites.

I would like you to think of a criterion as you did in the practice session, and sort the pictures into groups, using one criterion at a time. When you are satisfied with your sort tell me first what the criterion was for that sort, what the categories were into which you sorted the cards, and then tell me the numbers of the picture in each group, so that I can record this. I would appreciate your use of English words when deciding the criteria and categories as words will be recorded as you will give them to me.

After that you can repeat the sorting process until you feel you have covered all of the criteria you can think of.

Please take a little time to look at each of the picture and then when you are ready to start sorting, let me know and you can begin.

Please note that:

If you cannot think of a simple way to say something you can use a sentence to say it and I will use that as the name of the criterion or group. Please remember to use only one criterion at a time – you can do another sort for the other criterion later.

If you have any comments or questions, then please say, and I will sort them out. Thank you for your help.

B.7 Instructions to Independent Judge for Criteria Grouping

You will be given access to a list of criteria generated by Egyptian Young Internet Users based on their perceptions of e-commerce sites. The criteria are verbatim, as given by the participants and they thus reflect their choice of words.

Your task is to interpret the criteria into criteria grouping. You should try to identify gist agreement between verbatim criteria so that you can state, with reasonable certainty, where one participant could be said to have meant the same as another but simply used different wording.

You should then note which criteria belong to these criteria groups. You should also allow for the fact that some participants might have used very similar or identical wording to other participants for criteria but in fact meant something quite different. For this purpose you should take into account the named categories into which the respondents divided their criteria as well as any recorded comments they made at the time. This information will be made available to you.

You should use your knowledge of web sites and Egyptian's use of English Language to help you reach your decisions. In order to interpret what the participant meant it may be necessary to look at the pictures of web sites themselves.

B.8 Sorting Sessions Recoding Sheets

Sorting Session Recording Sheet # **1**

Participant Code: 1

Participant Name: Mohamed Fawzy

Date: August, 8th, 2002

Location: Participants work place meeting room

Sort #1: Criterion Used: Dominant Colour in the Page				
Categories:	Blue	Green	Brown	No Dominant Colour
Pictures #s:	1,2,3,5,10,11	4,6,8	7	9

Sort #2: Criterion Used: Existing of Command Buttons		
Categories:	Exist	Don't exist
Pictures #s:	1,2,3,4,5,6,7,8,10	9,11

Sort #3: Criterion Used: Content of Items presented in the page		
Categories:	large number of Items	Suitable number of Items
Pictures #s:	2,4,5,6	1,3,7,8,9,10,11

Comment: Participant when cited the criterion said :"page not loaded by many items, more simple, more easy to use". He engaged simplicity and ease of use with number of items presented in the page. When asked to select one criterion he selected: content of items presented in the page.

Sort #4: Criterion Used: Site Language		
Categories:	English	Arabic
Pictures #s:	2,3,4,5, 8,9	1,6,7,10,11

* After this sort, the participant went into a dry point; the experimenter conducted a Triadic elicitation with him which results of the following sort

Sort #5: Criterion Used: Amount of Arabic Language use in the site		
Categories:	All in Arabic	Title only in Arabic and rest in English
Pictures #s:	10,11	9

<div style="text-align: center; background: #cccccc;">

Picture Sorting Session Recording Sheet # **2**

Participant Code: 2

Participant Name: Maysaa Mohamed

Date: August, 8th, 2002

Location: Participants work place meeting room

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Sort #1: Criterion Used: Site Language			
Categories:	English	Arabic	Mix of Arabic and English
Pictures #s:	2,3,4,5,8,9	1,6	7,10,11

Sort #2: Criterion Used: Scroll Bar Direction		
Categories:	Left	Right
Pictures #s:	1,6	2,3,4,5,7,8,9,10,11

Sort #3: Criterion Used: Site has a web-standard look		
Categories:	web-standard look	Non-web-standard look
Pictures #s:	1,2,4,5,10	3,6,7,8,9,11

Comment: Participant when cited the criterion said: "page has a web-standard, professional look". He engaged professionalism of the site with having a web-standard look. When asked to select one criterion he selected: Site has a web-standard look.

Sort #4: Criterion Used: Site with famous repetition		
Categories:	Yes	No
Pictures #s:	1,2,4,5	3,6,7,8,9,10,11

Sort #5: Criterion Used: Existing of advertising in the site		
Categories:	Yes	No
Pictures #s:	2,4	1,3,5,6,7,8,9,10,11

Sort #6: Criterion Used: Ways to Find Books			
Categories:	By Scrolling	By Searching	By Browsing categories
Pictures #s:	3,8,10	2,4,5	1,6,7,9,11

Picture Sorting Session Recording Sheet # **3**

Participant Code: 3
Participant Name: Maha Gamal
Date: August, 12th, 2002
Location: Participants work place meeting room

Sort #1: Criterion Used: Language with which site is designed			
Categories:	Arabic	English	Bilingual
Pictures #s:	1,6,10	2,3,4,5,8	7,9,11

Sort #2: Criterion Used: Categorization of books			
Categories:	Mentioned	Not Sure	Not Mentioned
Pictures #s:	1,4,6,7,11	3,8	2,5,9,10

Sort #3: Criterion Used: Physical Library versus Cyber E-Commerce Site		
Categories:	Physical Library	Cyber Site
Pictures #s:	3,6,7,9	1,2,4,5,8,9,10,11

Comment: Pictures 7 and 9 are sites for real physical libraries, while 3 and 6 are simply cyber library. Maybe the participant though that site 3 and 6 are real libraries as the names of these sites includes the world library.

Sort #4: Criterion Used: Picture represents main vs inside page of the home page		
Categories:	Main page	Inside Page
Pictures #s:	1,2,4,5,6,7,9,10,11	3,8

Comment: All the Pictures represent the main page of sites. Maybe because 3and 8 have unusual site design the participants though that they couldn't be of a main page.

* After this sort, the participant went into a dry point; the experimenter conducted a Triadic elicitation with him which results of the following sort

Sort #5: Criterion Used: Existence of site description		
Categories:	Exists	Doesn't exist
Pictures #s:	9	5,11

Sort #6: Criterion Used: Existence of Top Seller books		
Categories:	Exists	Doesn't Exist
Pictures #s:	10,2	8

Picture Sorting Session Recording Sheet # **4**

Participant Code: 4
Participant Name: Alaa Shaheen
Date: August, 12th, 2002
Location: Participants work place meeting room

Sort #1: Criterion Used: Ways to Find Books

Categories:	Categorized	Not Sure	Not Categorized
Pictures #s:	4,5,7,11,6,1	2	3,8,9,10

Sort #2: Criterion Used: Products are easy to buy

Categories:	Easy	Hard
Pictures #s:	1,2,3,4,5,7,8,10	6,9,11

After this sort, the participant went into a dry point; the experimenter conducted a Triadic elicitation with him which results of the following sort. It is important to note that when asked after the session why he went so quickly on the dry point he cited that he was hungry and that this si the time for him to eat. Accordingly, the experimenter stopped doing the experiment during lunch break.

Sort #3: Criterion Used: Site includes a Menu Bar

Categories:	Include	Doesn't include
Pictures #s:	3,5	8

Sort #4: Criterion Used: Site Language

Categories:	Arabic	Arabic and English
Pictures #s:	6	9,7

Sort #5: Criterion Used: Site Selling Religious Books

Categories:	Yes	Not sure	No
Pictures #s:	1,7	9	4,5,8,3,10,2,11,6

Sort #6: Criterion Used: Site Selling Microsoft Books

Categories:	Yes	Not sure	No
Pictures #s:	3,5,2,4	1,7,9	10,6,8,11

Comment: While adding the Amazon Picture in the category of sites selling Microsoft books, the participant mentioned that the picture in the Picture doesn't show any Microsoft books in the Amazon site but he is sure that a famous site like Amazon would include such books.

Note: In the previous four sorting session, the experimenter use to take an appointment from the participants during their lunch break, and use to make the experiment at participants' meeting room. After the last session, the experimenter noticed the participant fatigue, as at that time of day workers usually take lunch and need break. Therefore, the setting of the experiment was changed to be at the experimenter work place's meeting room after working hours. Participants are told to come any time in the after noon, after eating and taking a rest to do the experiment. It is interesting to find that in this new settings the dry points happened later in sessions and that the number of criteria used increased.

Picture Sorting Session Recording Sheet # **5**

Participant Code: 5
Participant Name: Medhat Asaad
Date: August, 13th, 2002
Location: Experimenter work place meeting room, after noon

Sort #1: Criterion Used: Site Nationality		
Categories:	Egyptian / Arabic	Foreign
Pictures #s:	7,3,1,10,6,9,8,11	5,4,2

Sort #2: Criterion Used: Selling on line feature			
Categories:	Clear	Not clear	Not Available
Pictures #s:	8,11,2,9,5,4	3	1,6,7,10

Sort #3: Criterion Used: Familiarity with the site		
Categories:	Familiar	Not Familiar
Pictures #s:	5,2,1,7	10,4,8,3,11,9,6

* After this sort, the participant went into a dry point; the experimenter conducted a Triadic elicitation with him which results of the following sort.

Sort #4: Criterion Used: Site Language		
Categories:	Arabic	English
Pictures #s:	1,10	2

Sort #5: Criterion Used: Type of books available		
Categories:	Arabic	Variety
Pictures #s:	10	1,2

Picture Sorting Session Recording Sheet # **6**

Participant Code: 6
Participant Name: George Magdy
Date: August, 13th, 2002
Location: Experimenter work place meeting room, after noon

Sort #1: Criterion Used: Support of Language			
Categories:	Arabic	English	Arabic and English
Pictures #s:	1,6	8,9,2,3,4,5	7,10,11

Sort #2: Criterion Used: Product Provided		
Categories:	Books Only	Books and Others
Pictures #s:	10,6,9,8,11	7,1,3,4,5,2

Sort #3: Criterion Used: Friendly Site		
Categories:	Yes	No
Pictures #s:	1,2,3,4,5,6	7,8,9,10,11

Sort #4: Criterion Used: Site Easy to Use		
Categories:	Yes	No
Pictures #s:	1,2,3,4,5,6	7,8,9,10,11

Comment: Originally the participant cited a criterion "Friendly and easy to use" when informed that these might be 2 and not one criterion, and asked to try to split them he put them into 2 criterion, and allocate site categorised as friendly as easy to use and vice versa. This might suggest that the participant strongly connect the friendliness of the site to its ease of use.

Sort #5: Criterion Used: Site I already used in buying things online		
Categories:	Yes	No
Pictures #s:	2	1,3,4,5,6,7,8,9,10,11

Comment: The participant made a comment there that he only used Amazon to buy a film not because it is his first preferred site but because he only the product he wanted to buy in that site.

Sort #6: Criterion Used: Way to Access Products			
Categories:	Tabs	Not Clear	Buttons on the top of page
Pictures #s:	1,2,3,4,5	8,9	11,6,7,10

Sort #7: Criterion Used: Product Search versus List Options		
Categories:	Search and List	List only
Pictures #s:	2,5,1,4,6,10	8,9,11,3,7

Sort #8: Criterion Used: Interface Ranking				
Categories:	Excellent	Good	Bad	Very Bad
Pictures #s:	1,2,5	3,6	10,7,4	8,9,11

Comment: The participant cited that he would select a site to buy from mainly due to the availability of products he needs on that site and not necessarily the site interface.

Picture Sorting Session Recording Sheet # **7**

Participant Code: 7
Participant Name: Ismail Fayed
Date: August, 15th, 2002
Location: Experimenter work place meeting room, at 11:00

Sort #1: Criterion Used: Books Language		
Categories:	Arabic Books	English Books
Pictures #s:	10,8,7,6,3,9,1	4,5,2,11

Sort #2: Criterion Used: Browsing Language			
Categories:	Arabic	English	Arabic & English
Pictures #s:	10,6,1	9,8,4,2,3,5	7,11

Sort #3: Criterion Used: With vs. Without Frames		
Categories:	With Frames	Without Frames
Pictures #s:	11,2,5,4,7,1,10,6	8,9,3

Sort #4: Criterion Used: Advertising appearance		
Categories:	With Ads	Without Ads
Pictures #s:	10,2,5,4	6,1,7,3,8,9,11

Sort #5: Criterion Used: Books Display		
Categories:	By list of Books	By list of Categories
Pictures #s:	6,5,8,2,10,1,3	7,4,9,11

* After this sort, the participant went into a dry point; the experimenter conducted a Triadic elicitation with him which results of the following sort.

Sort #6: Criterion Used: Background Colour		
Categories:	Gray	White
Pictures #s:	11,1	8

Picture Sorting Session Recording Sheet # **8**

Participant Code: 8
Participant Name: Rasha El Khateeb
Date: August, 15th, 2002
Location: Experimenter work place meeting room, at 12:00

Sort #1: Criterion Used: Book Description Available

Categories:	Yes	No	Not Sure
Pictures #s:	1,6,2,10,5,3	9	8,4,7,11

Sort #2: Criterion Used: Items vs. Items categories listing

Categories:	Items List	Item's Category List
Pictures #s:	11,7,9	1,2,3,4,5,6,8,10

Sort #3: Criterion Used: Attractive Interface

Categories:	Attractive	Not Attractive
Pictures #s:	6,1,4,10,5,2	3,7,8,9,11

* After this sort, the participant went into a dry point; the experimenter conducted a Triadic elicitation with him which results of the following sort.

Sort #4: Criterion Used: Site Language

Categories:	Arabic	English
Pictures #s:	1,6	2

Sort #5: Criterion Used: Author's Link

Categories:	Yes	No
Pictures #s:	2,6	1

Picture Sorting Session Recording Sheet # **9**

Participant Code: 9
Participant Name: Khaled Refaat
Date: August, 16th, 2002
Location: Experimenter Home dinning room, at 6:00

Sort #1: Criterion Used: Web Site Language		
Categories:	Arabic Web Site	English Web Site
Pictures #s:	1,6,7,9,10,11	2,3,4,5,8

Sort #2: Criterion Used: Cheerful Interface		
Categories:	Cheerful	Flat Interface
Pictures #s:	2,3,4,5,10	1,6,7,8,9,11

Sort #3: Criterion Used: Site within I can quickly find the book I want		
Categories:	Yes	No
Pictures #s:	1,2,3,4,5,6,10	7,8,9,11

Sort #4: Criterion Used: Obviousness of Book Search		
Categories:	Yes	No
Pictures #s:	1,2,3,4,5,6,10	7,8,9,11

Comment: The participant first combined the following criteria into one sort "Support of quick search", "Obviousness of Book Search", "Can Quickly find what I wont" and "Easy to use site". When informed that only one criterion should be selected the "Site within I can quickly find the book I want" and "Obviousness of Book Search" criteria in different sorting.

Sort #5: Criterion Used: Availability of Top Sellers on first page		
Categories:	Available	Not Available
Pictures #s:	1,2,3,5,6,7,8,10	4,9,11

Sort #6: Criterion Used: Site Selling other products beside books		
Categories:	Yes	No
Pictures #s:	1,2,3,4,5	6,7,8,9,10,11

Picture Sorting Session Recording Sheet # **10**
Participant Code: 10
Participant Name: Amr Salam
Date: August, 17th, 2002
Location: Experimenter Home dinning room, at 8:00

Sort #1: Criterion Used: Site Nationality			
Categories:	Foreigner	Arabic	Not Sure
Pictures #s:	5,4,2	11,6,1,3	10,8,9,7

Sort #2: Criterion Used: Virtual Site Vs Real Book Store		
Categories:	Real	Virtual
Pictures #s:	9,7	1,2,3,4,5,6,8,10,11

Comment: The participant commented that he would trust more a web site for a real physical book store, as he may collect data about books from the site and buy books from book store later.

Sort #3: Criterion Used: Interface Language		
Categories:	Arabic	English
Pictures #s:	1,6,10	2,3,4,5,7,8,9,11

Sort #4: Criterion Used: Site I will prefer to use when I search for books			
Categories:	Favour	No	N/A
Pictures #s:	1,2,4,5,10	6,7,9,11	3,8

Sort #5: Criterion Used: Clear Categorization of books		
Categories:	No	Yes
Pictures #s:	3,8	1,2,4,5,6,7,9,10,11

Sort #6: Criterion Used: Looks like a home page Vs inside page		
Categories:	Inside Page	Home page
Pictures #s:	3,8	1,2,4,5,6,7,9,10,11

Sort #7: Criterion Used: Easy to Notice menus reflecting variety of books		
Categories:	Easy to notice	Hard to notice
Pictures #s:	1,2,6,11	3,4,5,7,8,9,10

Comment: The participant commented that he prefer a list of book categories to select from within, rather than making a search.

Sort #8: Criterion Used: Sites selling Islamic books		
Categories:	Yes	No
Pictures #s:	1,3,6,11	2,4,5,7,8,9,10

Picture Sorting Session Recording Sheet # **11**

Participant Code: 11

Participant Name: Reem Salam

Date: August, 17th, 2002

Location: Experimenter Home dinning room, at 10:00

Sort #1: Criterion Used: Language Used		
Categories:	Arabic	English
Pictures #s:	1,6,10	2,3,4,5,7,8,9,11

Sort #2: Criterion Used: Home page includes books' details				
Categories:	Lots of details	Less detail	No details	N/A
Pictures #s:	1,6,10	8,3,4,9	7,11	5

Sort #3: Criterion Used: Site delivering the right message		
Categories:	No	Yes
Pictures #s:	2,5	1,3,4,6,7,8,9,10,11

Comment: The participant commented that Picture 2 and 5 are showing lots of items (Books, CDs, advertising) which makes the user confused about what the site is selling.

Sort #4: Criterion Used: Home page busy with advertisings		
Categories:	Busy	Not busy
Pictures #s:	1,2,3,4,5,6	7,8,9,10,11

Comment: The participant commented that advertisings are attracting her attention far from the page content.

Sort #5: Criterion Used: Advertisings relevant to site subjects		
Categories:	Yes	No
Pictures #s:	1,4,5,6,7,8,9,10,	2,3,11

Sort #6: Criterion Used: Available ways to find a book				
Categories:	Books displayed	List of books displayed	Search option	N/A
Pictures #s:	1,2,3,8,10	11,7	5,6	4,9

Comment: The participant commented that it is easier to navigate within an available list of books rather than searching for one.

Picture Sorting Session Recording Sheet # **12**

Participant Code: 12
Participant Name: Mohamed Abdel Gawad
Date: August, 18th, 2002
Location: Experimenter work place meeting room, at 11:00

Sort #1: Criterion Used: Language of Interface			
Categories:	English	Mixed	Arabic
Pictures #s:	5,2,8,3,4	10,11,7,9	1,6

Sort #2: Criterion Used: Listing Books data Vs Listing category		
Categories:	Book data	Category listing
Pictures #s:	3,8	1,2,4,5,6,7,9,10,11

Comment: The participant commented that providing list of books categories to select from is the appropriate then listing books and their data

Sort #3: Criterion Used: Attractive Colours			
Categories:	Very attractive	Middle	Not attractive
Pictures #s:	11,9,4,6	10,2,1,5	8,3,7

Sort #4: Criterion Used: Search Option		
Categories:	Exists	Doesn't Exist
Pictures #s:	4,6,2,10,1,5	11,9,7,3,8

Sort #5: Criterion Used: Sites I prefer more			
Categories:	Low	Middle	High
Pictures #s:	3,8,11	9,10,7,1,5	4,2,6

Picture Sorting Session Recording Sheet # **13**

Participant Code: 13
Participant Name: Rania Sultan
Date: August, 18th, 2002
Location: Experimenter work place meeting room, at 12:00

Sort #1: Criterion Used: Crowded Interface		
Categories:	Crowded	To The Point
Pictures #s:	4,2,6,5,1	10,7,11,9,8,3

Sort #2: Criterion Used: Site with Multiple Frames		
Categories:	Yes	No
Pictures #s:	4,2,6,5,1	10,7,11,9,8,3

Sort #3: Criterion Used: Site Easy To Use		
Categories:	No	Yes
Pictures #s:	4,2,6,5,1	10,7,11,9,8,3

Comment: The participant commented that the easier sites to use are the sites which are "*To the Point*", providing list of items category on the first page

Sort #4: Criterion Used: Mono Language Vs Multi Language		
Categories:	Mono Language	Multi Language
Pictures #s:	4,8,3,5,1,10,2,6	9,11,7

Sort #5: Criterion Used: Search Command is obvious to notice		
Categories:	obvious	Not obvious
Pictures #s:	10,1,4,6,5,2	9,11,7,3,8

Comment: The participant commented that she would prefer to find the search button as the first thing to notice in the main page

Sort #6: Criterion Used: Advertising new books release		
Categories:	Yes	No
Pictures #s:	7,1,10,6,5,8,2,4	9,11,3

<div align="center">Picture Sorting Session Recording Sheet # **14**</div>

Participant Code: 14
Participant Name: Shady
Date: August, 18th, 2002
Location: Experimenter work place meeting room, at 01:00

Sort #1: Criterion Used: Colours I like more				
Categories:	Very Preferred	Preferred	Neutral	Not preferred	N/A
Pictures #s:	3	2	4	7	

Sort #2: Criterion Used: Site Ease of Use	
Categories:	Easy	Difficult
Pictures #s:	2,5,11,4,6	3,10,7,1,8,9

Sort #3: Criterion Used: Books Subjects	
Categories:	Islamic Books	Others
Pictures #s:	6,10,1,7	2,3,4,5,8,9,11

* After this sort, the participant went into a dry point; the experimenter conducted a Triadic elicitation with him which results of the following sort.

Sort #4: Criterion Used: Language	
Categories:	Arabic Language	English Language
Pictures #s:	10,6	4

Sort #5: Criterion Used: Best Seller Display	
Categories:	Yes	No
Pictures #s:	6,10	4

Picture Sorting Session Recording Sheet # **15**

Participant Code: 15
Participant Name: Amira Asaad
Date: August, 19th, 2002
Location: Researcher work's meeting room, at 02:00

Sort #1: Criterion Used: Site Language		
Categories:	Arabic Sites	Non Arabic Sites
Pictures #s:	10,11,6,1,7	3,4,8,5,9,2

Sort #2: Criterion Used: Sites selling only books Vs other products		
Categories:	Only books	Other products
Pictures #s:	6,1,11,9,10,8,3,4 ,7	2,5

Sort #3: Criterion Used: Books Types			
Categories:	Islamic books	Others	N/A
Pictures #s:	7,6,1	4,3,8,10,9, 11	2,5

* After this sort, the participant went into a dry point; the experimenter conducted a Triadic elicitation with him which results of the following sort.

Sort #4: Criterion Used: Existence of links irrelevant to the site's subject		
Categories:	Yes	No
Pictures #s:	4,3	11

B.9 Sorting Criteria Grouping by Independent Judgement

Site Language

Participant code	Criteria used
1	Site Language
1	Amount of Arabic used in the site
2	Site Language
3	Language with which site is designed
4	Site Language
5	Site Language
6	Support of Language
7	Browsing Language
8	Site Language
9	Web Site Language
10	Interface Language
11	Language Used
12	Language of Interface
13	Mon-Language vs. Multi-Language
14	Language
15	Site Language
15 Participants (100% of participants #)	16 criteria (20% of overall criteria)

Ways to Find Products

Participant code	Criteria used
1	Existing of command buttons
2	Ways to Find Books
3	Categorization of books
3	Existence of Top Seller books
4	Ways to Find Books
4	Site Includes a Menu Bar
6	Ways to Access Products
6	Product Search versus List Options
7	Books Display
8	Book Description Available
8	Items vs. Items categories listing
9	Availability of Top sellers on first page
9	Obviousness of book search
9	Site within I can quickly find the book I want
10	Clear Categorization of books
10	Easy to Notice Menus reflecting variety of books
11	Home Page includes book's details
11	Available ways to find a book
12	Listing books data Vs. Listing categories
12	Search Option
13	Search command is obvious to notice
13	Advertising new books release
14	Best Seller display
14 Participants (93% of participants #)	23 criteria (27% of overall criteria)

Type of Products

Participant code	Criteria used
4	Site Selling Religious Books
4	Site Selling Microsoft Books
5	Type of books available
6	Product Provided
7	Books Language
9	Site Selling other products beside books
10	Site Selling Islamic books
14	Books Subject
15	Sites selling only books Vs. other products
15	Books Type
8 Participants (53% of participants #)	10 criteria (11% of overall criteria)

Content of Information Displayed

Participant code	Criteria used
1	Content of Items presented in the page
2	Existing of advertising in the site
7	With vs. Without Frames
7	Advertising appearance
11	Home page busy with advertising
11	Advertising relevance to site subject
13	Crowded Interface
13	Site with multiple frames
15	Existence of links irrelevant to the site's subject
6 Participants (40% of participants #)	9 criteria (10% of overall criteria)

Familiarity with the Site

Participant code	Criteria used
2	Site has a web-standard look
2	Site with famous repetition
3	Physical Library versus Cyber E-Commerce Site
3	Existence of Site Description
3	Card represents main Vs inside page of the home
5	Familiarity with the site
5	Site Nationality
6	Site I already used in buying things online
10	Site nationality
10	Virtual site Vs. Real Book store
10	Looks like a home page Vs. inside page
5 Participants (33% of participants #)	11 criteria (13% of overall criteria)

Ease of Use

Participant code	Criteria used
4	Products are Easy to Buy
6	Friendly Site
6	Site Easy to Use
13	Site easy to use
14	Easy to use
4 Participants (33% of participants #)	5 criteria (7% of overall criteria)

Site Interface

Participant code	Criteria used
6	Interface Ranking
8	Attractive Interface
9	Cheerful Interface
3 Participants (33% of participants #)	3 criteria (6% of overall criteria)

Site Colours

Participant code	Criteria used
1	Dominant Colour in the Page
7	Background Colour
12	Attractive colours
14	Colours I like more
4 Participants (26% of participants #)	4 criteria (5% of overall criteria)

Site Preference

Participant code	Criteria used
10	Site I will prefer to use when I search for books
12	Sites I prefer more
11	Site delivering the right message
3 Participants (7% of participants #)	3 criteria (1% of overall criteria)

Others

Participant code	Criteria used
2	Scroll bars direction
5	Selling on line feature
8	Author's Link
3 Participants (7% of participants #)	3criteria (1% of overall criteria)

B.10 Number of Respondents Using Constructs in Super-Ordinate Construct Groups

Super-ordinate construct	Non-IT specialists	IT-Specialists	Total
Site language	4	7	11
Categorisation of content	2	4	6
Search method	2	4	6
Use of adverts	3	2	5
General interface appearance	1	3	4
Ease of use	2	1	3
Content: Islamic books	2	1	3
Content: Product range	0	3	3
Real store	1	1	2
Appears to be a home page	1	1	2
Use of command buttons / tabs	1	1	2
Use of frames	1	1	2
Familiarity / reputation	1	1	2
Subjective preference	1	1	2
Online buying (ability / ease)	1	1	2
Screen clutter	2	0	2
Presence of book descriptions	2	0	2
Site nationality	2	0	2
Use of colour (subjective)	1	1	2
Colours used (objective)	1	0	1
Book language	0	1	1
Right message	1	0	1
Scroll bar position	0	1	1
Already use site	0	1	1
Search speed	0	1	1
Top sellers list feature	0	1	1
Total super-ordinate constructs	**32**	**38**	**70**

B.11 Respondents to Forced Sorting Session

#	Willing to Buy From	Not Willing to Buy From	Comments	Other Sorting Criteria
1	1,2,5,3,4	6,7,8,9,10,11	• Famous sites	• Site has command buttons
2	1,2,3,4,6	5,7,8,9,10,11	• Sites I used before • Famous sites • Sites have a professional look • Looks like Amazon • Sites are not located in Cairo, so I can't get it from the library	• Site with famous reputations
3	1,2,4	3,5,6,7,8,9,10,11	• Known for me • Secured	• Categorization of books • Card represent site's main page
4	All of them		▪ But I've concerns about credit card security	
5	1,2,4,8	3,5,6,7,9,10,11	• Famous sites	• Familiarity with the site
6	1,2	3,4,5,6,7,8,9,10,11	• Amazon is a famous site and E-Kotob interface looks like Amazon Interface • Contains all subjects that I may need	• Friendly site • Ways to access products • Search and list options for products • Excellent interface ranking
7	None of them	All	• I am not willing to buy from the internet as I do not trust the security for my credit card	
8	2,3	1,4,5,6,7,8,9,10,11	• All the people I know use only these two sites	• Book Description Available • Item's Category List
11	2	1,4,3,5,6,7,8,9,11	• Sites used and recommended by my colleagues	• Site delivering the right message • Busy interface • Books data displayed
12	1,2,3,4,6,11	5,7,8,9,10	• Articles of books in the printed pages r interesting for me	
13	1,2,3,4,6	5,7,8,9,10,11	• These sites have large collection of books and they are easy to use	• Mono Language
14	4,2	1,3,5,6,7,8,9,10,11	▪ Famous sites	• Site easy to use
15	2,4,	1,3,5,6,7,8,9,10,11	▪ I would trust these sites more as I already used them before	▪ Non Arabic sites

B.12 Summary of the Willingness to Buy Responds

Participant Name	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11
Mohamed F.	+	+	+	+	+	-	-	-	-	-	-
Mayssa	+	+	+	+	-	+	-	-	-	-	-
Maha	+	+	-	+	-	-	-	-	-	-	-
Alaa	+	+	+	+	+	+	+	+	+	+	+
Medhat	+	+	-	+	-	-	-	+	-	-	-
Mohamed	+	+	+	+	-	+	-	-	-	-	+
George	+	+	-	-	-	-	-	-	-	-	-
Shady	-	+	-	+	-	-	-	-	-	-	-
Reem	-	+	-	-	-	-	-	-	-	-	-
Amira	-	+	-	+	-	-	-	-	-	-	-
Ismail	-	+	+	+	-	-	-	-	-	-	-
Rasha	-	+	+	-	-	-	-	-	-	-	-
Rania	+	+	+	+	-	+	-	-	-	-	-

- Not Willing to Buy from that Site   + Willing to Buy from that Site

B.13 Cluster Analysis Screen Shot for the "Site Language" Criterion
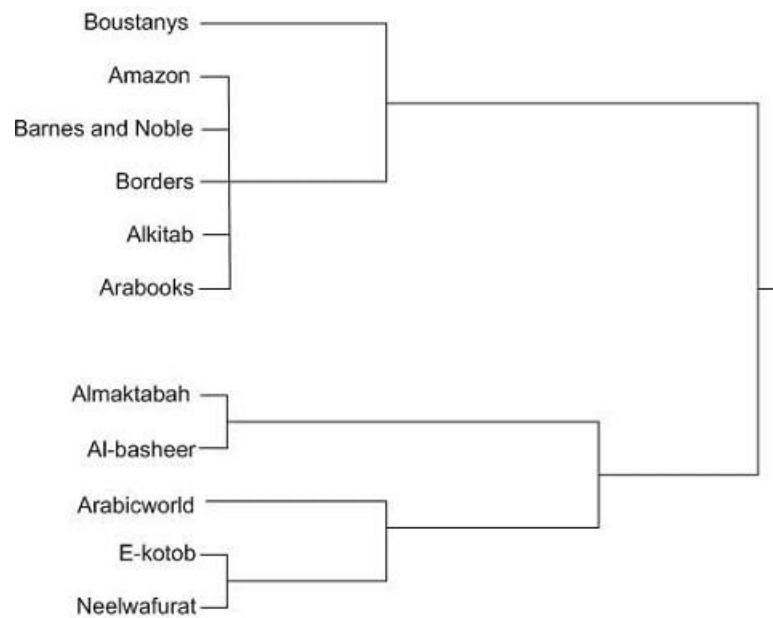
APPENDIX C

EXPERIENTIAL SURVEY SETTING APPENDIX

C.1 List of Items and Scales for the Research Constructs

Perceived Familiarity (PFAM)

The original items and scales as drawn from Gefen (2000) are listed as following:

"Please indicate your agreement with the next set of statements using the following rating scale:"

1	2	3	4	5	6	7
Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree

	Strongly Agree	Strongly Disagree

1. I am familiar with searching for books at this store ⟶ 1 2 3 4 5 6 7

2. I am familiar with buying books at this store ⟶ 1 2 3 4 5 6 7

3. I am familiar with this store ⟶ 1 2 3 4 5 6 7

4. I am familiar with inquiring about book ratings at this store ⟶ 1 2 3 4 5 6 7

Perceived Reputation (PREP)

The original items and scales as drawn from Jarvenpa et al (2000) are listed as following:

"Please indicate your agreement with the next set of statements using the following rating scale:"

1	2	3	4	5
Strongly disagree	**Disagree**	**Neither disagree no agree**	**Agree**	**Strongly agree**

	Strongly Disagree				Strongly Agree
1. This store has a bad reputation in the market (reverse)	1	2	3	4	5
2. This store is well known	1	2	3	4	5
3. This store has a good reputation	1	2	3	4	5

Trust (TRST)

The original items and scales as drawn from Gefen (2000) are listed as following:

"Please indicate your agreement with the next set of statements using the following rating scale:"

1	2	3	4	5	6	7
Strongly agree	**Agree**	**Somewhat agree**	**Neutral**	**Somewhat disagree**	**Disagree**	**Strongly disagree**

	Strongly Agree						Strongly Disagree
1. I trust this store	1	2	3	4	5	6	7
2. I believe that this store is trustworthy	1	2	3	4	5	6	7
3. I would not hesitate to provide personal information to this store	1	2	3	4	5	6	7

Attitude (ATT)

The original items and scales as drawn from Jarvenpaa et al (2000) are listed as following:

"Please indicate your agreement with the next set of statements using the following rating scale:"

1	2	3	4	5
Strongly disagree	**Disagree**	**Neither disagree no agree**	**Agree**	**Strongly agree**

	Strongly Disagree				Strongly Agree
1. The idea of using the Internet to shop from this store is appealing	1	2	3	4	5
2. I like the idea of using the Internet to shop from this store	1	2	3	4	5
3. Using the Internet to shop from this store is a good idea	1	2	3	4	5

Willingness to Buy (WTB)

The original items and scales as drawn from Jarvenpaa et al (2000) are listed as following:

"Please indicate your agreement with the next set of statements using the following rating scale:"

1	2	3	4	5
Strongly disagree	**Disagree**	**Neither disagree no agree**	**Agree**	**Strongly agree**

	Strongly Disagree				Strongly Agree
1. I am very likely to return to this store's web site	1	2	3	4	5
2. I am very likely to consider purchasing from this store in the next three months	1	2	3	4	5
3. I am very likely to consider purchasing from this store in the next year	1	2	3	4	5

Uncertainty Avoidance (UA)

The original items and scales as drawn from Hofstede (1994) are listed as following:

1. How often do you feel nervous or tense at work?
   1. Never
   2. Seldom
   3. Sometimes
   4. Usually
   5. Always

"To what extent do you agree or disagree with each of the following statements?
(Please circle one answer in each line across)"

   1 = strongly agree
   2 = agree
   3 = undecided
   4 = disagree
   5 = strongly disagree

2. One can be a good manager without having precise answers   1   2   3   4   5

   to most questions that subordinates may raise about their work

3. Competition between employees usually does more harm   1   2   3   4   5

   than good

4. A company's or organization's rules should not be broken   1   2   3   4   5

   not even when the employee thinks it is in the company's

   best interest

Technology Familiarity (TECHFM)

The original items and scales as drawn from O'keefe at al (2000) are listed as following:

"Please tick the appropriate check box that represents your extent of using each of the technologies/ services:"

	Never	Rarely	Occasionally	Frequently
1. Chat-rooms	☐	☐	☐	☐
2. Electronic Mail	☐	☐	☐	☐
3. File Transfer Protocol (FTP)	☐	☐	☐	☐
4. HTML	☐	☐	☐	☐
5. Java	☐	☐	☐	☐
6. JavaScript	☐	☐	☐	☐
7. VBScript	☐	☐	☐	☐
8. Active Server Pages (ASP)	☐	☐	☐	☐
9. CGI	☐	☐	☐	☐
10. List Servers	☐	☐	☐	☐
11. Newsgroups	☐	☐	☐	☐
12. Telnet	☐	☐	☐	☐
13. URLs	☐	☐	☐	☐
14. VRML	☐	☐	☐	☐
15. WAIS	☐	☐	☐	☐
16. WWW (World Wide Web)	☐	☐	☐	☐
17. Web Search engines? (e.g. Yahoo, Lycos, Infoseek, ect.)	☐	☐	☐	☐
18. Web Browsers? (e.g. Netscape, Internet Explorer, ect.)	☐	☐	☐	☐

The 2-item reduced version of the scale used in this thesis consists of items 17 and 18.

Internet Usage (IUSE)

The original items and scales as drawn from O'keefe at al (2000) are listed as following:

	Less than 6 months	1 year	2-3years	More than 3 years
1. How would you rate yourself as a user of the Internet technology and services?	☐	☐	☐	☐

	Novice	Intermediate	Professional
2. For how long have you been using the Internet?	☐	☐	☐

	Yes	No
3. Have you ever purchased anything online via the Internet?	☐	☐

	Never	Rarely	Occasionally	Frequently
4. If yes, how often did you purchase items on line?	☐	☐	☐	☐

Internet Shopping Risk Attitude (IRSK)

The original items and scales as drawn from Jarvenpaa at al (2000) are listed as following:

"Please indicate your agreement with the next set of statements using the following rating scale:"

1	2	3	4	5
Strongly disagree	**Disagree**	**Neither disagree no agree**	**Agree**	**Strongly agree**

	Strongly Disagree				Strongly Agree
1. I would feel safe completing commercial transactions over the Internet	1	2	3	4	5
2. There is too much uncertainty associated with shopping on the Internet	1	2	3	4	5
3. Compared with other ways of shopping, buying on the Internet would be more risky	1	2	3	4	5

C.2 List of Survey Items

Name of Construct	Origin from Literature	Items of Construct
PFAM Perceived Familiarity	Gefen (2000)	- I am familiar with searching for books at this store - I am familiar with buying books at this store - I am familiar with this store - I am familiar with inquiring about book ratings at this store
PREP Perceived Reputation	Jarvenpaa et al. (2000)	- This store has a bad reputation in the market - This store is well known - This store has a good reputation
UA Uncertainty Avoidance	Hofstede (1994)	- How often do you fee nervous or tense at work - One can be a good manager without having precise answers to most questions that subordinates may raise about their work - Competition between employees usually does more harm than good - A company's or organization's rules should not be broken not even when the employee thinks it is in the company's best interest
TRST Trust in Internet Store	Gefen (2000)	- I trust this store - I believe that this store is trustworthy - I would not hesitate to provide personal information to this store
ATT Attitude toward Internet Store	Jarvenpaa et al. (2000)	- The idea of using the Internet to shop from this store is appealing - I like the idea of using the Internet to shop from this store - Using the Internet to shop from this store is a good idea
WTB Willingness to Buy from Internet Store	Jarvenpaa et al. (2000)	- I am very likely to return to this store's web site - I am very likely to consider purchasing from this store in the next 3 months - I am very likely to consider purchasing from this store in the next year
TECHFM Technology Familiarity	O'Keefe et al. (2000)	- How often do you use Web search engines (e.g. Yahoo, Lycos, Infoseek, ect.) - How often do you use Web browsers (e.g. Netscape, Internet Explorer, ect.)
IUSE Internet Usage	O'Keefe et al. (2000)	- How would you rate yourself as a user of the Internet technology and services - For how long have you been using the Internet - Have you ever purchased anything online via the Internet - If yes, how often did you purchase items on line
IRSK Internet Shopping Risk Attitude	Jarvenpaa et al. (2000)	- I would feel safe completing commercials transaction over the Internet - There is too much uncertainty associated with shopping on the Internet - Compared with other ways of shopping, buying on the Internet would be more risky

C.3 Pre-Experiential Survey: English Version

Dear colleagues:

I am currently conducting a study on Web usability for Egyptian users. I am questioning how Egyptian users perceive and use Internet in general and the Internet stores in specific. I will be surveying technology professionals, and other professionals regarding their uses of the Internet. Through this process, I hope to learn more about how we, the Egyptians, are using the Internet for shopping, and how this intersects with other issues concerning our culture.

I have a survey that I would very much like you to fill out. And I will be happy to make available to you the results of the study when it is completed.
Will you be so kind as to take a few minutes to complete the attached survey?

If you like, you can provide your e-mail address bellow, **ONLY IF** you want a copy of the survey's results.

Participant E-Mail: @_

I will be also doing interviews with some of the survey takers, please inform me if you would like to be part of these interviews

I want to participate in future interviews   Yes ☐   No ☐

Thank you

Ghada Refaat El Said

grefaat@aedegypt.org

August 2003

▶**P**lease Circle the Appropriate Category

1	Your gender	Male		Female							
2	Your age range	Under 20	20-24	25-29		30-34	35-39	40-49	50-59	Over 60	
3	How many years of formal school education did you complete(including primary)?	10 years or less	11 years	12 years	13 years	14 years	15 years	16 years	17 years	18 years or more	
4	How do you rate your English language?	Novice		Intermediate				Professional			
5	How would you rate yourself as a user of the Internet	Novice		Intermediate				Professional			
6	Do you use credit cards in general?	Yes		No							
7	**If Yes** How many times have you given your credit card number on the web?	Never		Rarely		Occasionally		Frequently			
8	How often do you use Web search engines	Never		Rarely		Occasionally		Frequently			
9	How often do you use Web browsers	Never		Rarely		Occasionally		Frequently			
10	For how long have you been using the Internet	1 year or less		2-3 years		4-5 years		6 years or more			
11	Have you ever purchased anything via the Internet?	Yes		No							
12	**If Yes,** how often did you purchase items on line	Rarely				Occasionally		Frequently			
13	What language do you prefer for Internet sites?	Arabic		English		Arabic & English		Does not Matter			
14	What is the payment method you would feel comfortable with when buying from the Internet?	Other, like …………..				Credit Card		Pay on delivery			

15	What is the delivery method you would feel comfortable with when buying from the Internet?	Other, like …………...	By Post	By Hand

►To what extent do you agree or disagree with each of the following statements? (Please circle one answer in each line across)

16	I would feel safe completing commercials transaction over the Internet	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
17	There is too much uncertainty associated with shopping on the Internet	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
18	Compared with other ways of shopping, buying on the Internet would be more risky	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree

►To what extent do you agree or disagree with each of the following statements? (Please circle one answer in each line across)

		Strongly Agree	**Agree**	**Neither Agree No Disagree**	**Disagree**	**Strongly Disagree**
19	One can be a good manager without having precise answers to most questions that subordinates may raise about their work	1	2	3	4	5
20	Competition between employees usually does more harm than good	1	2	3	4	5
21	A company's rules should not be broken not even when the employee thinks it is in the company's best interest	1	2	3	4	5
22	How often do you feel nervous or tense at work?	**Never**	**Seldom**	**Sometimes**	**Usually**	**Always**
		1	2	3	4	5

C.4 Post-Experiential Survey: English Version

►**P**lease Circle the Appropriate Category

1	Did you ever use this Store for (1) Buying	Yes		No	
	(2) Searching for books	Yes		No	
	If Yes, how often did you purchase items online from this store	Rarely	Occasionally		Frequently

►**P**lease Circle the Appropriate Category, **Even** if you never used this store before

		strongly agree	agree	neither agree nor disagree	disagree	strongly disagree
2	This site offers a payment method that I would feel comfortable using	1	2	3	4	5
3	This site offers a delivery method that I would feel comfortable using	1	2	3	4	5
4	I am familiar with searching for books at this store	1	2	3	4	5
5	This store is well known	1	2	3	4	5
6	I trust this store	1	2	3	4	5
7	I am likely to return to this store's web site	1	2	3	4	5
8	I am familiar with buying books at this store	1	2	3	4	5
9	This store has a bad reputation in the market	1	2	3	4	5
10	The idea of using the Internet to shop from this store is appealing.	1	2	3	4	5
11	I believe that this store is trustworthy	1	2	3	4	5
12	I would not hesitate to provide personal information to this store	1	2	3	4	5

13	I am familiar with this store	1	2	3	4	5
14	This store has a good reputation	1	2	3	4	5
15	I like the idea of using the Internet to shop from this store	1	2	3	4	5
16	I am likely to consider purchasing from this store in the next 3 months	1	2	3	4	5
17	I am familiar with inquiring about book ratings at this store	1	2	3	4	5
18	Using the Internet to shop from this store is a good idea	1	2	3	4	5
19	I am likely to consider purchasing from this store in the next year	1	2	3	4	5
20	This store wants to be known as one who keeps promises and commitments	1	2	3	4	5
21	I prefer to use this store language when dealing in general with the Internet	1	2	3	4	5
22	I trust this store keeps my best interests in mind	1	2	3	4	5

►If you have indicated that you are unlikely to shop from this store in the future, what is your main reasons?

....

....

....

....

C.5 Pre-Experiential Survey: Arabic Version

زملائي الأعزاء

تحية طيبة وبعد،،،

أود إبلاغكم بأني أجري حالياً دراسة حول "سهولة استخدام الأنترنت للمستخدمين المصريين" أتناول فيها نظرة المستخدم المصري للإنترنت واستخدامه لها، ويتعامل ذلك البحث مع متخصصي التكنولوجيا وغيرهم من المتخصصين حول استخدامهم للإنترنت.

ولدي هنا استبيان أرجو أن تتفضلوا بملئه، ويسعدني أن أزودكم بنتائج الدراسة فور اكتمالها.

كل ما أرجوه منكم هو بضع دقائق لاستكمال الاستبيان المرفق، وأن تزودونني ببريدكم الإلكتروني **في حالة** اذا ما اردتم نسخة من نتائج الدراسة

البريد الإلكتروني للمشارك:

_____@_____

كما أود إحاطتكم بأنني أعد حالياً لإجراء عدد من المقابلات الشخصية مع بعض المشاركين، ويسعدني أن تبدوا موقفكم بالقبول أو الرفض لعقد هذه المقابلة الشخصية كما هو مبين أدناه:

أقبل بالمشاركة في المقابلة الشخصية: ☐ نعم ☐ لا
ولكم جزيل الشكر،،،

غادة رفعت السعيد

grefaat@aedegypt.org

أغسطس2003

الجزء الديموجرافي

◄ برجاء وضع دائرة حول واحدة فقط من الإجابات في كل سطر

1	برجاء تحديد النوع	ذكر		أنثى					
2	برجاء تحديد السن	دون 20	24-20	29-25	34-30	39-35	49-40	59-50	60 عاما أو أكبر
3	كم عدد السنوات التي قضيتها في التعليم بما في ذلك المدرسة الابتدائية؟	10 سنوات أو أقل	11 سنة	12 سنة	13 سنة	14 سنة	15 سنة	16 سنة	17 سنة	18 سنة أو أكثر
4	كيف تقيم مستواك في الإنجليزية؟	مبتدئ		متوسط			محترف		
5	كيف تقيم نفسك كمستخدم للإنترنت؟	مبتدئ		متوسط			محترف		
6	هل تستخدم بطاقات الائتمان؟	نعم		لا					
7	**إذا كانت الإجابة "نعم"**، كم مرة أعطيت فيها رقم بطاقتك الائتمانية عبر الأنترنت؟	لا على الإطلاق		نادراً		أحياناً		تكرر حدوث ذلك		
8	ما هو معدل استخدامك لمحركات البحث Search Engines مثل Yahoo	لا على الإطلاق		نادراً		أحياناً		تكرر حدوث ذلك		
9	ما هو معدل استخدامك لمستعرضات الويب Browsers مثل Netscape	لا على الإطلاق		نادراً		أحياناً		تكرر حدوث ذلك		
10	منذ متى وأنت تستخدم الإنترنت؟	سنة أو أقل		من 2 إلى 3 سنوات		من 4 إلى 5 سنوات		5 سنوات أو أكثر		
11	هل قمت بأية عملية شرائية مباشرة عبر الإنترنت؟	نعم		لا					
12	**إذا كانت الإجابة "نعم"**، ما هو معدل قيامك بذلك؟	نادراً		أحياناً		تكرر حدوث ذلك		
13	ما هي اللغة التي تفضل استخدامها على الإنترنت؟	عربي		إنجليزي		إنجليزي & عربي		لا يهم	
14	ما هي طريقة الدفع التي تفضل أن تشترى بها من على الأنترنت؟	أخرى، مثل		بطاقة الأثمان		الدفع عند التسلم		

15	ما هي الطريقة التى تفضل أن تستلم بها ما أشتريته من على الأنترنت؟	أخرى، مثل	البريد	يدأ ليد

◄ إلى أي مدى تتفق أو تختلف مع كل من العبارات التالية؟ (برجاء وضع دائرة حول واحدة فقط من الإجابات في كل سطر)

16	أشعر بالأمان عند إنهاء المعاملات التجارية عبر الإنترنت	أتفق تماما	أتفق	لا أتفق ولا اختلف	اختلف	اختلف تماماً
17	يقترن التسوق عبر الإنترنت بكثير من الشك	أتفق تماما	أتفق	لا أتفق ولا اختلف	اختلف	اختلف تماماً
18	تزيد مخاطر الشراء عبر الإنترنت عن الطرق الأخرى للتسوق	أتفق تماما	أتفق	لا أتفق ولا اختلف	اختلف	اختلف تماماً

◄ مع استبعاد وظيفتك الحالية، برجاء التفكير في وظيفة أخرى ترى أنها مثالية، وأن تحدد مدى أهمية هذه الوظيفة لك عند الاختيار (برجاء وضع دائرة حول واحدة فقط من الإجابات في كل سطر):

		ذات أهمية قصوى	هامة جداً	متوسطة الأهمية	منخفضة الأهمية	غير هامة
19	توافر وقت كافٍ لحياتك الشخصية وحياتك العائلية	1	2	3	4	5
20	توافر ظروف عمل جيدة (تهوية وإضاءة جيدة الخ)	1	2	3	4	5
21	توافر علاقات عمل جيدة مع رؤسائك المباشرين	1	2	3	4	5
22	توافر تأمين وظيفي	1	2	3	4	5
23	العمل مع أفراد يبدون قدراً كبيراً من التعاون مع بعضهم	1	2	3	4	5
24	أن يستشيرك رئيسك المباشر في القرارات التي يتخذها	1	2	3	4	5
25	توافر فرص الترقي إلى وظائف أعلى	1	2	3	4	5
26	توافر عنصر التنوع والمغامرة في وظيفتك	1	2	3	4	5

◄ ما مدى أهمية كل من العناصر التالية لك في حياتك الخاصة؟ (برجاء وضع دائرة حول واحدة فقط من الإجابات في كل سطر)

		ذات أهمية قصوى	هامة جداً	متوسطة الأهمية	منخفضة الأهمية	غير هامة
27	الاستقرار الشخصي	1	2	3	4	5
28	الاستقرار الاقتصادي	1	2	3	4	5
29	الإصرار (المثابرة)	1	2	3	4	5
30	احترام التقاليد	1	2	3	4	5
31	ما هو معدل شعورك بالتوتر في العمل؟	لا يحدث ابدا	نادراً	أحيانا	عادة	دائما
		1	2	3	4	5
32	من واقع خبراتك، إلى إي مدى يخشى المرؤوسون التعبير عن عدم اتفاقهم مع رؤسائهم؟	لا يحدث ابدا	نادراً	أحيانا	عادة	دائما
		1	2	3	4	5

◄ إلى أي مدى تتفق أو تختلف مع كل من العبارات التالية؟ (برجاء وضع دائرة حول واحدة فقط من الإجابات في كل سطر):

		أتفق تماما	أتفق	لا أتفق ولا اختلف	اختلف	اختلف تماماً
33	يمكن الثقة في معظم الناس	1	2	3	4	5
34	يمكن للمرء أن يصبح مديراً جيداً دون أن يكون له إجابات	1	2	3	4	5

	على معظم الأسئلة التي قد يطرحها المرؤوسون					
35	يجب تجنب الهيكل التنظيمي الذي يشرف فيه اثنين من الرؤساء على بعض العاملين مهما اختلفت التكاليف	1	2	3	4	5
36	المنافسة بين الموظفين يكون عادةً ضررها أكثر من نفعها	1	2	3	4	5
37	يجب عدم خرق قواعد الشركة أو المنظمة حتى ولو ظن الموظفون أن ذلك يصب في مصلحة الشركة	1	2	3	4	5
38	لا يلوم المرء عند فشله في حياته إلا نفسه	1	2	3	4	5

C.6 Post-Experiential Survey: Arabic Version

◄ برجاء وضع دائرة حول واحدة فقط من الإجابات في كل سطر

39أ	هل استخدمت مخزن الإنترنت هذا (Amazon.com) من قبل (1) فى شراء منتجات	لا	نعم
	(2) فى البحث عن منتجات	لا	نعم
	إذا كانت الإجابة "نعم"، كم مرة أشتريت من هذا المخزن من قبل؟	دائما أحيانا	نادراً

◄ برجاء وضع دائرة حول واحدة فقط من الإجابات في كل سطر، **حتى** اذا لم تكن أستخدمت فذا المخزن من قبل

		أتفق تماماً	أتفق	لا أتفق ولا اختلف	اختلف	اختلف تماماً
40أ	عند الشراء من الأنترنت، أفضل طريقة الدفع المتبعة فى هذا المخزن: بطاقة الأئتمان	1	2	3	4	5
41أ	عند الشراء من الأنترنت، أفضل طريقة التسلم المتبعة فى هذا المخزن:عن طريق البريد	1	2	3	4	5
42أ	أنا معتاد على البحث على الكتب في هذا المخزن	1	2	3	4	5
43أ	هذا المخزن معروف جيداً	1	2	3	4	5
44أ	أثق في هذا المخزن	1	2	3	4	5
45أ	من المحتمل أني سأعود إلى موقع الويب الخاص بهذا المخزن	1	2	3	4	5
46أ	أنا معتاد على شراء الكتب من هذا المخزن	1	2	3	4	5
47أ	هذا المخزن له سمعة سيئة في السوق	1	2	3	4	5
48أ	إن فكرة استخدام الإنترنت للتسوق من هذا المخزن تعتبر فكرة جذابة	1	2	3	4	5
49أ	أؤمن بأن هذا المخزن جدير بالثقة	1	2	3	4	5
50أ	لن أتردد في توفير بعض من معلوماتي شخصية لهذا المخزن	1	2	3	4	5
51أ	أنا معتاد على هذا المخزن	1	2	3	4	5
52أ	هذا المخزن له سمعة جيدة	1	2	3	4	5
53أ	أبدي إعجابي بفكرة استخدام الإنترنت للتسوق من هذا المخزن	1	2	3	4	5
54أ	من المحتمل أن أفكر في الشراء من هذا المخزن خلال الثلاثة أشهر القادمة	1	2	3	4	5
55أ	أنا معتاد على الاستفسار عن تقييم الكتب من هذا المخزن	1	2	3	4	5

		1	2	3	4	5
أ56	إن فكرة استخدام الإنترنت للتسوق من هذا المخزن تعتبر فكرة جيدة	1	2	3	4	5
أ57	من المحتمل أن أفكر في الشراء من هذا المخزن خلال السنة القادمة	1	2	3	4	5
أ58	أنا أرى أن هذا المخزن يرغب في أن يشتهر بأنه يفي بالعهود و يحافظ على الألتزامات	1	2	3	4	5
أ59	أنا أفضل استخدام اللغة المستخدمه في هذا المخزن (الانجليزية) لتصفح الإنترنت	1	2	3	4	5
أ60	أنا أثق أن هذا المخزن سيأخذ أهتماماتى بعين الأعتبار	1	2	3	4	5

◄ فى حالة ابداء **عدم** رغبتك فى التسوق من هذا المخزن، برجاء تحديد الأسباب

....

....

....

C.7 Screen Shots of the English E-Commerce Site: www.Amazon.com (July 2003)

C.8 Screen Shots of the Arabic E-Commerce Site: www.E-Kotob.com (July 2003)

C.9 Experiential Survey Introductory Statement

BRUNEL UNIVERSITY

Introductory statement

*"Thank you for taking part in this experiment. I am an Egyptian PhD student interested in investigating the cultural effects on consumer behaviour in electronic commerce; to do this I require information and opinions from Egyptian Internet users like you. Over the next **60 minutes** I will ask you to perform few tasks on two electronic commerce sites. While you are working on both sites, please feel free to ask questions, and discuss what you are experiencing. After you finish working on each site, you will have a questionnaire to complete. You will also have some time at the end of the session to discuss you experience.*

Please note that you have the freedom to withdraw any task at any time.
Please also remember that I am not testing you, I am testing how an e-commerce site would appeal for Egyptian Internet users in general".

Thank you for your time and effort.

Ghada Refaat El Said, Ph.D. Candidate
Brunel University, Department of Information Systems, Computing and Mathematics
Grefaat@equipegypt.org

Main supervisor: Dr. Kate Hone, Brunel University, UK.
Local supervisor: Dr. Galal H. Galal, Faculty of Computing and Information, Cairo University.

APPENDIX D

EXPERIENTIAL SURVEY DATA ANALYSIS APPENDIX

D.1 Missing Entries of Questionnaire Items

Amazon Site	Missing Entries
Familiar with Searching Books at Amazon	8
I am Familiar with Buying Books at Amazon	11
I am Familiar with Amazon	5
I am Familiar with Inquiring about Book Ratings at Amazon	7
Amazon is well Known	10
Amazon has a Bad Reputation in Market	7
Amazon has a Good Reputation	3
I Trust Amazon	5
I Believe that Amazon is Trustworthy	2
I Would not Hesitate to Provide Personal Information to Amazon	8
Amazon Wants to be known as one who keeps promises and commitments	9
I Trust Amazon keeps my Best Interests in Mind	8
The Idea of Using Amazon to Shop is Appealing	5
I Like the Idea of Using the Internet to Shop from Amazon	4
Using the Internet to Shop from Amazon is a Good Idea	6
I am Likely to Return to Amazon Site	8
I am Likely to Consider Purchasing from Amazon in the Next 3 Months	5
I am Likely to Consider Purchasing from Amazon in the Next Year	3
I Prefer to Use English when Dealing with the Internet in General	3
E-Kotob Site	
Familiar with Searching Books at E-Kotob	8
I am Familiar with Buying Books at E-Kotob	9
I am Familiar with E-Kotob	6
I am Familiar with Inquiring about Book Ratings at E-Kotob	5
E-Kotob is well Known	7
E-Kotob has a Bad Reputation in Market	7
E-Kotob has a Good Reputation	4
I Trust E-Kotob	8
I Beleive that E-Kotob is Trustworthy	5
I Would not Hesitate to Provide Personal Information to E-Kotob	4
E-Kotob Wants to be known as one who keeps promises and commitments	9
I Trust E-Kotob keeps my Best Interests in Mind	7
The Idea of Using E-Kotob to Shop is Appealing	6
I Like the Idea of Using the Internet to Shop from E-Kotob	3
Using the Internet to Shop from E-Kotob is a Good Idea	6
I am Likely to Return to E-Kotob Site	5
I am Likely to Consider Purchasing from E-Kotob in the Next 3 Months	4
I am Likely to Consider Purchasing from E-Kotob in the Next Year	6
I Prefer to Use English when Dealing with the Internet in General	2

D.2 UA Value for the Three Cultural Groups

Cultural Group	Sample Size	Minimum Value of UA	Maximum Value of UA	Mean
High UA	122	90	255	135
Medium UA	112	35	85	58.3
Low UA	115	0	30	21.35

D.3 Data Normality Tests

Amazon Site	Kolmogorov-Smirnov		
	Statistic	df	Sig.
Familiar with Searching Books at Amazon	.169	305	.000
I am Familiar with Buying Books at Amazon	.221	305	.000
I am Familiar with Amazon	.170	305	.000
I am Familiar with Inquiring about Book Ratings at Amazon	.190	305	.000
Amazon is well Known	.264	305	.000
Amazon has a Bad Reputation in Market	.259	305	.000
Amazon has a Good Reputation	.215	305	.000
I Trust Amazon	.246	305	.000
I Beleive that Amazon is Trustworthy	.264	305	.000
I Would not Hesitate to Provide Personal Information to Amazon	.221	305	.000
Amazon Wants to be known as one who keeps promises and commitments	.238	305	.000
I Trust Amazon keeps my Best Interests in Mind	.226	305	.000
The Idea of Using Amazon to Shop is Appealing	.292	305	.000
I Like the Idea of Using the Internet to Shop from Amazon	.280	305	.000
Using the Internet to Shop from Amazon is a Good Idea	.307	305	.000
I am Likely to Return to Amazon Site	.272	305	.000
I am Likely to Consider Purchasing from Amazon in the Next 3 Months	.209	305	.000
I am Likely to Consider Purchasing from Amazon in the Next Year	.200	305	.000
I Prefer to Use English when Dealing with the Internet in General	.311	305	.000

E-Kotob.com	Kolmogorov-Smirnov		
	Statistic	df	Sig.
Use E-Kotob to Buy	.392	18	.000
Use E-Kotob to Search	.334	18	.000
How Often Buy from E-Kotob	.435	18	.000
Prefered Pay Method: Pay when Deliver	.272	18	.001
Prefered Deliver Method: By Hand	.414	18	.000
Familiar with Searching Books at E-Kotob	.168	18	.195
I am Familiar with Buying Books at E-Kotob	.203	18	.048
I am Familiar with E-Kotob	.234	18	.010
I am Familiar with Inquiring about Book Ratings at E-Kotob	.274	18	.001
E-Kotob is well Known	.221	18	.020
E-Kotob has a Bad Reputation in Market	.306	18	.000
E-Kotob has a Good Reputation	.279	18	.001
I Trust E-Kotob	.261	18	.002
I Beleive that E-Kotob is Trustworthy	.291	18	.000
I Would not Hesitate to Provide Personal Information to E-Kotob	.297	18	.000
E-Kotob Wants to be known as one who keeps promises and commitments	.322	18	.000
I Trust E-Kotob keeps my Best Interests in Mind	.291	18	.000
The Idea of Using E-Kotob to Shop is Appealing	.301	18	.000
I Like the Idea of Using the Internet to Shop from E-Kotob	.412	18	.000
Using the Internet to Shop from E-Kotob is a Good Idea	.399	18	.000
I am Likely to Return to E-Kotob Site	.250	18	.004
I am Likely to Consider Purchasing from E-Kotob in the Next 3 Months	.279	18	.001
I am Likely to Consider Purchasing from E-Kotob in the Next Year	.279	18	.001
I Prefer to Use English when Dealing with the Internet in General	.336	18	.000

D.4 T-Test between Responses for both Sites

T-Test
Paired Samples Test

Perceived Familiarity for Internet stores

		Sig. (2-tailed)
Pair 1	q42.A - q42.B	.000
Pair 2	q46.A - q46.B	.012
Pair 3	q51.A - q51.B	.000
Pair 4	q55.A - q55.B	.000

		Sig. (2-tailed)
Pair 1	FAMAMAZ-FAMKOT	.000

Perceived Repetition for Internet stores

		Sig. (2-tailed)
Pair 1	q43.A - q43.B	.000
Pair 2	q47.A - q47.B	.000
Pair 3	q52.A - q52.B	.000

		Sig. (2-tailed)
Pair 1	REPAMAZ-REPKOT	.000

Trust for Internet stores

		Sig. (2-tailed)
Pair 1	Q58.A – q58.B	.000
Pair 2	Q60.A – q60.B	.000

		Sig. (2-tailed)
Pair 1	TRSTAMAZ-TRSTKOT	.000

Attitude toward Internet stores

		Sig. (2-tailed)
Pair 1	Q56.A – q56.B	.012
Pair 2	Q53.A – q53.B	.001
Pair 3	Q48.A – q48.B	.003

		Sig. (2-tailed)
Pair 1	ATTAMAZ-ATTKOT	.001

Willingness to Buy from Internet stores

		Sig. (2-tailed)
Pair 1	Q57.A – q57.B	.748
Pair 2	Q54.A – q54.B	.321
Pair 3	Q45.A – q45.B	.000

		Sig. (2-tailed)
Pair 1	WTBAMAZ-WTBKOT	.013

D.5 Data Validity Tests

Correlation between Perceived Familiarity (Amazon case) and its Associated Items

			FAMAMAZ
Spearman's rho	A42	Correlation Coefficient	.867**
	A46	Correlation Coefficient	.729**
	A51	Correlation Coefficient	.840**
	A55	Correlation Coefficient	.777**
	FAMAMAZ	Correlation Coefficient	1.000

Correlation between Perceived Familiarity (E-Kotob case) and its Associated Items

			FAMKOT
Spearman's rho	B42	Correlation Coefficient	.868**
	B46	Correlation Coefficient	.869**
	B51	Correlation Coefficient	.909**
	B55	Correlation Coefficient	.870**
	FAMKOT	Correlation Coefficient	1.000

Correlation between Perceived Repetition (Amazon case) and its Associated Items

			REPAMAZ
Spearman's rho	A43	Correlation Coefficient	.896**
	A52	Correlation Coefficient	.931**
	A 47	Correlation Coefficient	.723**
	REPAMAZ	Correlation Coefficient	1.000

Correlation between Perceived Repetition (E-Kotob case) and its Associated Items

			REPKOT
Spearman's rho	B43	Correlation Coefficient	.941**
	B52	Correlation Coefficient	.753**
	A 47	Correlation Coefficient	.114*
	REPKOT	Correlation Coefficient	1.000

Correlation between Trust (Amazon case) and its Associated Items

			TRSTAMAZ
Spearman's rho	A58	Correlation Coefficient	.899**
	A60	Correlation Coefficient	.904**
	TRSTAMAZ	Correlation Coefficient	1.000

Correlation between Trust (E-Kotob case) and its Associated Items

			TRSTKOT
Spearman's rho	B58	Correlation Coefficient	.876**
	B60	Correlation Coefficient	.917**
	TRSTKOT	Correlation Coefficient	1.000

Correlation between Attitude Toward (Amazon case) and its Associated Items

			ATTAMAZ
Spearman's rho	A56	Correlation Coefficient	.867**
	A53	Correlation Coefficient	.882**
	A48	Correlation Coefficient	.825**
	ATTAMAZ	Correlation Coefficient	1.000

Correlation between Attitude Toward (E-Kotob case) and its Associated Items

			ATTKOT
Spearman's rho	B56	Correlation Coefficient	.869**
	B53	Correlation Coefficient	.918**
	B48	Correlation Coefficient	.904**
	ATTKOT	Correlation Coefficient	1.000

Correlation between Willingness to Buy (Amazon case) and its Associated Items

			WTBAMAZ
Spearman's rho	A57	Correlation Coefficient	.871**
	A54	Correlation Coefficient	.865**
	A45	Correlation Coefficient	.666**
	WTBAMAZ	Correlation Coefficient	1.000

Correlation between Willingness to Buy (E-Kotob case) and its Associated Items

			WTBKOT
Spearman's rho	B57	Correlation Coefficient	.871**
	B54	Correlation Coefficient	.843**
	B45	Correlation Coefficient	.776**
	WTBKOT	Correlation Coefficient	1.000

**Correlation is significant at the .01 level (2-tailed).

D.6 Correlation Coefficient between Variables

E-Kotob Site		UA	FAMEKOT	REPEKOT	TRSTEKOT	ATTEKOT	WTBEKOT	NETRISK	Gender	English	Internet Use
UA	Pearson Correlation	1.000	-.035	-.007	-.040	.078	.116*	.059	.191**	.005	-.045
	Sig. (2-tailed)	.	.556	.898	.495	.179	.046	.314	.002	.926	.438
	N	302	291	298	296	297	297	293	270	301	301
FAMEKOT	Pearson Correlation	-.035	1.000	.553**	.402**	.323**	.319**	.127*	.058	.160**	.088
	Sig. (2-tailed)	.556	.	.000	.000	.000	.000	.029	.339	.005	.125
	N	291	308	305	302	303	304	297	273	306	306
REPEKOT	Pearson Correlation	-.007	.553**	1.000	.479**	.244**	.198**	.039	.114	.200**	.181**
	Sig. (2-tailed)	.898	.000	.	.000	.000	.000	.500	.057	.000	.001
	N	298	305	315	309	310	310	304	280	313	313
TRSTEKOT	Pearson Correlation	-.040	.402*	.479**	1.000	.492**	.515**	.160**	.133*	.255**	.127*
	Sig. (2-tailed)	.495	.000	.000	.	.000	.000	.005	.027	.000	.025
	N	296	302	309	312	307	307	301	277	310	310
ATTEKOT	Pearson Correlation	.078	.323**	.244**	.492**	1.000	.557**	.083	.090	.068	-.012
	Sig. (2-tailed)	.179	.000	.000	.000	.	.000	.149	.134	.231	.829
	N	297	303	310	307	313	308	302	278	311	311
WTBEKOT	Pearson Correlation	.116*	.319**	.198**	.515**	.557**	1.000	.118*	.090	.153**	.043
	Sig. (2-tailed)	.046	.000	.000	.000	.000	.	.040	.133	.007	.448
	N	297	304	310	307	308	313	302	278	311	311
NETRISK	Pearson Correlation	.059	.127*	.039	.160**	.083	.118*	1.000	.128*	.071	-.032
	Sig. (2-tailed)	.314	.029	.500	.005	.149	.040	.	.033	.213	.573
	N	293	297	304	301	302	302	310	278	309	309
Gender	Pearson Correlation	.191**	.058	.114	.133*	.090	.090	.128*	1.000	.017	-.185**
	Sig. (2-tailed)	.002	.339	.057	.027	.134	.133	.033	.	.777	.002
	N	270	273	280	277	278	278	278	286	285	285
English Language Rate	Pearson Correlation	.005	.160**	.200**	.255**	.068	.153**	.071	.017	1.000	.371**
	Sig. (2-tailed)	.926	.005	.000	.000	.231	.007	.213	.777	.	.000
	N	301	306	313	310	311	311	309	285	319	318
Internet Use Rate	Pearson Correlation	-.045	.088	.181**	.127*	-.012	.043	-.032	-.185**	.371**	1.000
	Sig. (2-tailed)	.438	.125	.001	.025	.829	.448	.573	.002	.000	.
	N	301	306	313	310	311	311	309	285	318	319

Amazon Site		UA	FAMAMAZ	REPAMAZ	TRSTAMAZ	ATTAMAZ	WTBAMAZ	NETRISK	Gender	English	Internet Use
UA	Pearson Correlation	1.000	-.005	.023	.041	.087	.031	.059	.191**	.005	-.045
	Sig. (2-tailed)	.	.930	.689	.481	.136	.599	.314	.002	.926	.438
	N	302	287	293	295	294	294	293	270	301	301
FAMAMAZ	Pearson Correlation	-.005	1.000	.476**	.421**	.346**	.403**	.093	.043	-.219**	-.352**
	Sig. (2-tailed)	.930	.	.000	.000	.000	.000	.111	.482	.000	.000
	N	287	305	296	300	296	299	296	272	303	303
REPAMAZ	Pearson Correlation	.023	.476**	1.000	.555**	.375**	.255**	.039	.132*	-.304**	-.411**
	Sig. (2-tailed)	.689	.000	.	.000	.000	.000	.498	.028	.000	.000
	N	293	296	311	303	302	302	301	276	309	309
TRSTAMAZ	Pearson Correlation	.041	.421**	.555**	1.000	.430**	.397**	.050	.068	-.265**	-.335**
	Sig. (2-tailed)	.481	.000	.000	.	.000	.000	.384	.257	.000	.000
	N	295	300	303	312	304	305	302	277	310	310
ATTAMAZ	Pearson Correlation	.087	.346**	.375**	.430**	1.000	.540**	.053	.048	-.167**	-.167**
	Sig. (2-tailed)	.136	.000	.000	.000	.	.000	.357	.427	.003	.003
	N	294	296	302	304	310	302	300	276	308	308
WTBAMAZ	Pearson Correlation	.031	.403**	.255**	.397**	.540**	1.000	.130*	.013	-.102	-.183**
	Sig. (2-tailed)	.599	.000	.000	.000	.000	.	.024	.823	.073	.001
	N	294	299	302	305	302	311	302	277	309	309
NETRISK	Pearson Correlation	.059	.093	.039	.050	.053	.130*	1.000	.128*	.071	-.032
	Sig. (2-tailed)	.314	.111	.498	.384	.357	.024	.	.033	.213	.573
	N	293	296	301	302	300	302	310	278	309	309
Gender	Pearson Correlation	.191**	.043	.132*	.068	.048	.013	.128*	1.000	.017	-.185**
	Sig. (2-tailed)	.002	.482	.028	.257	.427	.823	.033	.	.777	.002
	N	270	272	276	277	276	277	278	286	285	285
English Language Rate	Pearson Correlation	.005	-.219**	-.304**	-.265**	-.167**	-.102	.071	.017	1.000	.371**
	Sig. (2-tailed)	.926	.000	.000	.000	.003	.073	.213	.777	.	.000
	N	301	303	309	310	308	309	309	285	319	318
Internet Use Rate	Pearson Correlation	-.045	-.352**	-.411**	-.335**	-.167**	-.183**	-.032	-.185**	.371**	1.000
	Sig. (2-tailed)	.438	.000	.000	.000	.003	.001	.573	.002	.000	.
	N	301	303	309	310	308	309	309	285	318	319

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

D.7 Linear Regression

Because linear regression cannot test all relationships in a single statistical test, it is necessary to use separate regressions to test the model fully. In regression #1, WTB is the dependent variable and FAM, REP, TRST, and ATT are independent variables. In regression #2, TRST is the dependent variable and FAM, and REP are independent variables. In regression #3, ATT is the dependent variable and TRST, FAM, and REP are independent variables. First, regression is done on the Amazon model as following:
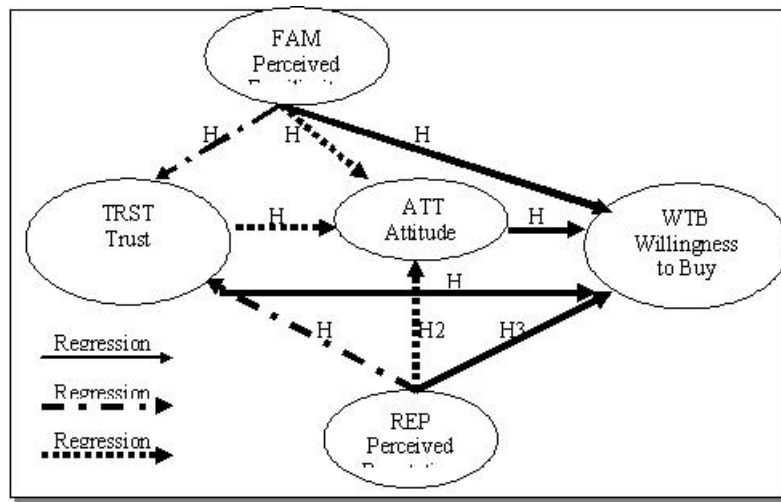
Linear Regression Amazon Site					
	DV	R2	IV	Coefficient (T-Value)	Significance
Regression #1	WTB	.279	FAM	.180 (3.599**)	.000
			REP		
			TRST		
			ATT	.442 (8.836**)	.000
Regression #2	TRST	.687	REP	.592(13.258**)	.000
			FAM	. 170(3.799**)	.000
Regression #3	ATT	.262	FAM	.157(2.938**)	.004
			REP		
			TRST	.422(7.911**)	.000

Regression #1 includes only two predictors: ATT and FAM, excluding REP and TRST. The R^2 = .279 a low value, express that only 28% of the change in WTB is due to change in the ATT and FAM, with loading of .442 and .180 respectively. The regression coefficients are significant since sig. value < .005. Accordingly, H6 and H8 are significant, while H9 and H3 are not.

Regression #2 includes R^2 = .687 a moderate value, express that 68% of the change in TRST is due to change in the REP and FAM, with loading of .592 and .170 respectively. The regression coefficients are significant since sig. value < .005. Accordingly, H1 and H4 are significant.

Regression #3 includes only two predictors: FAM and TRST, excluding REP. The R^2 = .262 a low value, express that only 26% of the change in ATT is due to change in the FAM and TRST, with loading of .157 and .422 respectively. The regression coefficients are significant since sig. value < .005. Accordingly, H5 and H7 are significant, while H2 is not.

Second, regression is done on the E-Kotob model as following:

Linear Regression E-Kotob Site					
	DV	R2	IV	Coefficient (T-Value)	Significance
Regression #1	WTB	.364	FAM	.144 (3.186**)	.002
			REP		
			TRST		
			ATT	.539 (11.899**)	.000
Regression #2	TRST		REP	The model can not be built	
			FAM		
Regression #3	ATT	.349	FAM	.211 (3.750**)	.004
			REP	.20 (3.561**)	.000
			TRST		

Regression #1 includes only two predictors: ATT and FAM, excluding REP and TRST. The R^2 = .364 a low value, express that only 36% of the change in WTB is due to change in the ATT and FAM, with loading of .539 and .144 respectively. The regression coefficients are significant since sig. value < .005. Accordingly, H6 and H8 are significant, while H9 and H3 are not.

Regression #2: the model can not be built.

Regression #3 includes only two predictors: FAM and REP, excluding TRST. The R^2 = .349 a low value, express that only 34% of the change in ATT is due to change in the FAM and REP, with loading of .211 and .20 respectively. The regression coefficients are significant since sig. value < .005. Accordingly, H5 and H2 are significant, while H7 is not.

Three linear regressions were done on both models (Amazon and E-Kotob), results of regressions were as following:

In Amazon Model:
- WTB as a significantly dependant variable is affected by FAM and ATT as independent variables. Accordingly, H6 and H8 are significant.
- TRST as a significantly dependant variable is affected by FAM and REP as independent variables. Accordingly, H1 and H4 are significant.

- ATT as a significantly dependant variable is affected by FAM and TRST as independent variables. Accordingly, H5 and H7 are significant.
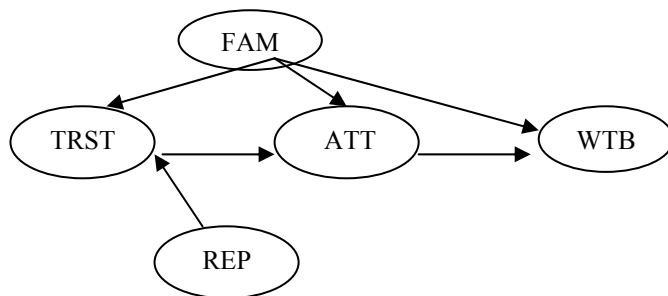
In E-Kotob Model:
- WTB as a significantly dependant variable is affected by FAM and ATT as independent variables. Accordingly, H6 and H8 are significant.

- ATT as a significantly dependant variable is affected by FAM and REP as independent variables. Accordingly, H5 and H2 are significant.
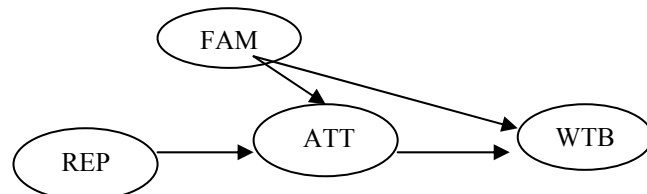
D.8 Structural Equation Modelling Analysis using MxGui

Construction of the Path Diagram of Causal Relationships

Within the path diagram, exogenous and endogenous constructs are defined and linked. A straight arrow indicates a direct causal relationship from one construct to another. A curved line between constructs indicates just a correlation between constructs. The following figure represents the path diagram, based on figure1. The path diagram is simplified, by decreasing the number of causal paths, as following
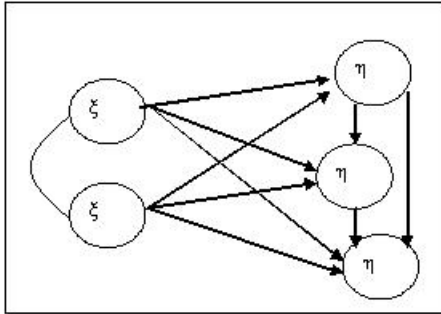
Converting the Path Diagram into a set of Structural and Measurement Models in LISREL Notation
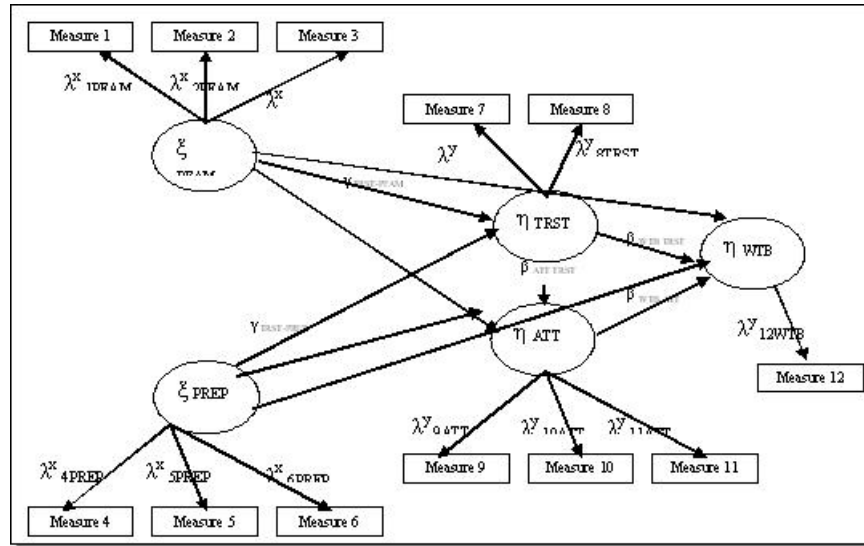
Specifying the Structural Model

Endogenous Construct		Exogenous Construct	Endogenous Construct	Error
η_{TRST}	=	$\gamma_{TRST\text{-}PFAM}\,\xi_{PFAM} + \gamma_{TRST\text{-}PREP}\,\xi_{PREP}\ +$	$\beta_{WTB\text{-}TRST}\,\eta_{WTB} + \beta_{ATT\text{-}TRST}\,\eta_{ATT}$	$+\ \zeta_{TRST}$
η_{ATT}	=	$\gamma_{ATT\text{-}LANG}\,\xi_{LANG} + \beta_{ATT\text{-}LANG}\,\eta_{TRST}\ +$	$\beta_{WTB\text{-}ATT}\,\eta_{WTB}$	$+\ \zeta_{ATT}$
η_{WTB}	=	$\beta_{WTB\text{-}TRST}\,\eta_{TRST} + \beta_{WTB\text{-}ATT}\,\eta_{ATT}$		$+\ \zeta_{WTB}$

Specifying the Measurement Modes:

Exogenous Indicator		Exogenous Construct		Error
X_1	=	$\lambda^{x}_{1PFAM}\,\xi_{PFAM}$	+	δ_1

Exogenous Indicator		Exogenous Construct		Error
X_2	=	$\lambda^x_{2PFAM} \xi_{PFAM}$	+	δ_2
X_3	=	$\lambda^x_{3PFAM} \xi_{PFAM}$	+	δ_3
X_4	=	$\lambda^x_{4PREP} \xi_{PREP}$	+	δ_4
X_5	=	$\lambda^x_{5PREP} \xi_{PREP}$	+	δ_5
X_6	=	$\lambda^x_{6PREP} \xi_{PREP}$	+	δ_6

Endogenous Indicator		Endogenous Construct		Error
Y_7	=	$\lambda^y_{7ATT} \eta_{ATT}$	+	ε_7
Y_8	=	$\lambda^y_{8ATT} \eta_{ATT}$	+	ε_8
Y_9	=	$\lambda^y_{9ATT} \eta_{ATT}$	+	ε_9
Y_{10}	=	$\lambda^y_{10TRST} \eta_{TRST}$	+	ε_{10}
Y_{11}	=	$\lambda^y_{11TRST} \eta_{TRST}$	+	ε_{11}
Y_{12}	=	$\lambda^y_{12WTB} \eta_{WTB}$	+	ε_{12}

Evaluating Goodness-to-Fit Criteria

The objective of this test is to calculate both the T and the R^2 values. T-value expresses the relation between the measurement variables and their corresponding latent variables, while R^2 express which of the variables included in the analysis account for the most variance. In the current analysis, and for both models, the covariance matrix was found Not Positive Definite; accordingly neither T-value nor R^2 value could be calculated.

SEM using MxGUI

MxGui uses covariance matrix to calculate the goodness to fit for the structural model. It starts with an initial model and engages in a series of model re-specifications, each time hoping to improve the model fit while maintaining accordance with the underlying theory.

For model fitting, three sets of goodness-of-fit statistics will be used:

- **Chi-square (Chi Sq²):** This measure is used to test the closeness of fit between the unrestricted covariance matrix and the restricted covariance matrix. The smaller the value of the ChiSq and the higher the probability associated with ChiSq the closer the fit between the hypothesized model and the perfect fit (Bollen, 1989).

- **Root Mean Square Error of Approximation (RMSEA):** This is one of the first indices to measure a fit (Steiger & Lind, 1980).

For a good to fit model the RMSEA is recommended to be less than .05

- **Akaike's Information Criterion (AIC):** AIC is used to address the issue of parsimony in the assessment of model fit. For a good to fit model the RMSEA is recommended to be less than 1

MxGUI Results

Constructs Covariance matrix for Amazon

	UA	FAMAMAZ	REPAMAZ	TRSTAMAZ	ATTAMAZ	WTBAMAZ
UA	4.6316					
FAMAMAZ	-.0632	15.6131				
REPAMAZ	.1313	3.0733	2.7021			
TRSTAMAZ	.1204	2.5178	1.4620	2.4193		
ATTAMAZ	.3168	3.3778	1.6131	1.5257	5.4723	
WTBAMAZ	.1233	4.1760	1.1737	1.4720	3.0455	5.7336

Constructs Covariance matrix for E-Kotob

	UA	FAMEKOT	REPEKOT	TRSTEKOT	ATTEKOT	WTBKOT
UA	4.5942					
FAMEKOT	-.1358	12.5490				
REPEKOT	-.0046	3.1254	2.2653			
TRSTEKOT	-.1657	2.3589	1.1574	2.6413		
ATTEKOT	.4746	2.5537	.9605	1.8899	5.4002	
WTBEKOT	.7487	2.8162	.7853	2.0454	3.0615	5.7488

The Null Model for Amazon
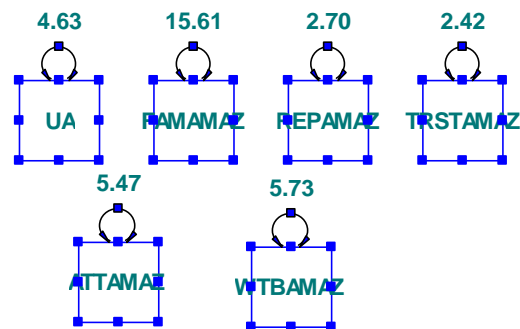
The Amazon Null model yielded the following goodness-of-fit values:
- ML ChiSq = 542.259
- RMSEA = .309
- AIC = 512.259
- Probability = .0000

The Null Model for E-Kotob
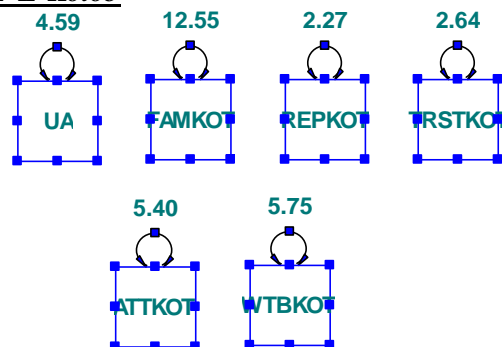
The E-Kotob Null model yielded the following goodness-of-fit values:
- ML ChiSq = 584.661
- RMSEA = .321
- AIC = 554.661
- Probability = .0000

The Initial Model for Amazon
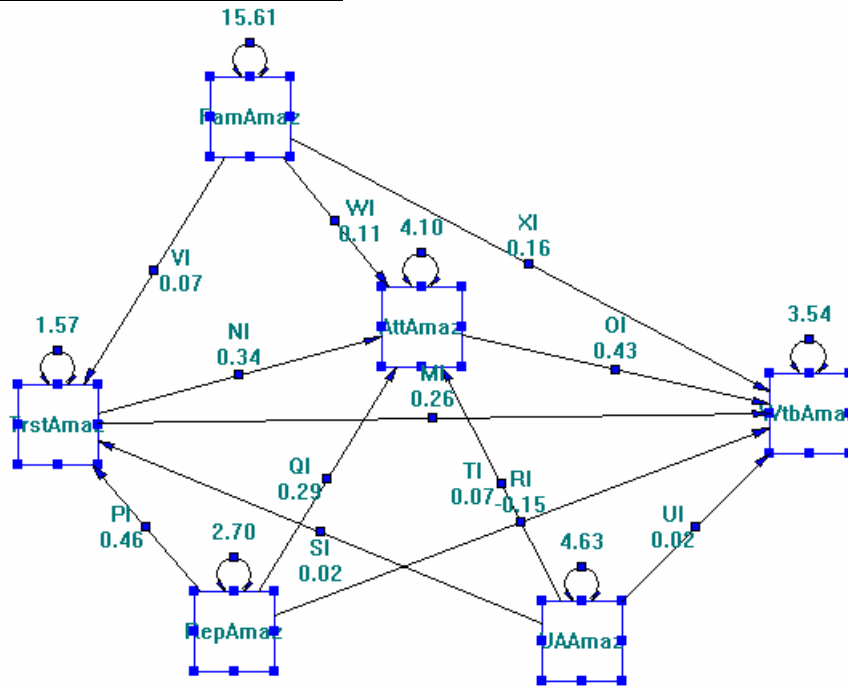
The model yielded the following goodness-of-fit values:

- ML ChiSq = 98.073
- RMSEA=0.293
- AIC= 92.073
- Probability=0.000

As the test of the structural model did not demonstrates good fit, relations between variables were simplified resulting a new simplified model, and a new run was done.

The Simplified Model (Amazon)

By excluding the FamAmaz variable, the model's good fit improved as following
The model yielded the following goodness-of-fit values:

- ML ChiSq = 0.509
- RMSEA=0.000
- AIC= -1.491
- Probability=0.476

The Final Model (Amazon)

To improve the probability, more simplification was done on the model; the test of the structural model demonstrates good fit. This can be deduced since RMSEA value < .05 - .08, the AIC value is < 1, and the associated probability is significant as following:
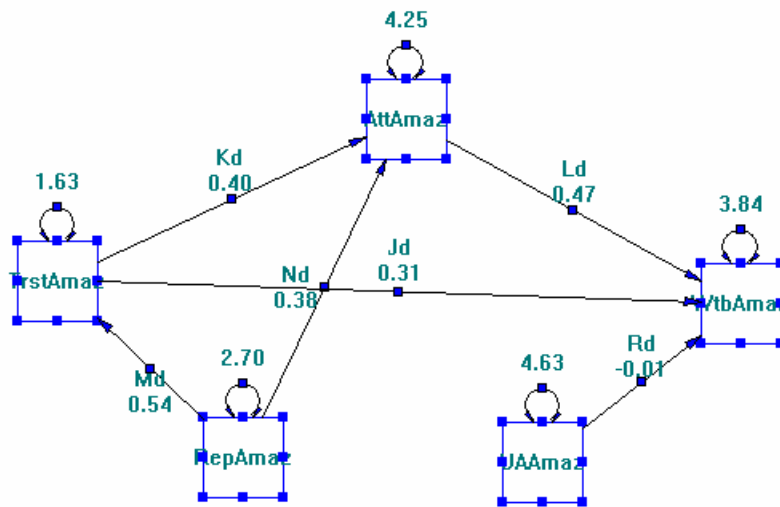
- ML ChiSq = 1.617
- RMSEA=0.000
- AIC= -6.383
- Probability=0.806

The Initial Model for E-Kotob
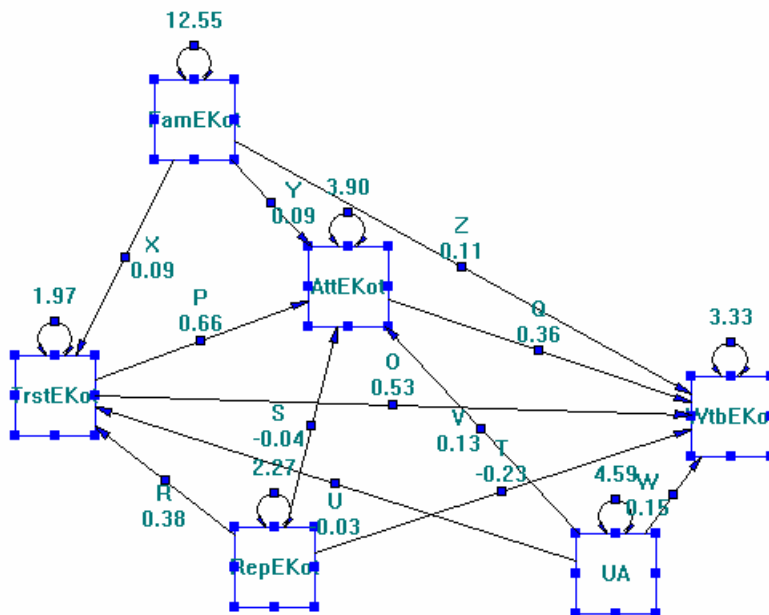
The model yielded the following goodness-of-fit values:
- ML ChiSq = 155.518
- RMSEA=0.371
- AIC= 149.518
- Probability=0.000

As the test of the structural model did not demonstrates good fit, relations between variables were simplified resulting a new simplified model, and a new run was done.

The Final Model (EKotob)

By excluding the FamAmaz variable, the model's good fit improved, the test of the structural model demonstrates good fit. This can be deduced since RMSEA value < .05 - .08, the AIC value is < 1, and the associated probability is significant as following:

- ML ChiSq = 0.001
- RMSEA=0.000
- AIC= -1.999
- Probability=0.978
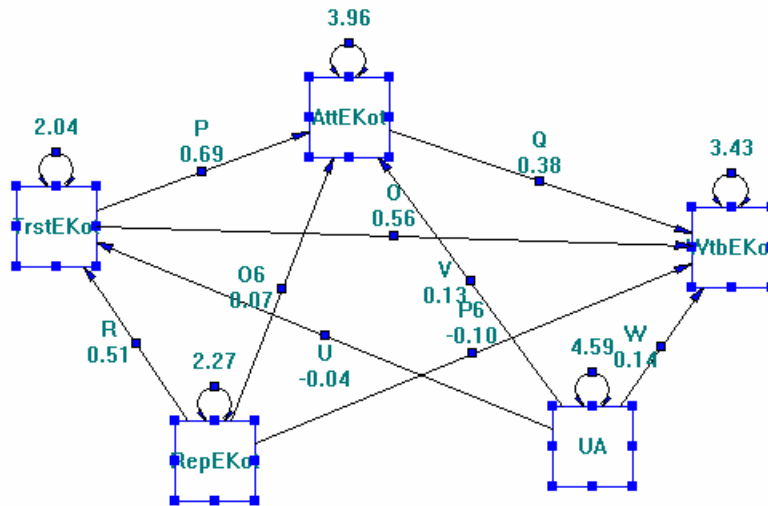
With MxGui, both models matched the goodness to fit criteria, loading of paths were calculated for both models. 6 hypotheses out of 12 were proved in Amazon model, while 9 hypotheses out of 12 were proved in E-Kotob model. In both model perceived familiarity variable was not proven and had to be removed. The following table demonstrates the path estimates of the hypothetical model as proposed by MxGUI.

Path	Value Amazon	Value EKotob
Reputation → Trust	.54	.51
Reputation → Attitude	.38	.07
Reputation → Willingness to Buy	Not Proved	-.10
Trust → Attitude	.40	.69
Attitude → Willingness to Buy	.47	.38
Trust → Willingness to Buy	.31	.56
Uncertainty Avoidance → Trust	Not Proved	.07
Uncertainty Avoidance → Attitude	Not Proved	.013
Uncertainty Avoidance → Willingness to Buy	-.01	.14

The following table presents the status of research hypotheses as suggested by both, the MxGUI SEM analysis and Linear Regression analysis:

Hypothesis	SEM by MXGUI		Linear Regression	
	Amazon	EKotob	Amazon	EKotob
PREP -> TRST	Proved	Proved	Proved	Not Proved
PREP -> ATT	Proved	Proved	Not Proved	Proved
PREP -> WTB	Not Proved	Proved	Not Proved	Not Proved
PFAM -> TRST	Not Proved	Not Proved	Proved	Not Proved
PFAM -> ATT	Not Proved	Not Proved	Proved	Proved
PFAM -> WTB	Not Proved	Not Proved	Proved	Proved
TRST -> ATT	Proved	Proved	Proved	Not Proved
ATT-> WTB	Proved	Proved	Proved	Proved
TRST -> WTB	Proved	Proved	Not Proved	Not Proved
UA -> TRST	Not Proved	Proved	Excluded	Excluded
UA -> ATT	Not Proved	Proved	Excluded	Excluded
UA -> WTB	Proved	Proved	Excluded	Excluded

D.9 Control Checks

Internet Usage breakdown for the three UA Groups

IUSE Breakdown for the three UA Groups				
Usage of Internet	Overall dataset	High UA	Medium UA	Low UA
1 year or less	48 (13%)	13 (11%)	13 (12%)	19 (16%)
2-3 years	102 (28%)	31 (25%)	35 (31%)	30 (26%)
4-5 years	84 (23%)	27 (22%)	27 (24%)	27 (23%)
>6 years	132 (36%)	50 (41%)	37 (33%)	37 (32%)
Perceived Internet Skills	Overall dataset	High UA	Medium UA	Low UA
Novice	24 (6%)	7 (6%)	7 (6%)	7 (6%)
Intermediate	176 (48%)	55 (45%)	59 (53%)	51 (44%)
Experienced	167 (45%)	60 (49%)	45 (40%)	56 (49%)
Previously Purchase Online	Overall dataset	High UA	Medium UA	Low UA
No	268 (72%)	90 (74%)	86 (77%)	79 (69%)
Yes	97 (26%)	32 (26%)	26 (23%)	34 (31%)
Frequency of Purchase Online	Overall dataset	High UA	Medium UA	Low UA
Rarely	48 (13%)	16(13%)	15 (13%)	17 (15%)
Occasionally	33 (9%)	8 (7%)	6 (5%)	15 (13%)
Frequently	20 (5%)	10 (8%)	6 (5%)	3 (3%)

Gender breakdown for the three UA Groups

Gender Breakdown for the three UA Groups				
Gender	Overall dataset	High UA	Medium UA	Low UA
Male	223 (60.3%)	76 (62.3%)	70 (62.5%)	68 (59.1%)
Female	125 (34.3%)	43 (35.2%)	34 (30.4%)	39 (33.9%)
Missing	20 (5.4%)	3 (2.5%)	8 (7.1%)	8 (7.0%)

General Use of Credit Card

Cumulative Percent	Valid Percent	Percent	Frequency			UA Groups
40.5	40.5	40.2	49	Yes	Valid	Low UA
100.0	59.5	59.0	72	No		
	100.0	99.2	121	Total		
		.8	1	System	Missing	
		100.0	122		Total	
33.0	33.0	33.0	37	Yes	Valid	Medium UA
100.0	67.0	67.0	75	No		
	100.0	100.0	112	Total		
27.0	27.0	27.0	31	Yes	Valid	High UA
100.0	73.0	73.0	84	No		
	100.0	100.0	115	Total		

Chi-sqr Calculation for the general use of credit card for the Low and High UA Groups

The General Use of Credit Card				
General Use of Credit Card		High UA	Low UA	
Yes		F :31 (expected F: 38.98)	F :49 (expected F: 41.11)	
No		F :84 (expected F: 76.01)	F :72 (expected F: 79.98)	

F : Frequency - Critical Chi-sqr = 3.84 atsignificant level<0.05

Chi-sqr = $(31-38.98)^2/38.98 + (84-76.01)^2/76.01 + (49-41.11)^2/41.11 + (72-79.981)^2/79.98$ = 4.83

Age

Cumulative %	Valid %	Percent	Frequency			UA Groups
51.6	51.6	51.6	63	20-24	Valid	Low UA
77.0	25.4	25.4	31	25-29		
89.3	12.3	12.3	15	30-34		
94.3	4.9	4.9	6	35-39		
100.0	5.7	5.7	7	40-49		
	100.0	100.0	122	Total		
48.2	48.2	48.2	54	20-24	Valid	Medium UA
82.1	33.9	33.9	38	25-29		
94.6	12.5	12.5	14	30-34		
98.2	3.6	3.6	4	35-39		
100.0	1.8	1.8	2	40-49		
	100.0	100.0	112	Total		
53.0	53.0	53.0	61	20-24	Valid	High UA
89.6	36.5	36.5	42	25-29		
94.8	5.2	5.2	6	30-34		
98.3	3.5	3.5	4	35-39		
100.0	1.7	1.7	2	40-49		
	100.0	100.0	115	Total		

English Language Proficiency

Cumulative %	Valid Percent	Percent	Frequency			UA Groups
51.6	51.6	51.6	63	Intermediate	Valid	Low UA
100.0	48.4	48.4	59	Professional		
	100.0	100.0	122	Total		
1.8	1.8	1.8	2	Novice	Valid	Medium UA
55.4	53.6	53.6	60	Intermediate		
100.0	44.6	44.6	50	Professional		
	100.0	100.0	112	Total		
.9	.9	.9	1	Novice	Valid	High UA
58.4	57.5	56.5	65	Intermediate		
100.0	41.6	40.9	47	Professional		
	100.0	98.3	113	Total		
		1.7	2	System	Missing	
		100.0	115		Total	

Internet Use Proficiency

Cumulative %	Valid %	Percent	Frequency			UA Groups
5.7	5.7	5.7	7	Novice	Valid	Low UA
50.8	45.1	45.1	55	Intermediate		
100.0	49.2	49.2	60	Professional		
	100.0	100.0	122	Total		
6.3	6.3	6.3	7	Novice	Valid	Medium UA
59.5	53.2	52.7	59	Intermediate		
100.0	40.5	40.2	45	Professional		
	100.0	99.1	111	Total		
		.9	1	System	Missing	
		100.0	112		Total	
6.1	6.1	6.1	7	Novice	Valid	High UA
50.9	44.7	44.3	51	Intermediate		
100.0	49.1	48.7	56	Professional		
	100.0	99.1	114	Total		
		.9	1	System	Missing	
		100.0	115		Total	

For How Long have you been Using the Internet

Cumulative %	Valid %	Percent	Frequency			UA Groups
10.7	10.7	10.7	13	1 Year or Less	Valid	Low UA
36.1	25.4	25.4	31	2-3 Years		
58.2	22.1	22.1	27	4-5 Years		
99.2	41.0	41.0	50	6 Years or More		
100.0	.8	.8	1	5		
	100.0	100.0	122	Total		
11.6	11.6	11.6	13	1 Year or Less	Valid	Medium UA
42.9	31.3	31.3	35	2-3 Years		
67.0	24.1	24.1	27	4-5 Years		
100.0	33.0	33.0	37	6 Years or More		
	100.0	100.0	112	Total		
16.8	16.8	16.5	19	1 Year or Less	Valid	High UA
43.4	26.5	26.1	30	2-3 Years		
67.3	23.9	23.5	27	4-5 Years		
100.0	32.7	32.2	37	6 Years or More		
	100.0	98.3	113	Total		
		1.7	2	System	Missing	
		100.0	115		Total	

Have you ever Purchased anything via the Internet

Cumulative %	Valid %	Percent	Frequency			UA Groups
26.2	26.2	26.2	32	Yes	Valid	Low UA
100.0	73.8	73.8	90	No		
	100.0	100.0	122	Total		
23.2	23.2	23.2	26	Yes	Valid	Medium UA
100.0	76.8	76.8	86	No		
	100.0	100.0	112	Total		
30.1	30.1	29.6	34	Yes	Valid	High UA
100.0	69.9	68.7	79	No		
	100.0	98.3	113	Total		
		1.7	2	System	Missing	
		100.0	115		Total	

If Yes, How Often have you Purchased Items via the Internet

Cumulative %	Valid %	Percent	Frequency			UA Groups
47.1	47.1	13.1	16	Rarely	Valid	Low UA
70.6	23.5	6.6	8	Occasionally		
100.0	29.4	8.2	10	Frequently		
	100.0	27.9	34	Total		
		72.1	88	System	Missing	
		100.0	122		Total	
55.6	55.6	13.4	15	Rarely	Valid	Medium UA
77.8	22.2	5.4	6	Occasionally		
100.0	22.2	5.4	6	Frequently		
	100.0	24.1	27	Total		
		75.9	85	System	Missing	
		100.0	112		Total	
48.6	48.6	14.8	17	Rarely	Valid	High UA
91.4	42.9	13.0	15	Occasionally		
100.0	8.6	2.6	3	Frequently		
	100.0	30.4	35	Total		
		69.6	80	System	Missing	
		100.0	115		Total	

What Language do you Prefer to use when Buying from the Internet

Cumulative %	Valid %	Percent	Frequency			UA Groups
4.2	4.2	4.1	5	Arabic	Valid	Low UA
52.9	48.7	47.5	58	English		
95.8	42.9	41.8	51	Arabic& English		
100.0	4.2	4.1	5	Does not Matter		
	100.0	97.5	119	Total		
		2.5	3	System	Missing	
		100.0	122		Total	
2.7	2.7	2.7	3	Arabic	Valid	Medium UA
48.2	45.5	45.5	51	English		
94.6	46.4	46.4	52	Arabic& English		
100.0	5.4	5.4	6	Does not Matter		
	100.0	100.0	112	Total		
3.5	3.5	3.5	4	Arabic	Valid	High UA
52.6	49.1	48.7	56	English		
96.5	43.9	43.5	50	Arabic& English		
100.0	3.5	3.5	4	Does not Matter		
	100.0	99.1	114	Total		
		.9	1	System	Missing	
		100.0	115		Total	

What Payment Method do you Prefer on the Internet

Cumulative %	Valid %	Percent	Frequency			UA Groups
2.2	2.2	1.6	2	Other	Valid	Low UA
19.8	17.6	13.1	16	Credit Card		
100.0	80.2	59.8	73	Pay on Delivery		
	100.0	74.6	91	Total		
		25.4	31	System	Missing	
		100.0	122		Total	
18.2	18.2	14.3	16	Credit Card	Valid	Medium UA
100.0	81.8	64.3	72	Pay on Delivery		
	100.0	78.6	88	Total		
		21.4	24	System	Missing	
		100.0	112		Total	
13.3	13.3	10.4	12	Credit Card	Valid	High UA
100.0	86.7	67.8	78	Pay on Delivery		
	100.0	78.3	90	Total		
		21.7	25	System	Missing	
		100.0	115		Total	

What Delivery Method do you Prefer on the Internet

Cumulative %	Valid %	Percent	Frequency			UA Groups
1.1	1.1	.8	1	Other	Valid	Low UA
17.2	16.1	12.3	15	By Post		
100.0	82.8	63.1	77	By Hand		
	100.0	76.2	93	Total		
		23.8	29	System	Missing	
		100.0	122		Total	
1.1	1.1	.9	1	Other	Valid	Medium UA
26.4	25.3	19.6	22	By Post		
100.0	73.6	57.1	64	By Hand		
	100.0	77.7	87	Total		
		22.3	25	System	Missing	
		100.0	112		Total	
18.2	18.2	13.9	16	By Post	Valid	High UA
100.0	81.8	62.6	72	By Hand		
	100.0	76.5	88	Total		
		100.0	115		Total	

D.10 Hofstede's Cultural Variables Calculations

Hofstede indices are calculated according to the Indices calculation formulas provided with the VSM-Questionnaire. Means were calculated using SPSS 10.0.7, Indices calculations are described bellow:

Power Distance Index (PDI)
PDI = –35m(03) +35m(06) +25m(14) –20m(17) –20

In which m (03) is the mean score for question 03, etc.
Hofstede Q3 = Q21 in the used questionnaire
Hofstede Q6 = Q24 in the used questionnaire
Hofstede Q14 = Q32 in the used questionnaire
Hofstede Q17 = Q35 in the used questionnaire

PDI = -35 (1.69) + 35 (2.18) + 25 (3.52) – 20 (2.53) –20
　　 = - 59.15　 + 76.3　　+ 88　　　 – 50.6　　 – 20 = 34.55

The index has a value between 0 (small Power Distance) and 100 (large Power Distance). According to Hofstede Arab countries have high power distance with PDI = 80. On the contrary, this sample is suggested to have a low Power Distance with PDI = 34.55

Individualism Index (IDV)
IDV = –50m(01) +30m(02) +20m(04) –25m(08) +130

In which m(01) is the mean score for question 01, etc.
Hofstede Q1 = Q19 in the used questionnaire
Hofstede Q2 = Q20 in the used questionnaire
Hofstede Q4 = Q22 in the used questionnaire
Hofstede Q8 = Q26 in the used questionnaire

IDV = -50 (1.95) + 30 (1.81) + 20 (1.91) – 25 (2.03) +130
　　 = -97.5　　 + 54.3　　 + 38.2　　 – 50.75　 + 130 = 74.25

The index has a value between 0 (strongly collectivist) and 100 (strongly individualist). According to Hofstede Arab countries have strong collectivist with IDV = 38. On the contrary, this sample is suggested to have a strong individualist with IDV = 74.25

Masculinity Index (MAS)
MAS = +60m(05) –20m(07) +20m(15) –70m(20) +100

In which m(05) is the mean score for question 05, etc.
Hofstede Q5 = Q23 in the used questionnaire
Hofstede Q7 = Q25 in the used questionnaire
Hofstede Q15 = Q33 in the used questionnaire
Hofstede Q20 = Q38 in the used questionnaire

MAS = +60 (1.57) – 20 (1.62) + 20 (3.53) – 70 (2.25) +100
　　 =　94.2　　 – 32.4　　 + 70.6　　 – 157.5　 + 100 = 74.9

The index has a value between 0 (strongly feminine) and 100 (strongly masculine). According to Hofstede Arab countries are rich masculine countries with MAS = 53. Similarly, this sample is suggested to be rich masculine with MAS = 74.9

Uncertainty Avoidance Index (UAI)
UAI = +25m(13) +20m(16) –50m(18) –15m(19) +120

In which m(13) is the mean score for question 13, etc.
Hofstede Q13 = Q31 in the used questionnaire
Hofstede Q16 = Q34 in the used questionnaire
Hofstede Q18 = Q36 in the used questionnaire
Hofstede Q19 = Q37 in the used questionnaire

UAI = 25 (3.08) + 20 (3.35) -50 (3.32) – 15 (2.37) +120
    = 77   + 67   – 166   – 35.55   + 120 = 62.45

The index has a value between 0 (weak Uncertainty Avoidance) and 100 (strong Uncertainty Avoidance). According to Hofstede Arab countries have strong uncertainty avoidance with UAI = 68. Similarly, this sample is suggested to have strong uncertainty avoidance with UAI = 62.45

Long Term Orientation Index (LTO)
LTO = +45m(09) –30m(10) –35m(11) +15m(12) +67

In which m(09) is the mean score for question 09, etc.
Hofstede Q9 = Q27 in the used questionnaire
Hofstede Q10 = Q28 in the used questionnaire
Hofstede Q11 = Q29 in the used questionnaire
Hofstede Q12 = Q30 in the used questionnaire

LTO = +45 (1.43) –30 (1.74) –35 (1.57) +15 (1.82) +67
   = 64.35   – 52.2   – 54.95   + 27.3   + 67 = 51.5

The index has a value between 0 (very short-term oriented) and 100 (very long-term oriented). Hofstede did not classify the Arab countries according to the LTO Index, this sample is suggested to have long term orientation with LTO Index = 51. 5
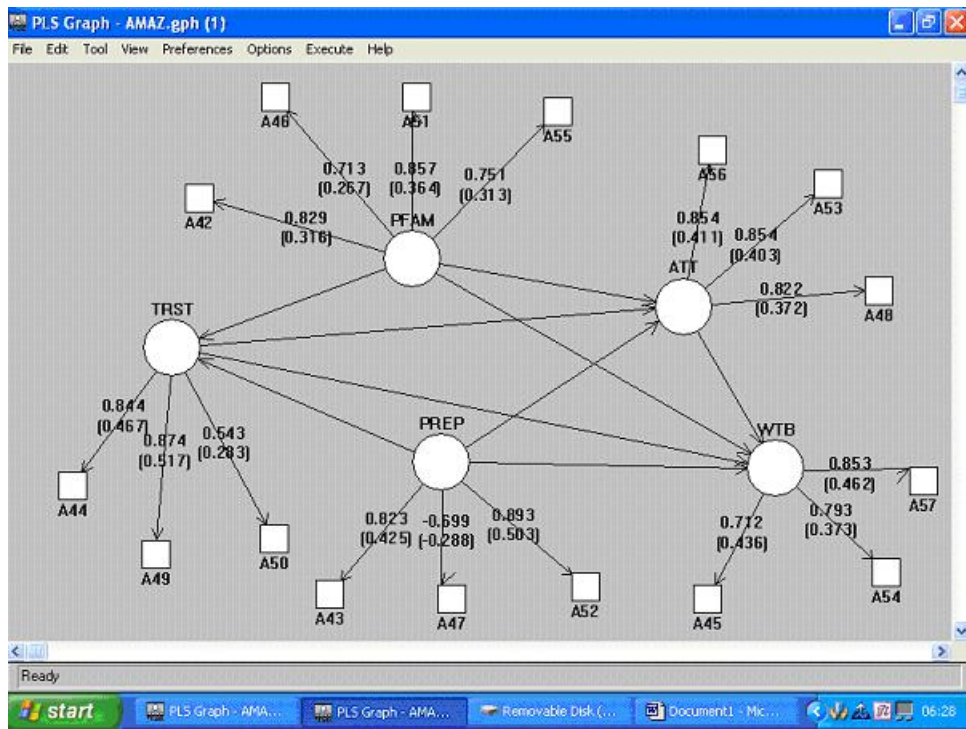
D.11 PLS Screen Capture for Model Items Loadings

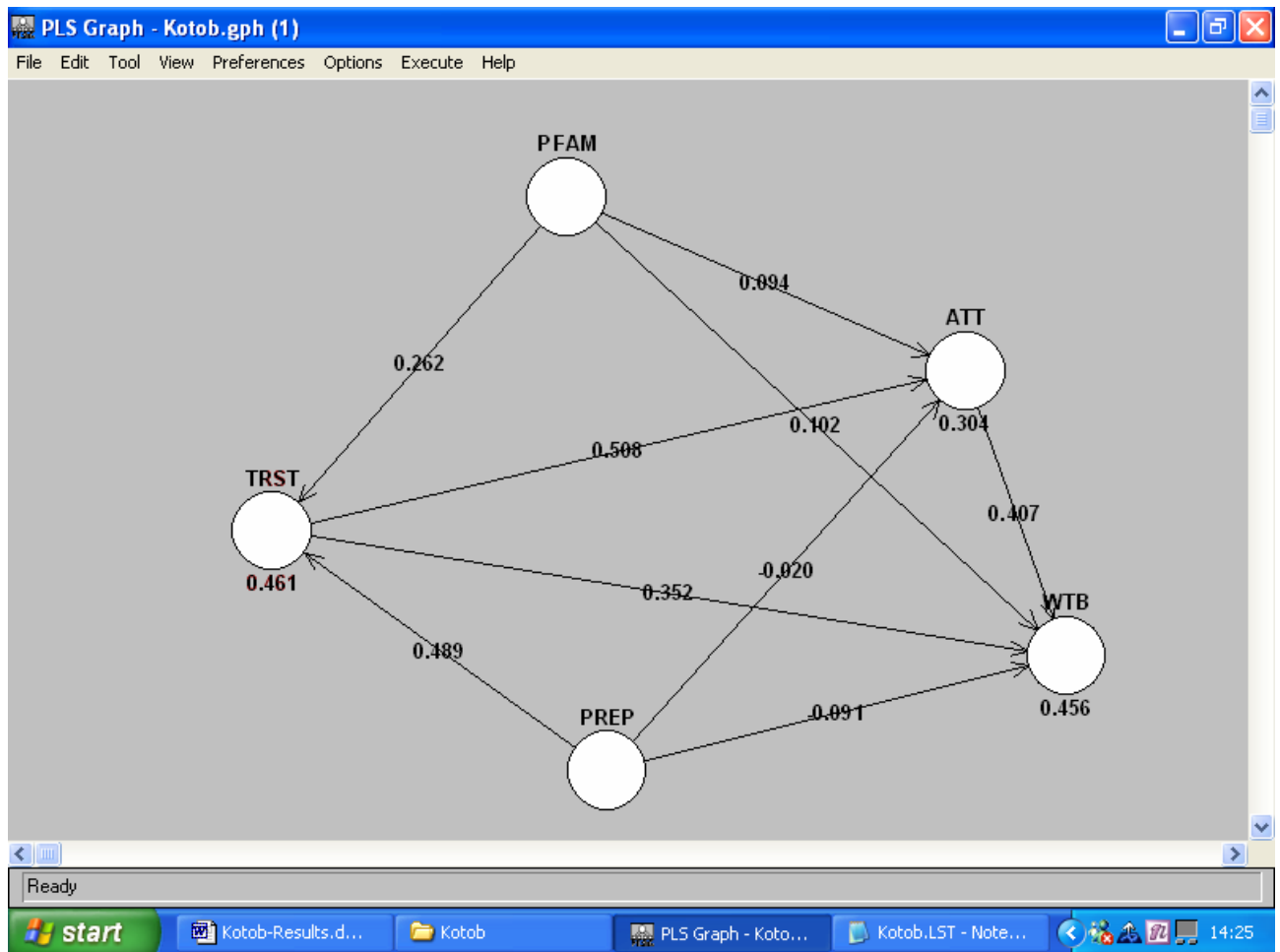**Structural Model with Path Coefficient for Combined Dataset:**
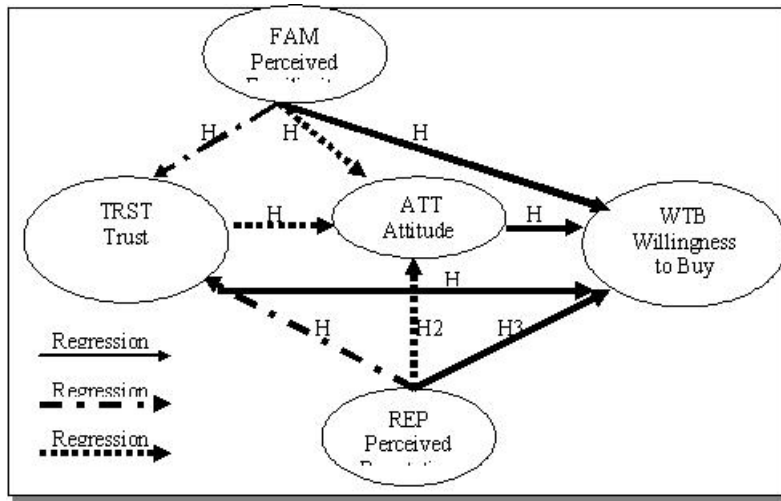
Amazon Site

Measurement Model with Item Loading and Item Weight for the Combined Dataset: Amazon Site

D.12 PLS Screen Capture for Model Items Loadings

Structural Model with Path Coefficient for Combined Dataset:

E-Kotob Site

Measurement Model with Item Loading and Item Weight for the Combined Dataset: E-Kotob Site